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HARDWARE TOOLS and SUPPLIES

for

MANUFACTURERS
INDIVIDUALS AND
INSTITUTIONS

Since 1848

Hammacher, Schlemmer & Co.

Fourth Avenue and 13th Street

New York

Officers of Hammacher, Schlemmer & Co.

Mr. William Schlemmer

Who is at present the Treasurer of the Company, has been identified with the business for sixty-one years continuously and President and Treasurer up to January 1, 1914.

Mr. William F. Schlemmer

Son of Mr. William Schlemmer, identified with the business for the past twenty-three years, fifteen years Vice-President, and now President.

Mr. Dean Park

Connected with the business for the past eighteen years and Secretary for the past ten years.





Our present location at
127 to 133 Fourth Avenue, corner 13th Street
New York

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Where Do You Live?

IT need not matter much, as our store is located in one of the few real centers of the city.

The Subway express station is one block away; the Broadway surface cars one block; the Fourth Avenue cars pass the door. From the Grand Central, the Subway brings you one block from our corner in six to eight minutes; from the Pennsylvania, the Broadway surface cars take ten minutes or so; from the Jersey side, the Hudson Tunnel lands you four rather long blocks away.

We are always glad to receive visitors—we like to make new acquaintances. Anyone interested in Hardware and Tools will enjoy our stock; while factory representatives may find it decidedly to their advantage to get acquainted in the main office on the second floor. On many lines of regular and special goods we are in a position to quote exceptionally favorable prices on large lots, or on contract basis.





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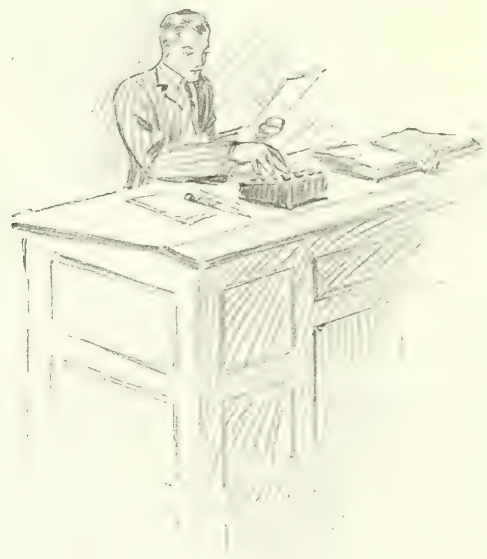
The Main Office

OCCUPIES the entire second floor, and it is here, rather than in the store, that the bulk of our business is handled.

In planning our office we adopted the old fashioned idea of everything "open and above board," for we have always believed that more and better business can be done where there is quickest and easiest contact between departments, and less time wasted in approaching the sanctums of the various managerial heads; therefore, "the office" generally assumes that one-large-family atmosphere, such as is occasionally found in long established business houses.

In the foreground of the upper picture may be seen the cabinets for our elaborate system of buyers' records, behind them a part of the invoicing and accounting departments. In the center the buying department is shown at closer range.

The lower view shows a display room devoted exclusively to builders' hardware.



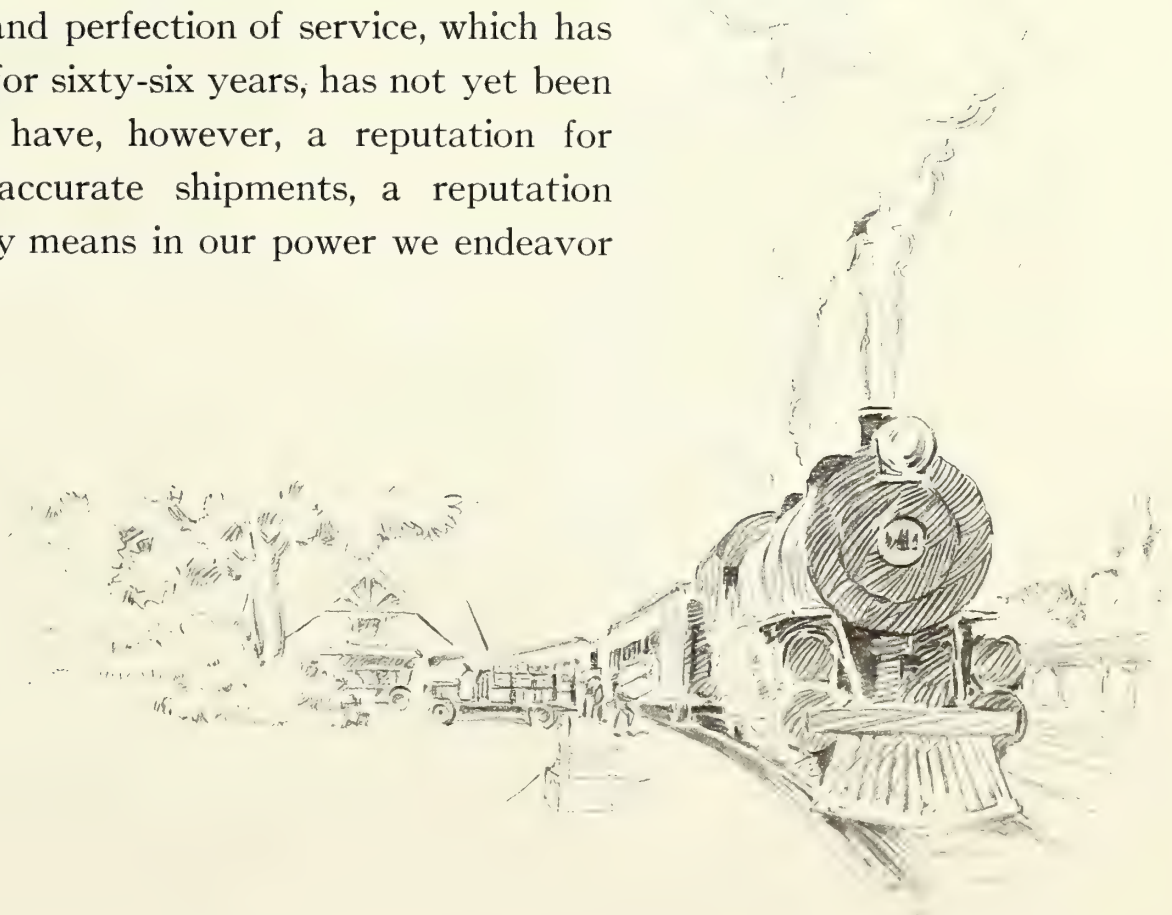


Packing and Shipping

THE Shipping Department is the main artery of any business, and this statement applies with exceptional truth to such a business as ours. Orders calling for several thousand items, many of unusual finishes or dimensions and manufactured in a score of different factories, are a familiar part of our day's work.

The original order and three carbon copies are written out and delivered to four different departments, where they become unfinished business until the order is delivered complete. Records of upwards of three million orders are on file in our cabinets.

Our system is infallible, but those who operate it are human, and perfection of service, which has been our goal for sixty-six years, has not yet been reached. We have, however, a reputation for prompt and accurate shipments, a reputation which by every means in our power we endeavor to maintain.





Piano Materials and Tools

ONE of the most important branches of our business is the sale of Piano Materials and Tools, and the views on the opposite page are taken at random from various points.

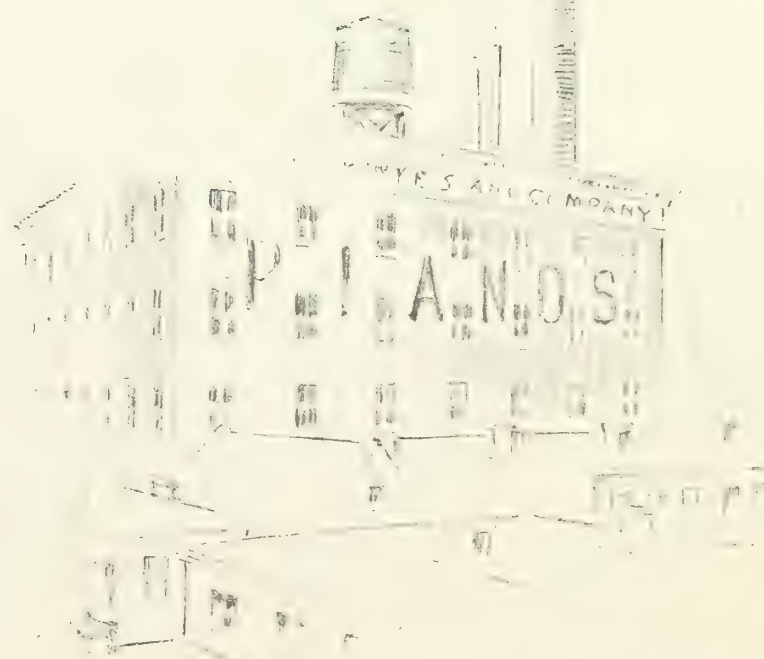
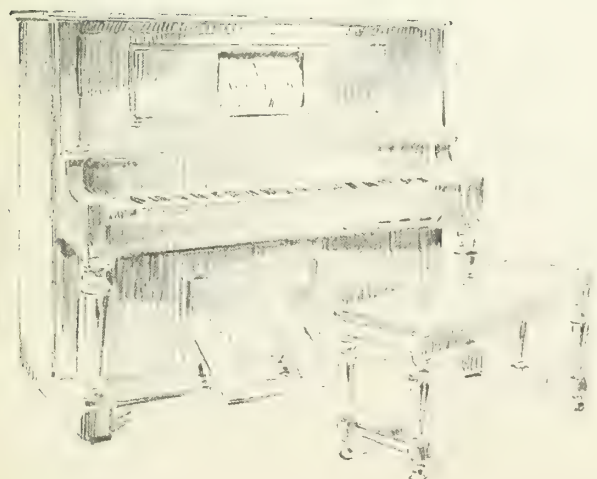
The upper picture shows a part of the space devoted to small items in Piano Materials, such as hinges, locks, knobs, rubber buttons, front frame swings and scores of other similar items.

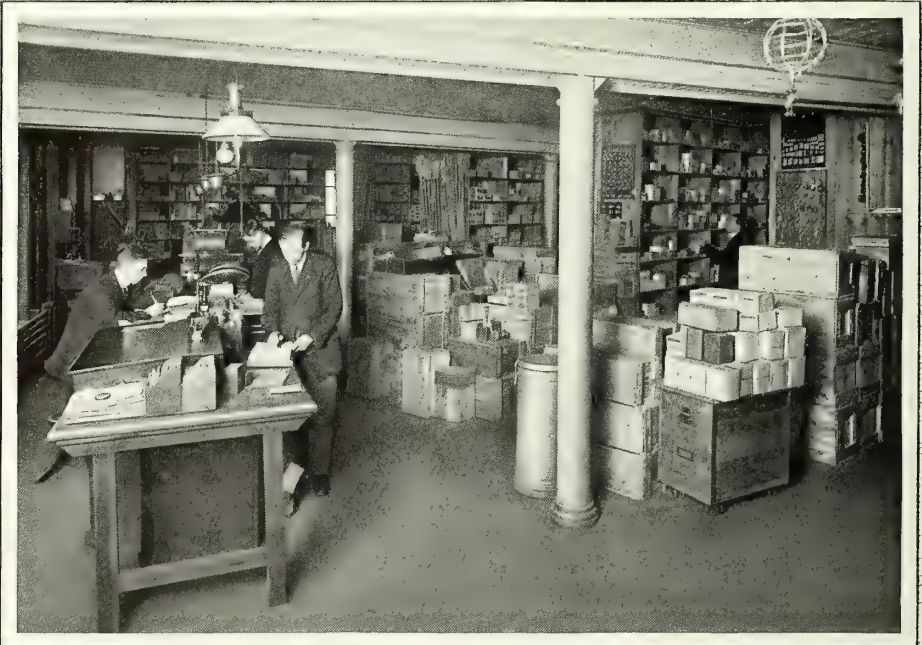
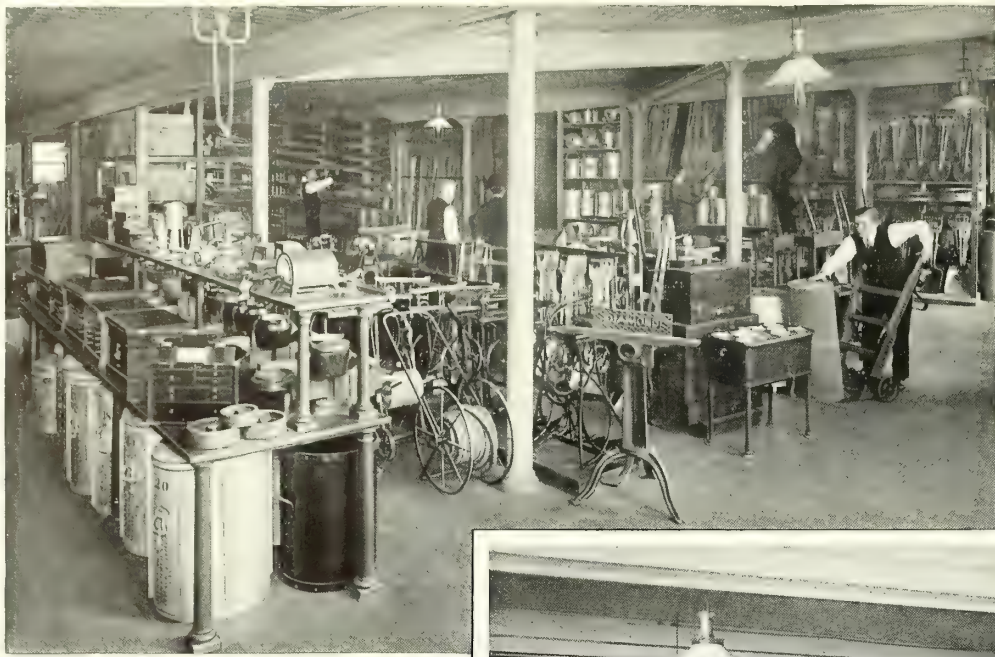
In the center view the various kinds of Felts and Cloths used exclusively in piano work, including bushing cloth, key rail cloth, string and name-board felt and similar material.

Next, a corner devoted entirely to tools for the use of piano tuners and regulators.

The lower picture shows the section devoted to the celebrated Felten and Guilleaume Music Wire, of which we carry an enormous stock at all times.

On this same floor we stock the famous "Fly" Brand Tuning Pins for which we have been the sole American and Canadian agents for years.





General Views

THE illustrations on the opposite page are used merely to give some idea of the scope and variety of our lines.

The upper picture shows an exceedingly varied assortment of "bulky" goods, including shovels, spades, brooms, etc., for contractors' use; hose-racks, mortising machines, tool chests, glue room specialties, ash and garbage cans, and scores of other items.

The remaining three pictures are from different floors housing thousands of items in the line of general hardware tools and supplies.

Our sole aim in these views has been to afford customers who have never given us the honor of a personal visit, some idea at a glance of the great variety and extent of our lines.

Our stock is probably the largest and most comprehensive in the East.





The Basement

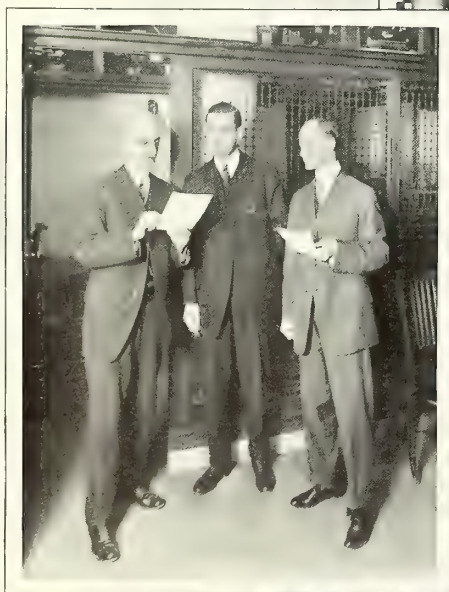
A BASEMENT is just the place for heavy goods, and certainly hardware is heavy. Opposite, three different views of our main basement show nails, screws, bolts, nuts, dowels, building paper and many other items which we stock in great quantities.

For years we have given very close attention to our stocks of wood screws and miscellaneous wire nails, and believe the statement a safe one to make that we have a greater variety of both items "on hand" than can be found elsewhere in the country, outside of possibly a few factory store houses.

In the sale of Birch Dowels, which show so prominently in the lower picture, we are legitimate factors, having marketed these goods in large quantities for many years.

We have given considerable study to the perfecting of our methods for the rapid and efficient handling of the lines of heavy goods carried generally in the basements or on reinforced floors.





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The Store

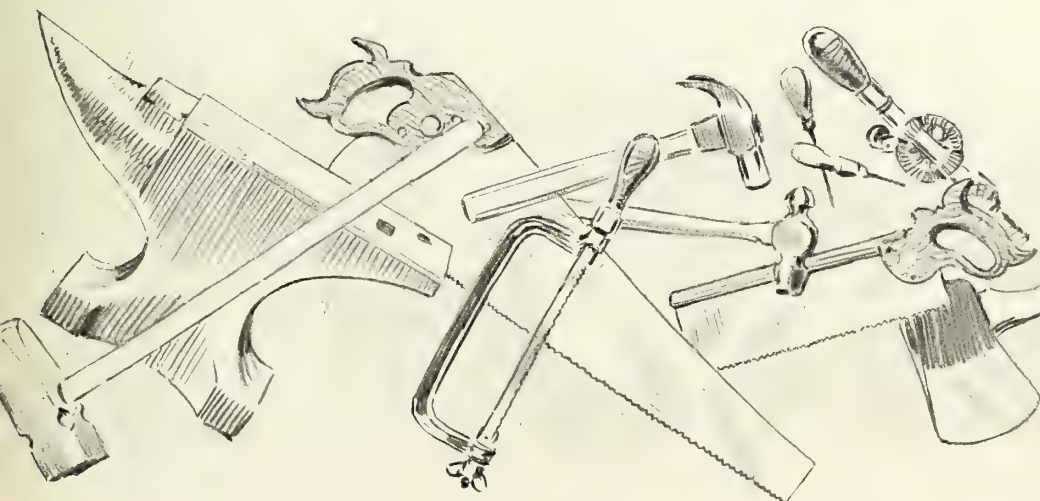
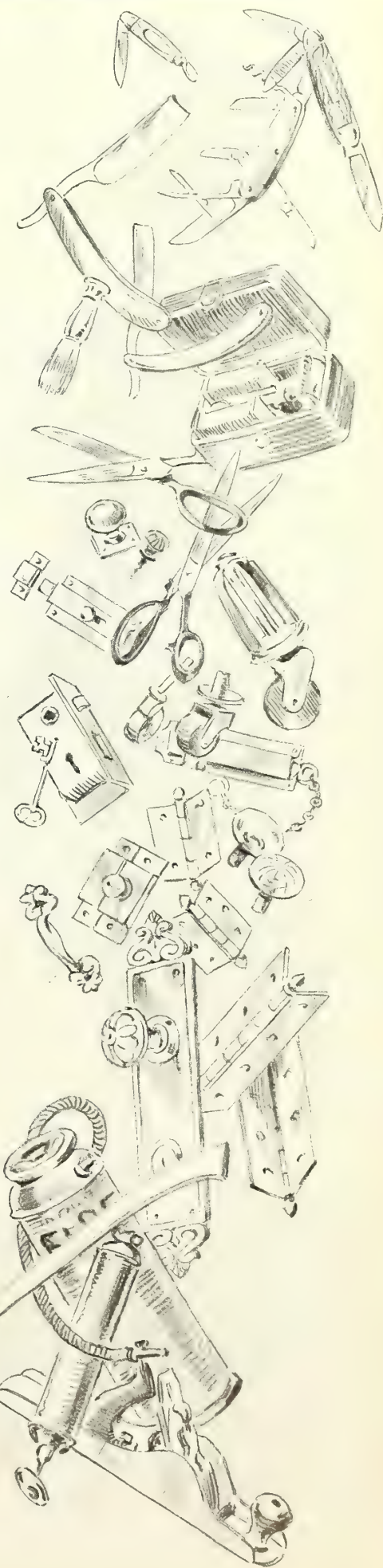
WE pride ourselves on conducting one of the finest hardware stores in the United States, and have had much satisfaction in being told by those who have traveled and observed much, that ours is "better than anything of the kind they have yet seen."

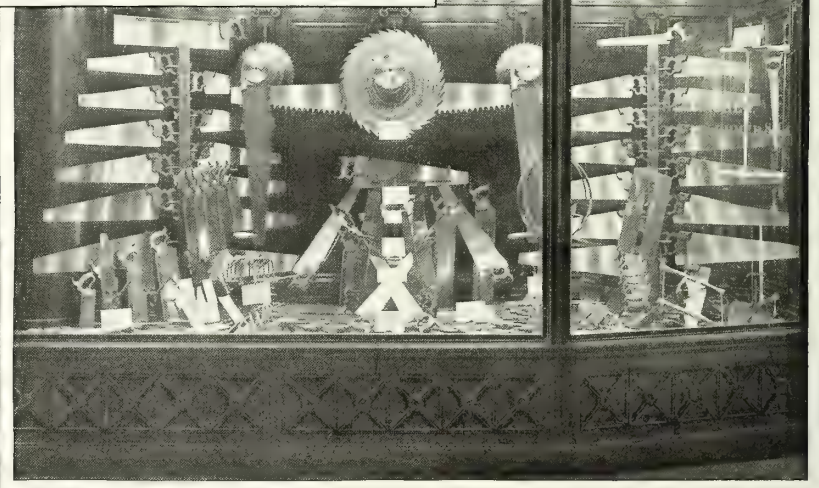
And the store has other advantages beyond "good looks," for in arrangements for handling business here as elsewhere throughout the building, we achieved a gratifying degree of "efficiency" some years before that word came into its present usage.

The store is roughly divided into two divisions: On the right from the entrance, Tools; on the left, Hardware; in the rear, our much advertised Tool Cabinets, and samples of general supplies.

The upper view is taken to the right and shows mainly the side of the store given to Tools. The lower view is taken to the left and shows the Hardware section. The central view shows in the foreground, Casters, one of our specialties; and in the rear, Tool Cabinets, etc.

It should be borne in mind that these pictures represent only a retail display.





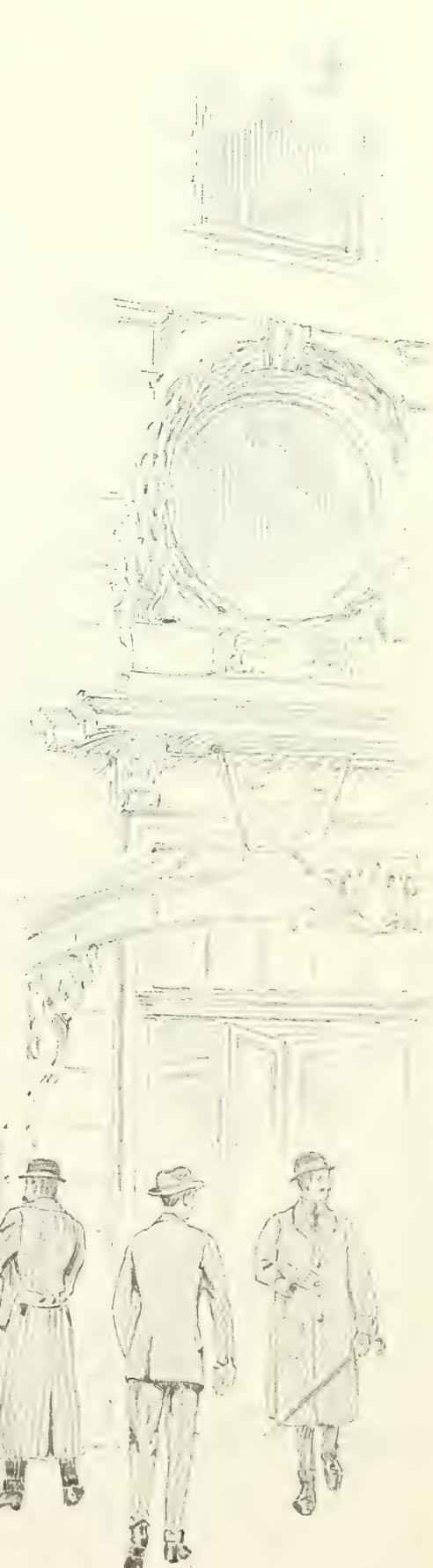
Show Windows

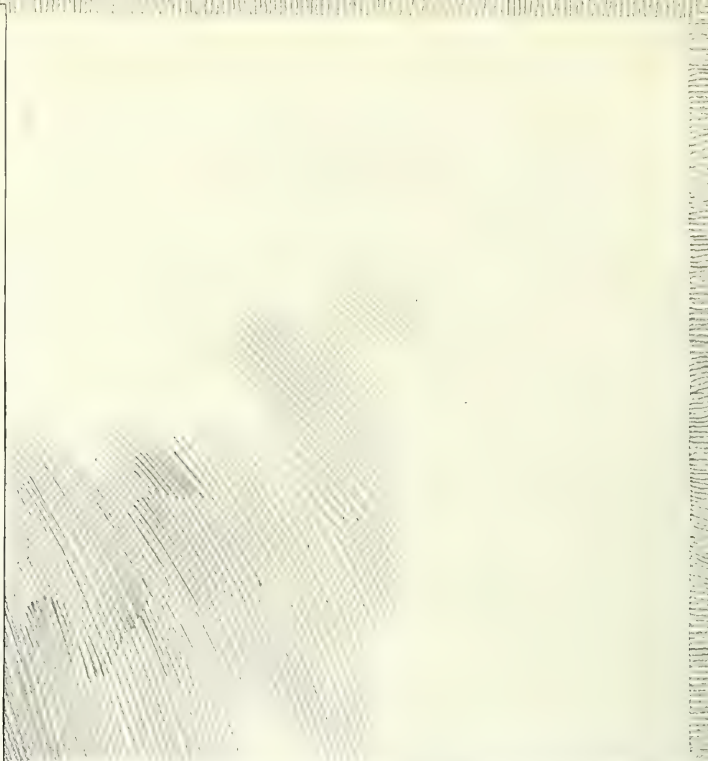
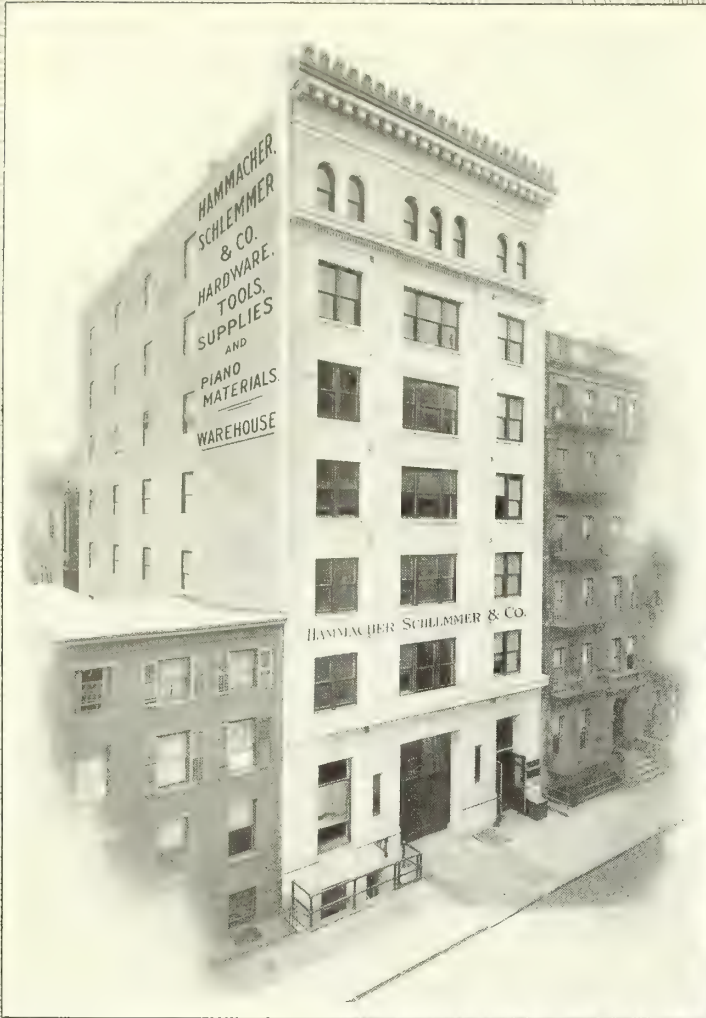
THE time is long passed when any sane person doubts the exceptional value of well trimmed and attractive store windows.

We spend much time and money in making our windows interesting and even instructive, and have always found that special effort in this direction has been amply repaid by the number of interested passersby who often spend several moments in studying the details.

These displays are of course changed frequently, but this group is fairly representative, particularly the three upper views presenting builders' hardware, saws of all kinds and a group of miscellaneous machinists' tools, including the standard Brown & Sharpe and Starrett specialties.

All four windows are panelled in solid mahogany and are of the very finest department store type. The illustrations were taken at night on account of street traffic, but they give a fair idea of the general arrangement of our window displays as they appear from time to time.



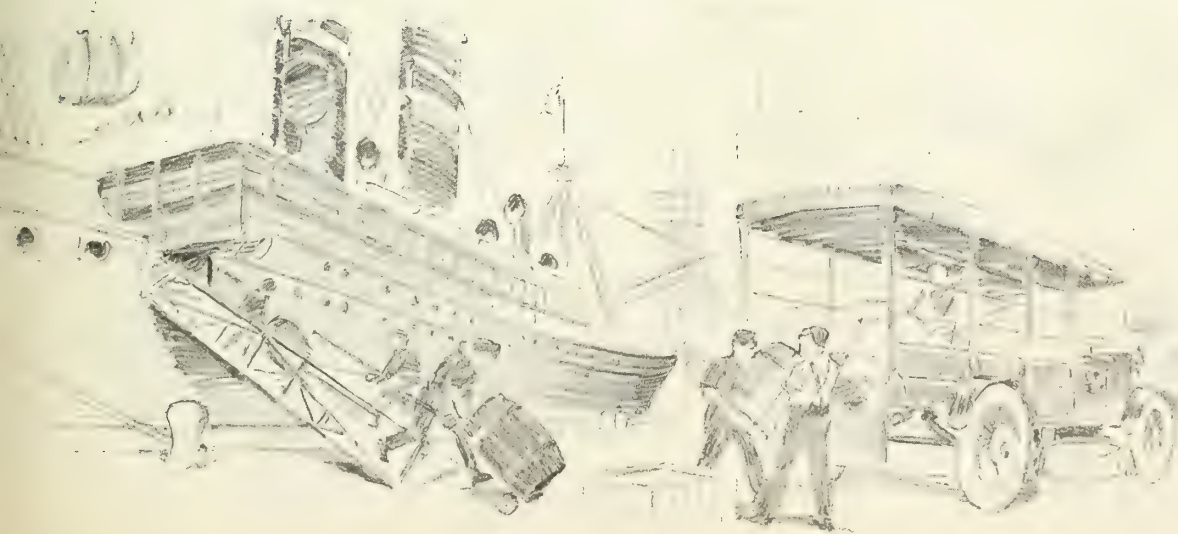


Our Warehouse

WHAT can anybody say about a warehouse? We show ours only to emphasize the fact that we are not merely a retail hardware store, as has been erroneously supposed by some of our new customers, but that we carry exceptionally large stocks of many items, thus enabling us to make prompt shipments to factories or to merchants who buy of us on a purely jobbing basis.

In conclusion we would say that although we trust you have become more or less acquainted with us and our business through these pictures, we hope that they will prove to be only an incentive for a personal call.

We take very great pleasure in meeting our customers.





The 1200 pages in this catalogue represent the boiled down essence of the literature of 1,000 manufacturers—plus descriptions of goods manufactured for or exclusively controlled by us

This book was built for
your convenience and to
save you time. We trust
you will find it useful

Compiled by
Catalogue Department
Hammacher, Schlemmer & Co.
Press of Robert L. Stillson Co.
New York

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“ Bar Clamps.....	444	“ Cap Screw, U. S. Standard,		“ Socket Brace.....	208
“ Carvers Benches.....	454	203-204		“ Socket Ratchet.....	209
“ Carvers Files.....	238	“ Car.....	201	“ Sockets for.....	207
“ Carvers Mallets.....	575	“ Carriage Makers.....	200-202	“ Spanner.....	205
“ Carvers Rasps.....	238	“ Chain Pipe.....	215-216	“ Spark Plug.....	203-210
“ Carvers Tools.....	560 to 564	“ Check Nut.....	196-197-204	“ Square Head Cap Screw,	
“ Carvers Vises.....	454	“ Combination.....	209	196-200-206-207	
“ Carving.....	458-561	“ Construction.....	201	“ Square Head Socket... 206 to 210	
“ Carving Tools.....	560 to 564	“ Detachable Handle Socket... 208		“ Steel Handle.....	212
“ Cements.....	738	“ Dog.....	163	“ Strap Pipe.....	216
“ Choppers Mauls.....	580	“ Double Head.....	194 to 201	“ Structural.....	201
“ Choppers Wedges.....	587	“ Drill Press.....	197	“ Tap.....	110-111
“ Clamps.....	444	“ Drop-forged.....	194 to 206	“ Telegraph Lineman's.....	201
“ Countersinks.....	59	“ Engineers.....	194	“ Textile Machine.....	197-204
“ Dowels.....	742	“ Explanation of Finishes, etc.. 194		“ Tool Post.....	197-198
“ Fret or Scroll Saw.....	523	“ Face Spanners.....	205	“ Track.....	201
“ Rasps, French.....	238	“ Finishes of, etc.....	194	“ Triple Head.....	196
“ Screws, Brass.....	662	“ Folding.....	207	“ U. S. Standard Cap Screw 203-204	
“ Screws, Iron.....	661	“ Friction Socket.....	207 to 210	“ U. S. Standard Nuts... 194 to 206	
“ Scroll or Fret Saw.....	523	“ Hexagon Head Cap Screw 195-207		“ Veneer Press Screw.....	437
“ Turners Gauges.....	559	“ Hexagon Head Socket. 206 to 210		Wringers, Mop.....	756
“ Turners Outfits.....	457	“ Hook Spanner.....	205	Wrought Iron Staples.....	700
“ Turners Parting Tools.....	559	“ Jam Nut.....	197		
“ Turners Sizers.....	559	“ Key Model.....	212		
“ Turners Lathes.....	336	“ Knife Handle.....	212		
“ Workers Knives.....	642	“ Lag Screw.....	201		
“ Workers Tools for Manual Train-		“ Lathe.....	197		
ing.....	455 to 458	“ Lineman.....	201		
“ Workers Vises.....	190-191	“ Lock Nut.....	197		
Wool, Steel.....	746	“ Loom.....	204		
		“ Machine.....	197-204		

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

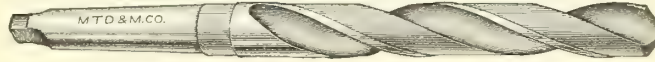
Twist Drills

Carbon and High Speed Steel

NEW NUMBERS

Read note opposite

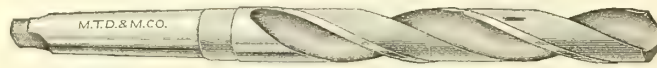
NOTE—Although Morse Drills now carry certain new numbers, we use only the old ones, as the new numbers have not been sufficiently established to secure their permanency.



Morse No. 102, with Taper Shanks

All Twist Drills in this catalogue have increase twist or constant angle, see notes pages 36 and 39

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank
$\frac{1}{16}$	\$.35	\$.90	$4\frac{3}{8}$	$1\frac{1}{4}$.0625	No. 1	$\frac{5}{64}$	\$2.45	\$4.75	$10\frac{1}{2}$	$6\frac{5}{8}$.8593	No. 2
$\frac{5}{64}$	.40	.90	$4\frac{1}{2}$	$1\frac{3}{8}$	.0781		$\frac{7}{8}$	2.45	4.75	$10\frac{1}{2}$	$6\frac{5}{8}$	.875
$\frac{3}{32}$	.40	.90	$4\frac{1}{2}$	$1\frac{1}{2}$	.0937		$\frac{5}{16}$	2.60	5.15	$10\frac{5}{8}$	$6\frac{3}{4}$	.8906
$\frac{7}{64}$	.45	.90	$4\frac{5}{8}$	$1\frac{11}{16}$	.1093		$\frac{29}{32}$	2.60	5.15	$10\frac{5}{8}$	$6\frac{3}{4}$	.9062
$\frac{1}{8}$	.45	.90	$5\frac{1}{8}$	$2\frac{3}{16}$	.125		$\frac{5}{16}$	2.75	5.50	$10\frac{3}{4}$	$6\frac{1}{8}$	.9218
$\frac{9}{64}$	.45	.90	$5\frac{1}{4}$	$2\frac{5}{16}$	.1406		$\frac{15}{16}$	2.75	5.50	$10\frac{3}{4}$	$6\frac{1}{8}$	.9375
$\frac{5}{32}$	.45	.90	$5\frac{3}{8}$	$2\frac{7}{16}$	.1562		$\frac{61}{64}$	2.90	5.90	$10\frac{7}{8}$	$6\frac{1}{4}$	.9531
$\frac{11}{64}$	.50	.90	$5\frac{1}{2}$	$2\frac{9}{16}$	.1718		$\frac{31}{32}$	2.90	5.90	$10\frac{7}{8}$	$6\frac{1}{4}$	.9687
$\frac{3}{16}$	.50	.90	$5\frac{3}{4}$	$2\frac{11}{16}$	.1875		$\frac{63}{64}$	3.00	6.25	11	$6\frac{3}{8}$	.9843
$\frac{13}{64}$	.55	1.00	$5\frac{7}{8}$	$2\frac{7}{8}$	.2031		1	3.00	6.25	11	$6\frac{3}{8}$	1
$\frac{7}{32}$.55	1.00	6	3	.2187		$\frac{1}{64}$	3.20	6.75	$11\frac{1}{8}$	$6\frac{1}{2}$	1.0156	No. 3
$\frac{15}{64}$	.60	1.10	$6\frac{1}{8}$	3	.2343		$\frac{1}{32}$	3.20	6.75	$11\frac{1}{8}$	$6\frac{1}{2}$	1.0312
$\frac{1}{4}$	.60	1.10	$6\frac{1}{8}$	3	.25		$\frac{1}{16}$	3.40	7.25	$11\frac{1}{4}$	$6\frac{5}{8}$	1.0468
$\frac{17}{64}$	.65	1.20	$6\frac{1}{4}$	$2\frac{15}{16}$	.2656		$\frac{1}{8}$	3.40	7.25	$11\frac{1}{4}$	$6\frac{5}{8}$	1.0625
$\frac{9}{32}$	.65	1.20	$6\frac{1}{4}$	$2\frac{13}{16}$	.2812		$\frac{5}{64}$	3.60	7.75	$11\frac{1}{2}$	$6\frac{7}{8}$	1.0781
$\frac{19}{64}$	.70	1.30	$6\frac{3}{8}$	$3\frac{1}{16}$	.2968		$\frac{1}{32}$	3.60	7.75	$11\frac{1}{2}$	$6\frac{7}{8}$	1.0937
$\frac{5}{16}$	.70	1.30	$6\frac{3}{8}$	$3\frac{1}{16}$	.3125		$\frac{7}{64}$	3.80	8.25	$11\frac{3}{4}$	$7\frac{1}{8}$	1.1093
$\frac{21}{64}$	.75	1.40	$6\frac{1}{2}$	$3\frac{3}{16}$	.3281		$\frac{1}{8}$	3.80	8.25	$11\frac{3}{4}$	$7\frac{1}{8}$	1.125
$\frac{11}{32}$	.75	1.40	$6\frac{1}{2}$	$3\frac{1}{16}$	.3437		$\frac{9}{64}$	4.00	8.90	$11\frac{7}{8}$	$7\frac{1}{4}$	1.1406
$\frac{23}{64}$	.80	1.50	$6\frac{3}{4}$	$3\frac{7}{16}$	.3593		$\frac{5}{32}$	4.00	8.90	$11\frac{7}{8}$	$7\frac{1}{4}$	1.1562
$\frac{3}{8}$	.80	1.50	$6\frac{3}{4}$	$3\frac{7}{16}$	.375		$\frac{11}{64}$	4.20	9.50	12	$7\frac{3}{8}$	1.1718
$\frac{25}{64}$.85	1.65	7	$3\frac{11}{16}$.3906	No. 1	$\frac{3}{16}$	4.20	9.50	12	$7\frac{3}{8}$	1.1875	No. 3
$\frac{13}{32}$	.85	1.65	7	$3\frac{11}{16}$	.4062		$\frac{1}{8}$	4.40	10.15	$12\frac{1}{8}$	$7\frac{1}{2}$	1.2031
$\frac{27}{64}$	.90	1.75	$7\frac{1}{4}$	$3\frac{15}{16}$	.4218		$\frac{1}{32}$	4.40	10.15	$12\frac{1}{8}$	$7\frac{1}{2}$	1.2187
$\frac{7}{16}$	.90	1.75	$7\frac{1}{4}$	$3\frac{15}{16}$	.4375		$\frac{1}{16}$	4.50	10.75	$12\frac{1}{2}$	$7\frac{7}{8}$	1.2343
$\frac{29}{64}$	.95	1.90	$7\frac{1}{2}$	$4\frac{3}{16}$	.4531		$\frac{1}{4}$	4.50	10.75	$12\frac{1}{2}$	$7\frac{7}{8}$	1.25
$\frac{15}{32}$	.95	1.90	$7\frac{1}{2}$	$4\frac{1}{16}$	.4687		$\frac{17}{64}$	4.65	11.50	$14\frac{1}{8}$	$8\frac{1}{2}$	1.2656
$\frac{31}{64}$	1.00	2.00	$7\frac{3}{4}$	$4\frac{7}{16}$	.4843		$\frac{9}{32}$	4.65	11.50	$14\frac{1}{8}$	$8\frac{1}{2}$	1.2812
$\frac{1}{2}$	1.00	2.00	$7\frac{3}{4}$	$4\frac{7}{16}$	.5		$\frac{1}{8}$	4.80	12.25	$14\frac{1}{4}$	$8\frac{5}{8}$	1.2968
$\frac{33}{64}$	1.10	2.15	8	$4\frac{11}{16}$	.5156		$\frac{5}{16}$	4.80	12.25	$14\frac{1}{4}$	$8\frac{5}{8}$	1.3125
$\frac{17}{32}$	1.10	2.15	8	$4\frac{11}{16}$	.5312		$\frac{21}{64}$	5.00	13.00	$14\frac{3}{8}$	$8\frac{3}{4}$	1.3281
$\frac{35}{64}$	1.20	2.25	$8\frac{1}{4}$	$4\frac{15}{16}$	.5468		$\frac{1}{32}$	5.00	13.00	$14\frac{3}{8}$	$8\frac{3}{4}$	1.3437
$\frac{9}{16}$	1.20	2.25	$8\frac{1}{4}$	$4\frac{15}{16}$	.5625		$\frac{13}{64}$	5.20	13.75	$14\frac{1}{2}$	$8\frac{7}{8}$	1.3593
$\frac{37}{64}$	1.30	2.40	$8\frac{1}{2}$	$4\frac{5}{8}$	.5781		$\frac{3}{8}$	5.20	13.75	$14\frac{1}{2}$	$8\frac{7}{8}$	1.375
$\frac{19}{32}$	1.30	2.40	$8\frac{1}{2}$	$4\frac{5}{8}$.5937		$\frac{25}{64}$	5.40	14.65	$14\frac{5}{8}$	9	1.3906	No. 4
$\frac{39}{64}$	1.40	2.50	$8\frac{3}{4}$	$4\frac{7}{8}$	.6093		$\frac{13}{32}$	5.40	14.65	$14\frac{5}{8}$	9	1.4062
$\frac{5}{8}$	1.40	2.50	$8\frac{3}{4}$	$4\frac{7}{8}$	.625		$\frac{27}{64}$	5.60	15.50	$14\frac{3}{4}$	$9\frac{1}{8}$	1.4218
$\frac{41}{64}$	1.50	2.75	9	$5\frac{1}{8}$	.6406		$\frac{7}{16}$	5.60	15.50	$14\frac{3}{4}$	$9\frac{1}{8}$	1.4375
$\frac{21}{32}$	1.50	2.75	9	$5\frac{1}{8}$	.6562		$\frac{29}{64}$	5.80	16.40	$14\frac{7}{8}$	$9\frac{1}{4}$	1.4531
$\frac{43}{64}$	1.60	3.00	$9\frac{1}{4}$	$5\frac{3}{8}$	.6718		$\frac{1}{32}$	5.80	16.40	$14\frac{7}{8}$	$9\frac{1}{4}$	1.4687
$\frac{11}{16}$	1.60	3.00	$9\frac{1}{4}$	$5\frac{3}{8}$	.6875		$\frac{31}{64}$	6.00	17.25	15	$9\frac{3}{8}$	1.4843
$\frac{45}{64}$	1.70	3.25	$9\frac{1}{2}$	$5\frac{5}{8}$	.7031		$\frac{1}{2}$	6.00	17.25	15	$9\frac{3}{8}$	1.5
$\frac{23}{32}$	1.70	3.25	$9\frac{1}{2}$	$5\frac{5}{8}$	.7187		$\frac{33}{64}$	6.30	18.15	15	$9\frac{3}{8}$	1.5156
$\frac{47}{64}$	1.85	3.50	$9\frac{3}{4}$	$5\frac{7}{8}$	.7343		$\frac{17}{32}$	6.30	18.15	15	$9\frac{3}{8}$	1.5312
$\frac{3}{4}$	1.85	3.50	$9\frac{3}{4}$	$5\frac{7}{8}$	.75	No. 2	$\frac{1}{16}$	6.60	19.00	$15\frac{1}{4}$	$9\frac{5}{8}$	1.5468
$\frac{49}{64}$	2.00	3.75	$9\frac{7}{8}$	6	.7656		$\frac{9}{16}$	6.60	19.00	$15\frac{1}{4}$	$9\frac{5}{8}$	1.5625	
$\frac{25}{32}$	2.00	3.75	$9\frac{7}{8}$	6	.7812		$\frac{37}{64}$	6.90	20.00	$15\frac{1}{4}$	$9\frac{5}{8}$	1.5781	
$\frac{51}{64}$	2.15	4.00	10	$6\frac{1}{8}$	.7968		$\frac{1}{32}$	6.90	20.00	$15\frac{1}{4}$	$9\frac{5}{8}$	1.5937
$\frac{13}{16}$	2.15	4.00	10	$6\frac{1}{8}$	.8125		$\frac{39}{64}$	7.20	21.00	$15\frac{1}{2}$	$9\frac{7}{8}$	1.6093
$\frac{53}{64}$	2.30	4.40	$10\frac{1}{4}$	$6\frac{3}{8}$	.8281		$\frac{1}{8}$	7.20	21.00	$15\frac{1}{2}$	$9\frac{7}{8}$	1.625
$\frac{27}{32}$	2.30	4.40	$10\frac{1}{4}$	$6\frac{3}{8}$	.8437							

Twist Drills
Carbon and High Speed Steel

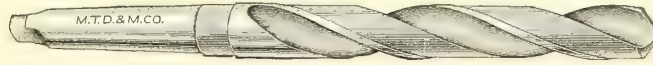
Morse No. 102, with Taper Shanks (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank
1 $\frac{1}{16}$	\$7.50	\$22.00	15 $\frac{1}{2}$	9 $\frac{7}{8}$	1.6406	No. 4	2 $\frac{1}{16}$	\$17.20	\$77.50	20	12 $\frac{1}{4}$	2.6406	No. 5
1 $\frac{1}{8}$	7.50	22.00	15 $\frac{1}{2}$	9 $\frac{7}{8}$	1.6562		2 $\frac{1}{8}$	17.20	77.50	20	12 $\frac{1}{4}$	2.6562	
1 $\frac{3}{16}$	7.80	23.00	15 $\frac{3}{4}$	10 $\frac{1}{8}$	1.6718		2 $\frac{3}{16}$	17.60	80.00	20	12 $\frac{1}{4}$	2.6718	
1 $\frac{1}{4}$	7.80	23.00	15 $\frac{3}{4}$	10 $\frac{1}{8}$	1.6875		2 $\frac{1}{2}$	17.60	80.00	20	12 $\frac{1}{4}$	2.6875	
1 $\frac{5}{16}$	8.10	24.00	15 $\frac{3}{4}$	10 $\frac{1}{8}$	1.7031		2 $\frac{5}{16}$	18.30	82.50	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.7031	
1 $\frac{3}{8}$	8.10	24.00	15 $\frac{3}{4}$	9 $\frac{11}{16}$	1.7187		2 $\frac{3}{4}$	18.30	82.50	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.7187	
1 $\frac{7}{8}$	8.40	25.00	16	9 $\frac{15}{16}$	1.7343		2 $\frac{7}{8}$	19.00	85.00	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.7343	
1 $\frac{1}{2}$	8.40	25.00	16	9 $\frac{15}{16}$	1.75		2 $\frac{9}{8}$	19.00	85.00	20 $\frac{1}{2}$	12 $\frac{5}{8}$	2.75	
1 $\frac{5}{8}$	8.60	26.25	16	9 $\frac{15}{16}$	1.7656		2 $\frac{5}{4}$	19.50	87.50	20 $\frac{1}{2}$	12 $\frac{5}{8}$	2.7656	
1 $\frac{3}{4}$	8.60	26.25	16	9 $\frac{15}{16}$	1.7812		2 $\frac{5}{2}$	19.50	87.50	20 $\frac{1}{2}$	12 $\frac{5}{8}$	2.7812	
1 $\frac{7}{8}$	8.80	27.50	16 $\frac{1}{4}$	10 $\frac{1}{8}$	1.7968	No. 4	2 $\frac{3}{2}$	20.00	90.00	20 $\frac{1}{2}$	12 $\frac{5}{8}$	2.7968	No. 5
1 $\frac{1}{2}$	8.80	27.50	16 $\frac{1}{4}$	10 $\frac{1}{8}$	1.8125		2 $\frac{1}{2}$	20.00	90.00	20 $\frac{1}{2}$	12 $\frac{5}{8}$	2.8125	
1 $\frac{5}{8}$	9.00	28.75	16 $\frac{1}{4}$	10 $\frac{1}{8}$	1.8281		2 $\frac{5}{4}$	20.50	92.50	21	13 $\frac{1}{8}$	2.8281	
1 $\frac{3}{4}$	9.00	28.75	16 $\frac{1}{4}$	10 $\frac{1}{8}$	1.8437		2 $\frac{7}{4}$	20.50	92.50	21	13 $\frac{1}{8}$	2.8437	
1 $\frac{7}{8}$	9.20	30.00	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.8593		2 $\frac{3}{2}$	21.00	95.00	21	13 $\frac{1}{8}$	2.8593	
1 $\frac{1}{2}$	9.20	30.00	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.875		2 $\frac{7}{8}$	21.00	95.00	21	13	2.875	
1 $\frac{5}{8}$	9.35	31.25	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.8906		2 $\frac{5}{2}$	22.00	97.50	21	13	2.8906	
1 $\frac{3}{4}$	9.35	31.25	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.9062		2 $\frac{5}{4}$	22.00	97.50	21	13	2.9062	
1 $\frac{7}{8}$	9.50	32.50	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.9218		2 $\frac{3}{2}$	23.00	100.00	21	13	2.9218	
1 $\frac{1}{2}$	9.50	32.50	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.9375		2 $\frac{5}{4}$	23.00	100.00	21	13	2.9375	
1 $\frac{5}{8}$	9.65	33.75	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.9531	No. 4	2 $\frac{7}{4}$	24.00	102.50	22	14	2.9531	No. 5
1 $\frac{3}{4}$	9.65	33.75	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.9687		2 $\frac{3}{2}$	24.00	102.50	22	14	2.9687	
1 $\frac{7}{8}$	9.80	35.00	16 $\frac{1}{2}$	10 $\frac{3}{8}$	1.9843		2 $\frac{5}{2}$	24.00	102.50	22	14	2.9843	
1 $\frac{1}{2}$	9.80	35.00	16 $\frac{1}{2}$	10 $\frac{3}{8}$	2		2 $\frac{3}{2}$	25.00	105.00	22	14	2.9843	
2	9.80	35.00	16 $\frac{1}{2}$	10 $\frac{3}{8}$	2		3	25.00	105.00	22	13 $\frac{7}{8}$	3	
2 $\frac{1}{16}$	10.20	36.25	16 $\frac{1}{2}$	9 $\frac{1}{2}$	2.0156	No. 4	3 $\frac{1}{16}$	28.00	112.50	24 $\frac{5}{16}$	14 $\frac{1}{2}$	3.0625	No. 5
2 $\frac{1}{8}$	10.20	36.25	16 $\frac{1}{2}$	9 $\frac{1}{2}$	2.0312		3 $\frac{1}{8}$	31.00	120.00	24 $\frac{5}{16}$	14 $\frac{3}{8}$	3.1250	
2 $\frac{3}{16}$	10.60	37.50	17	10	2.0468		3 $\frac{1}{4}$	34.00	127.50	24 $\frac{5}{16}$	14 $\frac{3}{8}$	3.1875	
2 $\frac{1}{4}$	10.60	37.50	17	10	2.0625		3 $\frac{1}{2}$	37.00	135.00	24 $\frac{5}{16}$	14 $\frac{3}{4}$	3.2500	
2 $\frac{5}{16}$	10.90	38.75	17	10	2.0781		3 $\frac{5}{16}$	40.00	142.50	24 $\frac{5}{16}$	14 $\frac{3}{4}$	3.3125	
2 $\frac{3}{8}$	10.90	38.75	17	10	2.0937		3 $\frac{3}{8}$	43.00	150.00	24 $\frac{5}{16}$	14 $\frac{5}{8}$	3.3750	
2 $\frac{7}{16}$	11.20	40.00	17	10	2.1093		3 $\frac{1}{2}$	46.00	157.50	24 $\frac{5}{16}$	14 $\frac{5}{8}$	3.4375	
2 $\frac{1}{2}$	11.20	40.00	17	10	2.125		3 $\frac{5}{8}$	49.50	165.00	25 $\frac{5}{16}$	15	3.5	
2 $\frac{5}{8}$	11.60	41.25	17	10	2.1406		3 $\frac{3}{4}$	53.00	172.50	25 $\frac{5}{16}$	15	3.5625	
2 $\frac{3}{4}$	11.60	41.25	17	10	2.1562		3 $\frac{7}{8}$	57.00	180.00	25 $\frac{5}{16}$	14 $\frac{7}{8}$	3.6250	
2 $\frac{7}{8}$	12.00	42.50	17	10	2.1718	No. 4	3 $\frac{1}{2}$	60.00	187.50	25 $\frac{5}{16}$	14 $\frac{7}{8}$	3.6875	No. 5
2 $\frac{5}{8}$	12.00	42.50	17	10	2.1875		3 $\frac{3}{4}$	63.00	195.00	25 $\frac{5}{16}$	15 $\frac{1}{4}$	3.75	
2 $\frac{3}{4}$	12.40	43.75	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.2031		3 $\frac{5}{8}$	66.00	202.50	25 $\frac{5}{16}$	15 $\frac{1}{4}$	3.8125	
2 $\frac{1}{2}$	12.40	43.75	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.2187		3 $\frac{7}{8}$	69.00	210.00	25 $\frac{5}{16}$	15 $\frac{1}{8}$	3.8750	
2 $\frac{5}{8}$	12.80	45.00	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.2343		3 $\frac{1}{2}$	72.00	217.50	25 $\frac{5}{16}$	15 $\frac{1}{8}$	3.9375	
2 $\frac{3}{4}$	12.80	45.00	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.25		4	75.00	225.00	25 $\frac{5}{16}$	15 $\frac{1}{8}$	4	
2 $\frac{7}{8}$	13.20	47.50	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.2656		4 $\frac{1}{16}$	78.00	232.50	25 $\frac{5}{16}$	15	4.0625	
2 $\frac{1}{2}$	13.20	47.50	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.2812		4 $\frac{1}{8}$	81.00	240.00	25 $\frac{5}{16}$	15	4.1250	
2 $\frac{5}{8}$	13.60	50.00	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.2968		4 $\frac{1}{4}$	84.00	247.50	25 $\frac{5}{16}$	15	4.1875	
2 $\frac{3}{4}$	13.60	50.00	17 $\frac{1}{2}$	10 $\frac{1}{2}$	2.3125	No. 5	4 $\frac{3}{8}$	87.00	255.00	25 $\frac{5}{16}$	15	4.25	No. 6
2 $\frac{7}{8}$	14.00	52.50	18	10 $\frac{3}{8}$	2.3281		4 $\frac{1}{2}$	90.50	262.50	25 $\frac{5}{16}$	15	4.3125	
2 $\frac{1}{2}$	14.00	52.50	18	10 $\frac{3}{8}$	2.3437		4 $\frac{5}{8}$	94.00	270.00	25 $\frac{5}{16}$	15	4.3750	
2 $\frac{5}{8}$	14.40	55.00	18	10 $\frac{3}{8}$	2.3593		4 $\frac{3}{4}$	97.50	277.50	25 $\frac{5}{16}$	15	4.4375	
2 $\frac{3}{4}$	14.40	55.00	18	10 $\frac{3}{8}$	2.375		4 $\frac{7}{8}$	101.00	285.00	25 $\frac{5}{16}$	16	4.5	
2 $\frac{7}{8}$	14.70	57.50	18 $\frac{1}{2}$	11	2.3906		4 $\frac{1}{2}$	103.50	292.50	25 $\frac{5}{16}$	16	4.5625	
2 $\frac{1}{2}$	14.70	57.50	18 $\frac{1}{2}$	11	2.4062		4 $\frac{5}{8}$	107.00	300.00	25 $\frac{5}{16}$	16	4.6250	
2 $\frac{5}{8}$	15.00	60.00	18 $\frac{1}{2}$	11	2.4218		4 $\frac{11}{16}$	110.50	307.50	25 $\frac{5}{16}$	16	4.6875	
2 $\frac{3}{4}$	15.00	60.00	18 $\frac{1}{2}$	11	2.4375		4 $\frac{3}{4}$	114.00	315.00	25 $\frac{5}{16}$	16	4.75	
2 $\frac{7}{8}$	15.30	62.50	19	11 $\frac{1}{2}$	2.4531		4 $\frac{7}{8}$	117.50	322.50	25 $\frac{5}{16}$	16	4.8125	
2 $\frac{1}{2}$	15.30	62.50	19	11 $\frac{1}{2}$	2.4687	No. 5	4 $\frac{1}{2}$	121.00	330.00	25 $\frac{5}{16}$	16	4.8750	No. 6
2 $\frac{5}{8}$	15.60	65.00	19	11 $\frac{1}{2}$	2.4843		4 $\frac{5}{8}$	124.50	337.50	25 $\frac{5}{16}$	16	4.9375	
2 $\frac{3}{4}$	15.60	65.00	19	11 $\frac{1}{2}$	2.5		4 $\frac{11}{16}$	128.00	345.00	25 $\frac{5}{16}$	17	5	
2 $\frac{7}{8}$	15.90	67.50	19 $\frac{1}{4}$	11 $\frac{3}{8}$	2.5156		4 $\frac{3}{4}$	134.00	352.50	25 $\frac{5}{16}$	17	5.1250	
2 $\frac{1}{2}$	15.90	67.50	19 $\frac{1}{4}$	11 $\frac{3}{8}$	2.5312		4 $\frac{5}{4}$	140.00	360.00	25 $\frac{5}{16}$	17	5.25	
2 $\frac{5}{8}$	16.20	70.00	19 $\frac{1}{4}$	11 $\frac{3}{8}$	2.5468		5 $\frac{1}{8}$	146.00	367.50	25 $\frac{5}{16}$	17	5.3750	
2 $\frac{3}{4}$	16.20	70.00	19 $\frac{1}{4}$	11 $\frac{3}{8}$	2.5625		5 $\frac{1}{4}$	152.00	375.00	25 $\frac{5}{16}$	18	5.5	
2 $\frac{7}{8}$	16.50	72.50	19 $\frac{1}{2}$	11 $\frac{7}{8}$	2.5781		5 $\frac{3}{8}$	158.00	382.50	25 $\frac{5}{16}$	18	5.6250	
2 $\frac{1}{2}$	16.50	72.50	19 $\frac{1}{2}$	11 $\frac{7}{8}$	2.5937		5 $\frac{1}{2}$	164.00	390.00	25 $\frac{5}{16}$	18	5.75	
2 $\frac{5}{8}$	16.80	75.00	19 $\frac{1}{2}$	11 $\frac{7}{8}$	2.6093		5 $\frac{3}{4}$	170.00	397.50	25 $\frac{5}{16}$	18	5.8750	
2 $\frac{3}{4}$	16.80	75.00	19 $\frac{1}{2}$	11 $\frac{7}{8}$	2.625		6	176.00	405.00	25 $\frac{5}{16}$	18	6	

For prices of these Drills in sets, see pages 48 and 49. For sizes larger than 2 inches we do not recommend Two-Groove Drills. We would call special attention to Three and Four-Groove Drills listed on page 40, which we think will enable customers to obtain much more satisfactory results

Twist Drills

Carbon and High Speed Steel



Morse No. 102, with Taper Shanks
Shanks larger than Regular

Morse No. 102 J Reamer, with Taper Shanks

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank
$\frac{5}{16}$	\$1.40	\$2.80	$6\frac{1}{2}$	$2\frac{5}{8}$.3125	No. 2
$\frac{7}{16}$	1.40	2.80	$6\frac{3}{4}$	$2\frac{7}{8}$	.3281
$\frac{9}{16}$	1.40	2.80	$6\frac{3}{4}$	$2\frac{7}{8}$	.3437
$\frac{11}{16}$	1.40	2.80	7	$3\frac{1}{8}$	.3593
$\frac{13}{16}$	1.40	2.80	7	$3\frac{1}{8}$	.375
$\frac{15}{16}$	1.40	2.80	$7\frac{1}{4}$	$3\frac{3}{8}$	.3906
$\frac{1}{2}$	1.40	2.80	$7\frac{1}{4}$	$3\frac{3}{8}$	.4062
$\frac{1}{2}$	1.40	2.80	$7\frac{1}{2}$	$3\frac{5}{8}$	.4218
$\frac{1}{2}$	1.40	2.80	$7\frac{1}{2}$	$3\frac{5}{8}$	.4375
$\frac{1}{2}$	1.45	3.00	$7\frac{3}{4}$	$3\frac{7}{8}$	.4531
$\frac{1}{2}$	1.45	3.00	$7\frac{3}{4}$	$3\frac{7}{8}$	.4687
$\frac{1}{2}$	1.45	3.00	8	$4\frac{1}{8}$	.4843
$\frac{1}{2}$	1.45	3.00	8	$4\frac{1}{8}$.5	No. 3
$\frac{1}{2}$	1.50	3.20	$8\frac{1}{4}$	$4\frac{3}{8}$	.5156
$\frac{1}{2}$	1.50	3.20	$8\frac{1}{4}$	$4\frac{3}{8}$	.5312
$\frac{1}{2}$	1.50	3.20	$8\frac{1}{2}$	$4\frac{5}{8}$	.5468
$\frac{1}{2}$	1.50	3.20	$8\frac{1}{2}$	$4\frac{5}{8}$	.5625
$\frac{1}{2}$	2.50	4.60	$9\frac{3}{8}$	$4\frac{3}{4}$	.5781
$\frac{1}{2}$	2.50	4.60	$9\frac{3}{8}$	$4\frac{3}{4}$	.5937
$\frac{1}{2}$	2.50	4.60	$9\frac{1}{2}$	$4\frac{7}{8}$	.6093
$\frac{1}{2}$	2.50	4.60	$9\frac{1}{2}$	$4\frac{7}{8}$	.625
$\frac{1}{2}$	2.50	4.60	$9\frac{5}{8}$	5	.6406	
$\frac{1}{2}$	2.50	4.60	$9\frac{5}{8}$	5	.6562	
$\frac{1}{2}$	2.50	4.60	$9\frac{3}{4}$	$5\frac{1}{8}$.6718	No. 4
$\frac{1}{2}$	2.50	4.60	$9\frac{3}{4}$	$5\frac{1}{8}$	.6875
$\frac{1}{2}$	2.60	5.00	$9\frac{7}{8}$	$5\frac{1}{4}$	.7031
$\frac{1}{2}$	2.60	5.00	$9\frac{7}{8}$	$5\frac{1}{4}$	.7187
$\frac{1}{2}$	2.60	5.00	10	$5\frac{3}{8}$	.7343
$\frac{1}{2}$	2.60	5.00	10	$5\frac{3}{8}$	.75
$\frac{1}{2}$	2.60	5.00	$10\frac{1}{8}$	$5\frac{1}{2}$	.7656
$\frac{1}{2}$	2.60	5.00	$10\frac{1}{8}$	$5\frac{1}{2}$	.7812
$\frac{1}{2}$	2.70	5.45	$10\frac{1}{4}$	$5\frac{5}{8}$	.7968
$\frac{1}{2}$	2.70	5.45	$10\frac{1}{4}$	$5\frac{5}{8}$	.8125
$\frac{1}{2}$	2.70	5.45	$10\frac{3}{8}$	$5\frac{3}{4}$	.8281
$\frac{1}{2}$	2.70	5.45	$10\frac{3}{8}$	$5\frac{3}{4}$	.8437
$\frac{1}{2}$	2.75	5.60	$10\frac{1}{2}$	$5\frac{7}{8}$.8593	No. 5
$\frac{1}{2}$	2.75	5.60	$10\frac{1}{2}$	$5\frac{7}{8}$	.875
$\frac{1}{2}$	2.80	5.75	$10\frac{5}{8}$	6	.8906	
$\frac{1}{2}$	2.80	5.75	$10\frac{5}{8}$	6	.9062	
$\frac{1}{2}$	4.60	10.50	12	$6\frac{3}{8}$	1.125	
$\frac{1}{2}$	4.65	10.80	$12\frac{1}{4}$	$6\frac{5}{8}$	1.1406	
$\frac{1}{2}$	4.65	10.80	$12\frac{1}{4}$	$6\frac{5}{8}$	1.1562	
$\frac{1}{2}$	4.70	11.10	$12\frac{1}{2}$	$6\frac{7}{8}$	1.1718	
$\frac{1}{2}$	4.70	11.10	$12\frac{1}{2}$	$6\frac{7}{8}$	1.1875	
$\frac{1}{2}$	4.75	11.55	$12\frac{3}{4}$	$7\frac{1}{8}$	1.2031	
$\frac{1}{2}$	4.75	11.55	$12\frac{3}{4}$	$7\frac{1}{8}$	1.2187	
$\frac{1}{2}$	4.80	12.00	13	$7\frac{3}{8}$	1.2343	
$\frac{1}{2}$	4.80	12.00	13	$7\frac{3}{8}$	1.25	
$\frac{1}{2}$	8.40	25.00	$16\frac{1}{2}$	$9\frac{5}{8}$	1.7343	No. 6
$\frac{1}{2}$	8.40	25.00	$16\frac{1}{2}$	$9\frac{5}{8}$	1.75	
$\frac{1}{2}$	8.60	26.25	$16\frac{1}{2}$	$9\frac{5}{8}$	1.7656	
$\frac{1}{2}$	8.60	26.25	$16\frac{1}{2}$	$9\frac{5}{8}$	1.7812	
$\frac{1}{2}$	8.80	27.50	$16\frac{1}{2}$	$9\frac{5}{8}$	1.7968	
$\frac{1}{2}$	8.80	27.50	$16\frac{1}{2}$	$9\frac{5}{8}$	1.8125	
$\frac{1}{2}$	9.00	28.75	$16\frac{1}{2}$	$9\frac{5}{8}$	1.8281	
$\frac{1}{2}$	9.00	28.75	$16\frac{1}{2}$	$9\frac{5}{8}$	1.8437	
$\frac{1}{2}$	9.20	30.00	$16\frac{1}{2}$	$9\frac{5}{8}$	1.8593	
$\frac{1}{2}$	9.20	30.00	$16\frac{1}{2}$	$9\frac{5}{8}$	1.875	
$\frac{1}{2}$	9.35	31.25	$16\frac{1}{2}$	$9\frac{5}{8}$	1.8906	
$\frac{1}{2}$	9.35	31.25	$16\frac{1}{2}$	$9\frac{5}{8}$	1.9062	
$\frac{1}{2}$	9.50	32.50	$16\frac{1}{2}$	$9\frac{5}{8}$	1.9218	No. 7
$\frac{1}{2}$	9.50	32.50	$16\frac{1}{2}$	$9\frac{5}{8}$	1.9375	
$\frac{1}{2}$	9.65	33.75	$16\frac{1}{2}$	$9\frac{5}{8}$	1.9531	
$\frac{1}{2}$	9.65	33.75	$16\frac{1}{2}$	$9\frac{5}{8}$	1.9687	
$\frac{1}{2}$	9.80	35.00	$16\frac{1}{2}$	$9\frac{5}{8}$	1.9843	
$\frac{1}{2}$	9.80	35.00	$16\frac{1}{2}$	$9\frac{5}{8}$	2	

Diameter Inch	Carbon Each	Whole Length Inches	Twist Cut Inches	To Precede Reamer Size	Morse Taper Shank
.245	\$.60	$6\frac{1}{8}$	3	$\frac{1}{4}$	No. 1
.276	.65	$6\frac{1}{4}$	$2\frac{15}{16}$	$\frac{9}{32}$	
.306	.70	$6\frac{3}{8}$	$3\frac{1}{16}$	$\frac{5}{16}$	
.337	.75	$6\frac{1}{2}$	$3\frac{3}{16}$	$\frac{11}{32}$	
.369	.80	$6\frac{3}{4}$	$3\frac{7}{16}$	$\frac{3}{8}$	
.400	.85	7	$3\frac{11}{16}$	$\frac{13}{32}$	
.429	.90	$7\frac{1}{4}$	$3\frac{15}{16}$	$\frac{7}{16}$	
.462	.95	$7\frac{1}{2}$	$4\frac{3}{16}$	$\frac{15}{32}$	
.492	1.00	$7\frac{3}{4}$	$4\frac{7}{16}$	$\frac{1}{2}$	
.554	1.20	$8\frac{1}{4}$	$4\frac{15}{16}$	$\frac{9}{16}$	
.615	1.40	$8\frac{3}{4}$	$4\frac{7}{8}$	$\frac{5}{8}$	No. 2
.677	1.60	$9\frac{1}{4}$	$5\frac{3}{8}$	$\frac{11}{16}$	
.740	1.85	$9\frac{3}{4}$	$5\frac{7}{8}$	$\frac{3}{4}$	
.802	2.15	10	$6\frac{1}{8}$	$\frac{13}{16}$	
.865	2.45	$10\frac{1}{2}$	$6\frac{5}{8}$	$\frac{7}{8}$	
.927	2.75	$10\frac{3}{4}$	$6\frac{1}{8}$	$\frac{15}{16}$	No. 3
.990	3.00	11	$6\frac{3}{8}$	1	



Morse No. 104 N Reamer, with Straight Shanks
Taper Length

Diameter Inch	Carbon Each	Whole Length Inches	Twist Cut Inches	To Precede Reamer Size
.245	\$.60	$6\frac{1}{8}$	4	$\frac{1}{4}$
.276	.65	$6\frac{1}{4}$	4	$\frac{9}{32}$
.306	.70	$6\frac{3}{8}$	$4\frac{1}{16}$	$\frac{5}{16}$
.337	.75	$6\frac{1}{2}$	$4\frac{1}{8}$	$\frac{11}{32}$
.369	.80	$6\frac{3}{4}$	$4\frac{1}{4}$	$\frac{3}{8}$
.400	.85	7	$4\frac{3}{8}$	$\frac{13}{32}$
.429	.90	$7\frac{1}{4}$	$4\frac{5}{8}$	$\frac{7}{16}$
.462	.95	$7\frac{1}{2}$	$4\frac{7}{8}$	$\frac{15}{32}$
.492	1.00	$7\frac{3}{4}$	5	$\frac{1}{2}$
.554	1.20	$8\frac{1}{4}$	$5\frac{3}{8}$	$\frac{9}{16}$
.615	1.40	$8\frac{3}{4}$	$5\frac{3}{4}$	$\frac{5}{8}$
.677	1.60	$9\frac{1}{4}$	6	$\frac{11}{16}$
.740	1.85	$9\frac{3}{4}$	$6\frac{3}{8}$	$\frac{3}{4}$
.802	2.15	10	$6\frac{5}{8}$	$\frac{13}{16}$
.865	2.45	$10\frac{1}{2}$	7	$\frac{7}{8}$
.927	2.75	$10\frac{3}{4}$	7	$\frac{15}{16}$
.990	3.00	11	$7\frac{3}{16}$	1

For Reamer Drills larger than one inch we recommend the use of Three or Four-Groove Drills listed on page 40.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Twist Drills

Forged High Speed Steel



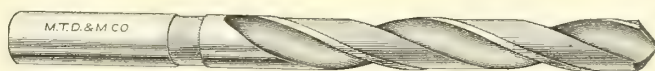
Morse No. 1020, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Morse Taper Shank	Whole Length Inches	Morse Taper Shank	Length of Groove Inches	Diameter Inches	Each	Whole Length Inches	Morse Taper Shank	Whole Length Inches	Morse Taper Shank	Length of Groove Inches
$\frac{31}{64}$	\$1.30	$8\frac{5}{16}$	No. 2	...	...	$5\frac{3}{16}$	$1\frac{3}{8}$	\$8.80	$15\frac{7}{16}$	No. 4	$15\frac{9}{16}$	No. 5	$9\frac{7}{16}$
$\frac{1}{2}$	1.30	$8\frac{5}{16}$		...	...	$5\frac{3}{16}$	$1\frac{25}{64}$	9.20	$15\frac{9}{16}$		$15\frac{11}{16}$		$9\frac{9}{16}$
$\frac{33}{64}$	1.40	$8\frac{7}{16}$		...	...	$5\frac{5}{16}$	$1\frac{33}{64}$	9.20	$15\frac{9}{16}$		$15\frac{11}{16}$		$9\frac{9}{16}$
$\frac{17}{32}$	1.40	$8\frac{7}{16}$		...	...	$5\frac{5}{16}$	$1\frac{127}{64}$	9.60	$15\frac{3}{4}$		$15\frac{7}{8}$		$9\frac{3}{4}$
$\frac{35}{64}$	1.50	$8\frac{9}{8}$		...	...	$5\frac{1}{2}$	$1\frac{7}{16}$	9.60	$15\frac{3}{4}$		$15\frac{7}{8}$		$9\frac{3}{4}$
$\frac{63}{64}$	1.50	$8\frac{9}{8}$		...	...	$5\frac{1}{2}$	$1\frac{29}{64}$	10.00	$15\frac{7}{8}$		16		$9\frac{7}{8}$
$\frac{37}{64}$	1.60	$8\frac{3}{4}$		...	...	$5\frac{5}{8}$	$1\frac{13}{32}$	10.00	$15\frac{7}{8}$		16		$9\frac{7}{8}$
$\frac{19}{32}$	1.60	$8\frac{3}{4}$		...	...	$5\frac{5}{8}$	$1\frac{31}{64}$	10.40	16		$16\frac{1}{8}$		10
$\frac{39}{64}$	1.75	$8\frac{15}{16}$		...	...	$5\frac{13}{16}$	$1\frac{1}{2}$	10.40	16		$16\frac{1}{8}$		10
$\frac{7}{8}$	1.75	$8\frac{15}{16}$		...	...	$5\frac{13}{16}$	$1\frac{23}{64}$	10.80	16		$16\frac{1}{8}$		10
$\frac{41}{64}$	1.90	$9\frac{1}{8}$	No. 3	...	...	$5\frac{15}{16}$	$1\frac{17}{32}$	10.80	16	No. 4	$16\frac{1}{8}$	No. 5	10
$\frac{21}{32}$	1.90	$9\frac{1}{8}$		...	...	$5\frac{15}{16}$	$1\frac{33}{64}$	11.20	$16\frac{3}{16}$		$16\frac{5}{16}$		$10\frac{3}{16}$
$\frac{43}{64}$	2.05	$9\frac{5}{8}$		...	...	$6\frac{1}{16}$	$1\frac{35}{64}$	11.20	$16\frac{3}{16}$		$16\frac{5}{16}$		$10\frac{3}{16}$
$\frac{11}{16}$	2.05	$9\frac{5}{8}$		...	...	$6\frac{1}{16}$	$1\frac{37}{64}$	11.65	$16\frac{3}{16}$		$16\frac{5}{16}$		$10\frac{3}{16}$
$\frac{45}{64}$	2.25	$10\frac{1}{8}$		...	...	$6\frac{1}{16}$	$1\frac{19}{32}$	11.65	$16\frac{3}{16}$		$16\frac{5}{16}$		$10\frac{3}{16}$
$\frac{23}{32}$	2.25	$10\frac{1}{8}$		...	...	$6\frac{1}{16}$	$1\frac{39}{64}$	12.10	$16\frac{7}{16}$		$16\frac{7}{16}$		$10\frac{7}{16}$
$\frac{47}{64}$	2.40	$10\frac{1}{4}$		...	...	$6\frac{3}{8}$	$1\frac{41}{64}$	12.10	$16\frac{7}{16}$		$16\frac{7}{16}$		$10\frac{7}{16}$
$\frac{3}{4}$	2.40	$10\frac{1}{4}$		...	...	$6\frac{3}{8}$	$1\frac{21}{32}$	12.60	$16\frac{5}{16}$		$16\frac{5}{16}$		$10\frac{5}{16}$
$\frac{49}{64}$	2.60	$10\frac{7}{16}$		...	...	$6\frac{9}{16}$	$1\frac{43}{64}$	12.60	$16\frac{5}{16}$		$16\frac{5}{16}$		$10\frac{5}{16}$
$\frac{25}{32}$	2.60	$10\frac{7}{16}$		...	...	$6\frac{9}{16}$	$1\frac{45}{64}$	13.05	$16\frac{1}{2}$		$16\frac{5}{8}$		$10\frac{1}{2}$
$\frac{51}{64}$	2.80	$10\frac{9}{16}$	No. 4	...	...	$6\frac{11}{16}$	$1\frac{11}{16}$	13.05	$16\frac{1}{2}$	No. 5	$16\frac{5}{8}$	No. 6	$10\frac{1}{2}$
$\frac{27}{32}$	2.80	$10\frac{9}{16}$		...	...	$6\frac{11}{16}$	$1\frac{13}{16}$	13.60	$16\frac{5}{8}$		...		$10\frac{1}{2}$
$\frac{53}{64}$	3.00	$10\frac{3}{4}$		...	...	$6\frac{7}{8}$	$1\frac{15}{16}$	13.60	$16\frac{5}{8}$		...		$10\frac{1}{2}$
$\frac{29}{32}$	3.00	$10\frac{3}{4}$		...	...	$6\frac{7}{8}$	$1\frac{17}{16}$	14.10	$16\frac{3}{4}$		...		$10\frac{5}{8}$
$\frac{55}{64}$	3.20	$10\frac{7}{8}$		...	...	7	$1\frac{19}{16}$	14.10	$16\frac{3}{4}$		...		$10\frac{5}{8}$
$\frac{31}{32}$	3.20	$10\frac{7}{8}$		...	...	7	$1\frac{21}{16}$	14.55	$17\frac{7}{8}$		...		$10\frac{5}{8}$
$\frac{57}{64}$	3.45	11		...	...	$7\frac{1}{8}$	$1\frac{23}{16}$	14.55	$17\frac{7}{8}$		...		$10\frac{5}{8}$
$\frac{29}{32}$	3.45	11		...	...	$7\frac{1}{8}$	$1\frac{25}{16}$	15.00	18		...		$10\frac{3}{4}$
$\frac{59}{64}$	3.75	$11\frac{3}{16}$		...	...	$7\frac{5}{16}$	$1\frac{27}{16}$	15.00	18		...		$10\frac{3}{4}$
$\frac{33}{32}$	3.75	$11\frac{3}{16}$		...	...	$7\frac{5}{16}$	$1\frac{29}{16}$	15.50	18		...		$10\frac{3}{4}$
$\frac{61}{64}$	4.05	$11\frac{5}{16}$	No. 5	...	...	$7\frac{7}{16}$	$1\frac{31}{16}$	15.50	18	No. 6	...	No. 7	$10\frac{3}{4}$
$\frac{35}{32}$	4.05	$11\frac{5}{16}$		...	...	$7\frac{7}{16}$	$1\frac{33}{16}$	16.00	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{63}{64}$	4.35	$11\frac{1}{2}$		...	...	$7\frac{5}{8}$	$1\frac{35}{16}$	16.00	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{1}{2}$	4.35	$11\frac{1}{2}$		...	...	$7\frac{5}{8}$	$1\frac{37}{16}$	16.55	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{11}{16}$	4.75	$12\frac{5}{8}$		...	...	$7\frac{3}{4}$	$1\frac{39}{16}$	16.55	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{13}{16}$	4.75	$12\frac{5}{8}$		...	...	$7\frac{3}{4}$	$1\frac{41}{16}$	17.10	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{15}{16}$	5.10	$12\frac{3}{4}$		...	...	$7\frac{15}{16}$	$1\frac{43}{16}$	17.10	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{17}{16}$	5.10	$12\frac{3}{4}$		...	...	$7\frac{15}{16}$	$1\frac{45}{16}$	17.65	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{19}{16}$	5.45	$12\frac{5}{8}$		...	...	$8\frac{1}{16}$	$1\frac{47}{16}$	17.65	$18\frac{3}{16}$		...		$10\frac{3}{4}$
$\frac{21}{16}$	5.45	$12\frac{5}{8}$		...	...	$8\frac{1}{16}$	$1\frac{49}{16}$	18.20	$18\frac{5}{16}$		...		$11\frac{1}{16}$
$\frac{23}{16}$	5.80	$13\frac{1}{8}$	No. 6	...	...	$8\frac{1}{4}$	$1\frac{51}{16}$	18.20	$18\frac{5}{16}$	No. 7	...	No. 8	$11\frac{1}{16}$
$\frac{25}{16}$	5.80	$13\frac{1}{8}$		...	...	$8\frac{1}{4}$	$1\frac{53}{16}$	18.85	$18\frac{5}{16}$		...		$11\frac{1}{16}$
$\frac{27}{16}$	6.20	$13\frac{1}{4}$		...	...	$8\frac{3}{8}$	$1\frac{55}{16}$	18.85	$18\frac{5}{16}$		...		$11\frac{1}{16}$
$\frac{29}{16}$	6.20	$13\frac{1}{4}$		...	...	$8\frac{3}{8}$	$1\frac{57}{16}$	19.50	$18\frac{5}{16}$		...		$11\frac{1}{16}$
$\frac{31}{16}$	6.55	$13\frac{3}{8}$		...	...	$8\frac{1}{2}$	$1\frac{59}{16}$	19.50	$18\frac{5}{16}$		...		$11\frac{1}{16}$
$\frac{33}{16}$	6.55	$13\frac{3}{8}$		...	...	$8\frac{1}{2}$	$1\frac{61}{16}$	20.15	$18\frac{5}{16}$		...		$11\frac{1}{16}$
$\frac{35}{16}$	6.90	$13\frac{9}{16}$		...	...	$8\frac{11}{16}$	$1\frac{63}{16}$	20.15	$18\frac{5}{16}$		...		$11\frac{1}{16}$
$\frac{37}{16}$	6.90	$13\frac{9}{16}$		...	...	$8\frac{11}{16}$	$1\frac{65}{16}$	20.80	$18\frac{7}{2}$		...		$11\frac{1}{4}$
$\frac{39}{16}$	7.20	$13\frac{11}{16}$		...	...	$8\frac{13}{16}$	$1\frac{67}{16}$	20.80	$18\frac{7}{2}$		...		$11\frac{1}{4}$
$\frac{41}{16}$	7.20	$13\frac{11}{16}$		...	...	$8\frac{13}{16}$	$1\frac{69}{16}$	21.50	$18\frac{7}{2}$		...		$11\frac{1}{4}$
$\frac{43}{16}$	7.60	15	No. 7	...	...	9	$1\frac{71}{16}$	21.50	$18\frac{7}{2}$	No. 8	...	No. 9	$11\frac{1}{4}$
$\frac{45}{16}$	7.60	15		...	...	9	$1\frac{73}{16}$	22.20	$18\frac{7}{2}$		...		$11\frac{1}{4}$
$\frac{47}{16}$	8.00	$15\frac{1}{8}$		...	...	$9\frac{1}{8}$	$1\frac{75}{16}$	22.20	$18\frac{7}{2}$		...		$11\frac{1}{4}$
$\frac{49}{16}$	8.00	$15\frac{1}{8}$		...	...	$9\frac{1}{8}$	$1\frac{77}{16}$	22.90	$18\frac{7}{2}$		...		$11\frac{1}{4}$
$\frac{51}{16}$	8.40	$15\frac{1}{4}$		...	...	$9\frac{1}{4}$	$1\frac{79}{16}$	22.90	$18\frac{7}{2}$		...		$11\frac{1}{4}$
$\frac{53}{16}$	8.40	$15\frac{1}{4}$		...	...	$9\frac{1}{4}$	$1\frac{81}{16}$	23.60	$18\frac{7}{8}$		...		$11\frac{3}{8}$
$\frac{55}{16}$	8.80	$15\frac{9}{16}$		...	...	$9\frac{7}{16}$	$1\frac{83}{16}$	23.60	$18\frac{7}{8}$		...		$11\frac{3}{8}$
$\frac{57}{16}$	8.80	$15\frac{9}{16}$		...	...	$9\frac{7}{16}$	$1\frac{85}{16}$	24.30	$18\frac{7}{8}$		...		$11\frac{3}{8}$
$\frac{59}{16}$	9.20	$16\frac{1}{8}$		...	...	$9\frac{3}{4}$	$1\frac{87}{16}$	24.30	$18\frac{7}{8}$		...		$11\frac{3}{8}$
$\frac{61}{16}$	9.20	$16\frac{1}{8}$		...	...	$9\frac{3}{4}$	$1\frac{89}{16}$	25.00	$18\frac{7}{8}$		...		$11\frac{3}{8}$

Several sizes of these Drills are furnished with two sizes of shanks and when ordering, customers should specify which size shank is desired

Twist Drills

Carbon and High Speed Steel



Morse No. 104, with Straight Shanks, Taper Length

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
1/16	.35	.90	3	1 1/4	.0625	1 5/16	\$2.75	\$5.50	10 3/4	7	.9375
5/64	.40	.90	3 3/4	1 3/8	.0781	1 1/4	2.90	5.90	10 7/8	7 1/8	.9531
3/32	.40	.90	4 1/4	1 5/8	.0937	1 3/16	2.90	5.90	10 7/8	7 1/8	.9687
7/64	.45	.90	4 5/8	2 1/4	.1093	1 1/2	3.00	6.25	11	7 3/16	.9843
1/8	.45	.90	5 1/8	2 1/2	.125	1 1/4	3.00	6.25	11	7 1/16	1.
9/64	.45	.90	5 1/4	2 3/4	.1406	1 3/8	3.20	6.75	11 1/8	7 3/16	1.0156
5/32	.45	.90	5 3/8	3	.1562	1 1/2	3.20	6.75	11 1/8	7 5/16	1.0312
11/64	.50	.90	5 1/2	3 1/4	.1718	1 3/4	3.40	7.25	11 1/4	7 3/8	1.0468
3/16	.50	.90	5 3/4	3 1/2	.1875	1 1/2	3.40	7.25	11 1/4	7 3/8	1.0625
13/64	.55	1.00	5 7/8	3 3/4	.2031	1 5/8	3.60	7.75	11 1/2	7 5/8	1.0781
7/32	.55	1.00	6	4	.2187	1 3/2	3.60	7.75	11 1/2	7 5/8	1.0937
15/64	.60	1.10	6 1/8	4	.2343	1 7/8	3.80	8.25	11 3/4	7 7/8	1.1093
1/4	.60	1.10	6 1/8	4	.25	1 1/8	3.80	8.25	11 3/4	7 7/8	1.125
17/64	.65	1.20	6 1/4	4	.2656	1 5/8	4.00	8.90	11 7/8	8	1.1406
9/32	.65	1.20	6 1/4	4	.2812	1 3/2	4.00	8.90	11 7/8	8	1.1562
19/64	.70	1.30	6 3/8	4 1/16	.2968	1 1/2	4.20	9.50	12	8 1/8	1.1718
5/16	.70	1.30	6 3/8	4 1/16	.3125	1 3/4	4.20	9.50	12	8 1/8	1.1875
21/64	.75	1.40	6 1/2	4 1/8	.3281	1 3/4	4.40	10.15	12 1/8	8 1/8	1.2031
11/32	.75	1.40	6 1/2	4 1/8	.3437	1 7/8	4.40	10.15	12 1/8	8 1/8	1.2187
23/64	.80	1.50	6 3/4	4 1/4	.3593	1 5/8	4.50	10.75	12 1/2	8 1/2	1.2343
3/8	.80	1.50	6 3/4	4 1/4	.375	1 1/4	4.50	10.75	12 1/2	8 1/2	1.25
25/64	.85	1.65	7	4 3/8	.3906	1 3/4	4.65	11.50	14 1/8	9 1/8	1.2656
13/32	.85	1.65	7	4 3/8	.4062	1 3/2	4.65	11.50	14 1/8	9 1/8	1.2812
27/64	.90	1.75	7 1/4	4 5/8	.4218	1 5/8	4.80	12.25	14 1/4	9 1/4	1.2968
7/16	.90	1.75	7 1/4	4 5/8	.4375	1 5/8	4.80	12.25	14 1/4	9 1/4	1.3125
29/64	.95	1.90	7 1/2	4 7/8	.4531	1 1/2	5.00	13.00	14 3/8	9 3/8	1.3281
15/32	.95	1.90	7 1/2	4 7/8	.4687	1 3/2	5.00	13.00	14 3/8	9 3/8	1.3437
31/64	1.00	2.00	7 3/4	5	.4843	1 5/8	5.20	13.75	14 7/8	9 1/2	1.3593
17/32	1.00	2.00	7 3/4	5	.5	1 3/4	5.20	13.75	14 7/8	9 1/2	1.375
41/64	1.10	2.15	8	5 1/4	.5156	1 5/8	5.40	14.65	14 7/8	9 1/2	1.3906
17/32	1.10	2.15	8	5 1/4	.5312	1 3/2	5.40	14.65	14 7/8	9 1/2	1.4062
35/64	1.20	2.25	8 1/4	5 3/8	.5468	1 7/8	5.60	15.50	14 3/4	9 5/8	1.4218
9/16	1.20	2.25	8 1/4	5 3/8	.5625	1 1/4	5.60	15.50	14 3/4	9 5/8	1.4375
37/64	1.30	2.40	8 1/2	5 5/8	.5781	1 3/4	5.80	16.40	14 7/8	9 3/4	1.4531
19/32	1.30	2.40	8 1/2	5 5/8	.5937	1 5/8	5.80	16.40	14 7/8	9 3/4	1.4687
43/64	1.40	2.50	8 3/4	5 3/4	.6093	1 3/2	6.00	17.25	15	9 7/8	1.4843
5/8	1.40	2.50	8 3/4	5 3/4	.625	1 1/2	6.00	17.25	15	9 7/8	1.5
41/64	1.50	2.75	9	5 7/8	.6406	1 3/4	6.30	18.15	15	9 1/2	1.5156
21/32	1.50	2.75	9	5 7/8	.6562	1 1/4	6.30	18.15	15	9 1/2	1.5312
43/64	1.60	3.00	9 1/4	6	.6718	1 3/2	6.60	19.00	15 1/4	9 3/4	1.5468
11/16	1.60	3.00	9 1/4	6	.6875	1 5/8	6.60	19.00	15 1/4	9 3/4	1.5625
45/64	1.70	3.25	9 1/2	6 1/16	.7031	1 7/8	6.90	20.00	15 3/4	9 3/4	1.5781
23/32	1.70	3.25	9 1/2	6 1/16	.7187	1 3/4	6.90	20.00	15 3/4	9 3/4	1.5937
39/64	1.85	3.50	9 3/4	6 3/8	.7343	1 5/8	7.20	21.00	15 1/2	10	1.6093
37/64	1.85	3.50	9 3/4	6 3/8	.75	1 3/2	7.20	21.00	15 1/2	10	1.625
49/64	2.00	3.75	9 7/8	6 1/2	.7656	1 1/4	7.50	22.00	15 1/2	10	1.6406
25/32	2.00	3.75	9 7/8	6 1/2	.7812	1 3/4	7.50	22.00	15 1/2	10	1.6562
51/64	2.15	4.00	10	6 5/8	.7968	1 5/8	7.80	23.00	15 3/4	10 1/4	1.6718
13/16	2.15	4.00	10	6 5/8	.8125	1 1/2	7.80	23.00	15 3/4	10 1/4	1.6875
53/64	2.30	4.40	10 1/4	6 3/4	.8281	1 3/4	8.10	24.00	15 3/4	10 1/4	1.7031
27/32	2.30	4.40	10 1/4	6 3/4	.8437	1 1/4	8.10	24.00	15 3/4	10 1/4	1.7187
33/64	2.45	4.75	10 1/2	7	.8593	1 3/2	8.40	25.00	16	10 1/2	1.7343
55/64	2.45	4.75	10 1/2	7	.875	1 5/8	8.40	25.00	16	10 1/2	1.75
7/8	2.60	5.15	10 5/8	7	.8906	1 3/4	8.60	26.25	16	10 1/2	1.7656
57/64	2.60	5.15	10 5/8	7	.9062	1 5/8	8.60	26.25	16	10 1/2	1.7812
31/32	2.75	5.50	10 3/4	7	.9218	1 3/2	8.60	26.25	16	10 1/2	1.7812

Drills 1 3/8 to 2 inches have shanks 1 1/2 inches diameter, 4 3/4 inches long

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

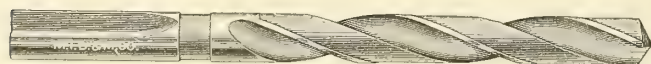
Twist Drills

Carbon and High Speed Steel

Morse No. 104 (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
1 $\frac{5}{16}$	\$8.80	\$27.50	16 $\frac{1}{4}$	10 $\frac{3}{4}$	1.7968	2 $\frac{3}{32}$	\$14.70	\$57.50	18 $\frac{1}{2}$	11 $\frac{1}{8}$	2.4062
1 $\frac{13}{16}$	8.80	27.50	16 $\frac{1}{4}$	10 $\frac{3}{4}$	1.8125	2 $\frac{27}{64}$	15.00	60.00	18 $\frac{1}{2}$	11 $\frac{1}{8}$	2.4218
1 $\frac{53}{64}$	9.00	28.75	16 $\frac{1}{4}$	10 $\frac{3}{4}$	1.8281	2 $\frac{7}{16}$	15.00	60.00	18 $\frac{1}{2}$	11 $\frac{1}{8}$	2.4375
1 $\frac{27}{32}$	9.00	28.75	16 $\frac{1}{4}$	10 $\frac{3}{4}$	1.8437	2 $\frac{29}{64}$	15.30	62.50	19	11 $\frac{5}{8}$	2.4531
1 $\frac{55}{64}$	9.20	30.00	16 $\frac{1}{2}$	11	1.8593	2 $\frac{31}{32}$	15.30	62.50	19	11 $\frac{5}{8}$	2.4687
1 $\frac{7}{8}$	9.20	30.00	16 $\frac{1}{2}$	11	1.875	2 $\frac{31}{64}$	15.60	65.00	19	11 $\frac{5}{8}$	2.4843
1 $\frac{57}{64}$	9.35	31.25	16 $\frac{1}{2}$	11	1.8906	2 $\frac{1}{2}$	15.60	65.00	19	11 $\frac{1}{2}$	2.5
1 $\frac{29}{32}$	9.35	31.25	16 $\frac{1}{2}$	11	1.9062	2 $\frac{33}{64}$	15.90	67.50	19 $\frac{1}{4}$	11 $\frac{3}{4}$	2.5156
1 $\frac{59}{64}$	9.50	32.50	16 $\frac{1}{2}$	11	1.9218	2 $\frac{17}{32}$	15.90	67.50	19 $\frac{1}{4}$	11 $\frac{3}{4}$	2.5312
1 $\frac{15}{16}$	9.50	32.50	16 $\frac{1}{2}$	11	1.9375	2 $\frac{35}{64}$	16.20	70.00	19 $\frac{1}{4}$	11 $\frac{3}{4}$	2.5468
1 $\frac{61}{64}$	9.65	33.75	16 $\frac{1}{2}$	11	1.9531	2 $\frac{9}{16}$	16.20	70.00	19 $\frac{1}{4}$	11 $\frac{3}{4}$	2.5625
1 $\frac{31}{32}$	9.65	33.75	16 $\frac{1}{2}$	11	1.9687	2 $\frac{37}{64}$	16.50	72.50	19 $\frac{1}{2}$	12	2.5781
1 $\frac{63}{64}$	9.80	35.00	16 $\frac{1}{2}$	11	1.9843	2 $\frac{19}{32}$	16.50	72.50	19 $\frac{1}{2}$	12	2.5937
2	9.80	35.00	16 $\frac{1}{2}$	11	2	2 $\frac{9}{64}$	16.80	75.00	19 $\frac{1}{2}$	12	2.6093
2 $\frac{1}{64}$	10.20	36.25	16 $\frac{1}{2}$	9 $\frac{5}{8}$	2.0156	2 $\frac{5}{8}$	16.80	75.00	19 $\frac{1}{2}$	11 $\frac{7}{8}$	2.625
2 $\frac{1}{32}$	10.20	36.25	16 $\frac{1}{2}$	9 $\frac{5}{8}$	2.0312	2 $\frac{41}{64}$	17.20	77.50	20	12 $\frac{3}{8}$	2.6406
2 $\frac{3}{64}$	10.60	37.50	17	10 $\frac{1}{8}$	2.0468	2 $\frac{23}{32}$	17.20	77.50	20	12 $\frac{3}{8}$	2.6562
2 $\frac{1}{16}$	10.60	37.50	17	10 $\frac{1}{8}$	2.0625	2 $\frac{43}{64}$	17.60	80.00	20	12 $\frac{3}{8}$	2.6718
2 $\frac{5}{64}$	10.90	38.75	17	10 $\frac{1}{8}$	2.0781	2 $\frac{11}{16}$	17.60	80.00	20	12 $\frac{3}{8}$	2.6875
2 $\frac{3}{32}$	10.90	38.75	17	10 $\frac{1}{8}$	2.0938	2 $\frac{45}{64}$	18.30	82.50	20 $\frac{1}{2}$	12 $\frac{7}{8}$	2.7031
2 $\frac{7}{64}$	11.20	40.00	17	10 $\frac{1}{8}$	2.1093	2 $\frac{23}{32}$	18.30	82.50	20 $\frac{1}{2}$	12 $\frac{7}{8}$	2.7187
2 $\frac{1}{8}$	11.20	40.00	17	10 $\frac{1}{8}$	2.125	2 $\frac{47}{64}$	19.00	85.00	20 $\frac{1}{2}$	12 $\frac{7}{8}$	2.7343
2 $\frac{9}{64}$	11.60	41.25	17	10 $\frac{1}{8}$	2.1406	2 $\frac{3}{4}$	19.00	85.00	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.75
2 $\frac{5}{32}$	11.60	41.25	17	10 $\frac{1}{8}$	2.1562	2 $\frac{49}{64}$	19.50	87.50	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.7656
2 $\frac{11}{64}$	12.00	42.50	17	10 $\frac{1}{8}$	2.1718	2 $\frac{25}{32}$	19.50	87.50	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.7812
2 $\frac{3}{16}$	12.00	42.50	17	10 $\frac{1}{8}$	2.1875	2 $\frac{51}{64}$	20.00	90.00	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.7968
2 $\frac{13}{64}$	12.40	43.75	17 $\frac{1}{2}$	10 $\frac{5}{8}$	2.2031	2 $\frac{13}{16}$	20.00	90.00	20 $\frac{1}{2}$	12 $\frac{3}{4}$	2.8125
2 $\frac{7}{32}$	12.40	43.75	17 $\frac{1}{2}$	10 $\frac{5}{8}$	2.2187	2 $\frac{53}{64}$	20.50	92.50	21	13 $\frac{1}{4}$	2.8281
2 $\frac{15}{64}$	12.80	45.00	17 $\frac{1}{2}$	10 $\frac{5}{8}$	2.2343	2 $\frac{27}{32}$	20.50	92.50	21	13 $\frac{1}{4}$	2.8437
2 $\frac{1}{4}$	12.80	45.00	17 $\frac{1}{2}$	10 $\frac{1}{4}$	2.25	2 $\frac{55}{64}$	21.00	95.00	21	13 $\frac{1}{4}$	2.8593
2 $\frac{17}{64}$	13.20	47.50	17 $\frac{1}{2}$	10 $\frac{1}{4}$	2.2656	2 $\frac{7}{8}$	21.00	95.00	21	13 $\frac{1}{8}$	2.875
2 $\frac{9}{32}$	13.20	47.50	17 $\frac{1}{2}$	10 $\frac{1}{4}$	2.2812	2 $\frac{57}{64}$	22.00	97.50	21	13 $\frac{1}{8}$	2.8906
2 $\frac{19}{64}$	13.60	50.00	17 $\frac{1}{2}$	10 $\frac{1}{4}$	2.2968	2 $\frac{29}{32}$	22.00	97.50	21	13 $\frac{1}{8}$	2.9062
2 $\frac{1}{16}$	13.60	50.00	17 $\frac{1}{2}$	10 $\frac{1}{4}$	2.3125	2 $\frac{59}{64}$	23.00	100.00	21	13 $\frac{1}{8}$	2.9218
2 $\frac{21}{64}$	14.00	52.50	18	10 $\frac{3}{4}$	2.3281	2 $\frac{15}{16}$	23.00	100.00	21	13 $\frac{1}{8}$	2.9375
2 $\frac{11}{32}$	14.00	52.50	18	10 $\frac{3}{4}$	2.3437	2 $\frac{61}{64}$	24.00	102.50	22	14 $\frac{1}{8}$	2.9531
2 $\frac{23}{64}$	14.40	55.00	18	10 $\frac{3}{4}$	2.3593	2 $\frac{31}{32}$	24.00	102.50	22	14 $\frac{1}{8}$	2.9687
2 $\frac{3}{8}$	14.40	55.00	18	10 $\frac{5}{8}$	2.375	2 $\frac{63}{64}$	25.00	105.00	22	14 $\frac{1}{8}$	2.9843
2 $\frac{25}{64}$	14.70	57.50	18 $\frac{1}{2}$	11 $\frac{1}{8}$	2.3906	3	25.00	105.00	22	14	3

For sizes larger than 2 inches we do not recommend Two-Groove Drills. We would call special attention to Three and Four-Groove Drills listed on page 40, which we think will enable customers to obtain much more satisfactory results. Drills 1 $\frac{3}{8}$ to 2 inches have shanks 1 $\frac{1}{2}$ inches in diameter, 4 $\frac{3}{4}$ inches long. Drills 2 $\frac{5}{8}$ to 3 inches have shanks 1 $\frac{3}{4}$ inches diameter, 6 inches long.



Morse No. 104 M, with Grooved Shanks

Taper Length



Morse No. 102 $\frac{1}{2}$, with Taper Shanks

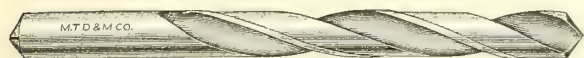
Fitting Andrew Socket

Carbon and High Speed Steel. These Drills take same list and discount as No. 104 Drills (see this and preceding page). Dimensions are also the same.

Carbon and High Speed Steel. These Drills take same list and discount as No. 102 Drills (see pages 25 and 26). Dimensions are also the same.

Twist Drills

Carbon and High Speed Steel

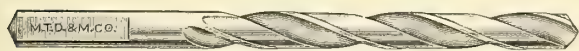


Morse No. 105, with Straight Shanks
Jobbers Lengths

Diameter Inch	Carbon Per Dozen	High Speed Per Dozen	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
$\frac{1}{32}$	\$.90	....	$1\frac{7}{16}$	$\frac{9}{16}$	.0312
$\frac{3}{64}$	1.00	....	$1\frac{11}{16}$	$\frac{25}{32}$	.0468
$\frac{1}{16}$	1.00	\$12.00	$2\frac{1}{2}$	$1\frac{1}{4}$	.0625
$\frac{5}{64}$	1.10	10.00	$2\frac{5}{8}$	$1\frac{3}{8}$	.0781
$\frac{3}{32}$	1.20	9.00	$2\frac{3}{4}$	$1\frac{1}{2}$	.0937
$\frac{7}{64}$	1.30	9.00	$2\frac{7}{8}$	$1\frac{11}{16}$	.1093
$\frac{1}{8}$	1.45	8.50	3	$1\frac{13}{16}$	.125
$\frac{9}{64}$	1.60	8.50	$3\frac{1}{8}$	$1\frac{15}{16}$	.1406
$\frac{5}{32}$	1.80	7.50	$3\frac{1}{4}$	$2\frac{3}{32}$	.1562
$\frac{11}{64}$	2.00	7.50	$3\frac{3}{8}$	$2\frac{7}{32}$	.1718
$\frac{3}{16}$	2.20	6.50	$3\frac{1}{2}$	$2\frac{5}{16}$	.1875
$\frac{13}{64}$	2.40	7.35	$3\frac{5}{8}$	$2\frac{7}{16}$	.2031
$\frac{7}{32}$	2.65	7.35	$3\frac{3}{4}$	$2\frac{17}{32}$	.2187
$\frac{15}{64}$	2.90	7.35	$3\frac{7}{8}$	$2\frac{21}{32}$	.2343
$\frac{1}{4}$	3.15	7.35	4	$2\frac{3}{4}$	.25
$\frac{17}{64}$	3.40	9.10	$4\frac{1}{8}$	$2\frac{7}{8}$	.2656
$\frac{9}{32}$	3.65	9.10	$4\frac{1}{4}$	$2\frac{31}{32}$	.2812
$\frac{19}{64}$	3.90	10.50	$4\frac{3}{8}$	$3\frac{3}{32}$	.2968
$\frac{5}{16}$	4.20	10.50	$4\frac{1}{2}$	$3\frac{3}{16}$	.3125
$\frac{21}{64}$	4.50	12.00	$4\frac{5}{8}$	$3\frac{5}{16}$	.3281
$\frac{11}{32}$	4.80	12.00	$4\frac{3}{4}$	$3\frac{13}{32}$	.3437
$\frac{23}{64}$	5.10	13.50	$4\frac{7}{8}$	$3\frac{17}{32}$	.3593
$\frac{3}{8}$	5.40	13.50	5	$3\frac{5}{8}$	.375
$\frac{25}{64}$	5.70	15.00	$5\frac{1}{8}$	$3\frac{3}{4}$	.3906
$\frac{13}{32}$	6.00	15.00	$5\frac{1}{4}$	$3\frac{27}{32}$	.4062
$\frac{27}{64}$	6.40	17.00	$5\frac{3}{8}$	$3\frac{31}{32}$	.4218
$\frac{7}{16}$	6.80	17.00	$5\frac{1}{2}$	$4\frac{1}{16}$	.4375
$\frac{29}{64}$	7.20	18.75	$5\frac{5}{8}$	$4\frac{1}{8}$	.4531
$\frac{15}{32}$	7.50	18.75	$5\frac{3}{4}$	$4\frac{9}{32}$	.4687
$\frac{31}{64}$	7.75	20.00	$5\frac{7}{8}$	$4\frac{13}{32}$	.4843
$\frac{1}{2}$	8.00	20.00	6	$4\frac{1}{2}$	.5

For prices of these Drills in sets see pages 48 and 49

Track



Morse No. 105 C
Carbon

Diameter Inch	Per Dozen	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
$\frac{9}{32}$	\$3.65	$4\frac{1}{4}$	$2\frac{31}{32}$.2812

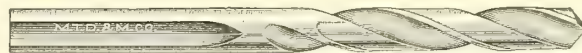
High Speed

$\frac{9}{32}$	9.10	$3\frac{1}{4}$	$1\frac{31}{32}$.2812
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These Drills are especially adapted for drilling rails for bonding work and are of a construction and temper guaranteed to give best results.

Left Hand Drills Nos. 102, 104, 105, 107 and 109E.

List prices on these Drills are the same as on Right Hand Drills of the same numbers.



Morse No. 105 B, with Grooved Shanks
Jobbers Lengths

Diameter Inch	Carbon Per Dozen	High Speed Per Dozen	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
$\frac{3}{32}$	\$1.20	\$9.00	$2\frac{3}{4}$	$1\frac{9}{16}$	.0937
$\frac{7}{64}$	1.30	9.00	$2\frac{7}{8}$	$1\frac{11}{16}$	.1093
$\frac{9}{64}$	1.45	8.50	3	$1\frac{3}{4}$	.125
$\frac{5}{32}$	1.60	8.50	$3\frac{1}{8}$	$1\frac{7}{8}$	.1406
$\frac{11}{64}$	1.80	7.50	$3\frac{1}{4}$	2	.1562
$\frac{13}{64}$	2.00	7.50	$3\frac{3}{8}$	$2\frac{1}{16}$	.1718
$\frac{3}{16}$	2.20	6.50	$3\frac{1}{2}$	$2\frac{3}{16}$	.1875
$\frac{15}{64}$	2.40	7.35	$3\frac{5}{8}$	$2\frac{5}{16}$	.2031
$\frac{7}{32}$	2.65	7.35	$3\frac{3}{4}$	$2\frac{7}{16}$	.2187
$\frac{17}{64}$	2.90	7.35	$3\frac{7}{8}$	$2\frac{9}{16}$	.2343
$\frac{1}{4}$	3.15	7.35	4	$2\frac{11}{16}$	.25
$\frac{19}{64}$	3.40	9.10	$4\frac{1}{8}$	$2\frac{13}{16}$	.2656
$\frac{9}{32}$	3.65	9.10	$4\frac{1}{4}$	$2\frac{15}{16}$	.2812
$\frac{11}{16}$	3.90	10.50	$4\frac{3}{8}$	$2\frac{17}{16}$	.2968
$\frac{5}{8}$	4.20	10.50	$4\frac{1}{2}$	$2\frac{19}{16}$	.3125
$\frac{21}{64}$	4.50	12.00	$4\frac{5}{8}$	$2\frac{21}{16}$	.3281
$\frac{11}{32}$	4.80	12.00	$4\frac{3}{4}$	$2\frac{23}{16}$	.3437
$\frac{23}{64}$	5.10	13.50	$4\frac{7}{8}$	$2\frac{25}{16}$	.3593
$\frac{3}{8}$	5.40	13.50	5	$2\frac{27}{16}$	.375
$\frac{25}{64}$	5.70	15.00	$5\frac{1}{8}$	$2\frac{29}{16}$	.3906
$\frac{13}{32}$	6.00	15.00	$5\frac{1}{4}$	3	.4062
$\frac{27}{64}$	6.40	17.00	$5\frac{3}{8}$	$3\frac{1}{8}$	.4218
$\frac{7}{16}$	6.80	17.00	$5\frac{1}{2}$	$3\frac{1}{4}$	.4375
$\frac{29}{64}$	7.20	18.75	$5\frac{5}{8}$	$3\frac{1}{2}$	.4531
$\frac{15}{32}$	7.50	18.75	$5\frac{3}{4}$	$3\frac{3}{8}$	.4687
$\frac{31}{64}$	7.75	20.00	$5\frac{7}{8}$	$3\frac{1}{2}$	.4843
$\frac{1}{2}$	8.00	20.00	6	$3\frac{5}{8}$	.5

Center



Morse No. 114 E

Diameter Inch	Carbon Per Dozen	Whole Length Inches	Twist Cut Inch	Diameter Inch	Carbon Per Dozen	Whole Length Inches	Twist Cut Inch
$\frac{1}{32}$	\$.90	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{3}{16}$	\$1.90	$1\frac{1}{2}$	1
$\frac{3}{64}$	.90	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{13}{64}$	2.10	$1\frac{1}{2}$	1
$\frac{1}{16}$	.80	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{7}{32}$	2.35	$1\frac{1}{2}$	1
$\frac{5}{64}$	.90	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{15}{64}$	2.60	$1\frac{1}{2}$	1
$\frac{3}{32}$	1.10	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{4}$	2.85	$1\frac{1}{2}$	1
$\frac{7}{64}$	1.20	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{17}{64}$	3.10	$1\frac{1}{2}$	1
$\frac{1}{8}$	1.25	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{9}{32}$	3.30	$1\frac{1}{2}$	1
$\frac{9}{64}$	1.35	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{19}{64}$	3.50	$1\frac{1}{2}$	1
$\frac{5}{32}$	1.50	$1\frac{1}{2}$	1	$\frac{11}{16}$	3.75	$1\frac{1}{2}$	1
$\frac{11}{64}$	1.70	$1\frac{1}{2}$	1				

Morse No. 114 F. Wire Sizes

Number by Gauge	Carbon Per Doz.	Whole Length Inches	Twist Cut Inch	Number by Gauge	Carbon Per Doz.	Whole Length Inches	Twist Cut Inch
30	\$1.55	$1\frac{1}{4}$	$\frac{3}{4}$	45	\$1.10	$1\frac{1}{4}$	$\frac{3}{4}$
35	1.40	$1\frac{1}{4}$	$\frac{3}{4}$	50	.95	$1\frac{1}{4}$	$\frac{3}{4}$
40	1.25	$1\frac{1}{4}$	$\frac{3}{4}$	55	.95	$1\frac{1}{4}$	$\frac{3}{4}$

For sizes in decimals of 1 inch, see No. 107, on page 32

Morse No. 114 G. Metric Sizes

Diameter MM.	Carbon Per Dozen	Diameter in Decimals of 1 inch	Whole Length MM.	Twist Cut MM.
1	\$.90	.0393	27	$13\frac{1}{2}$
$1\frac{1}{2}$	.90	.0590	27	$13\frac{1}{2}$
2	.90	.0787	27	$13\frac{1}{2}$
$2\frac{1}{2}$	1.00	.0984	27	$13\frac{1}{2}$
3	1.00	.1181	27	$13\frac{1}{2}$
$3\frac{1}{2}$	1.10	.1378	27	$13\frac{1}{2}$
4	1.10	.1575	27	$13\frac{1}{2}$
$4\frac{1}{2}$	1.40	.1771	27	$13\frac{1}{2}$
5	1.40	.1968	27	$13\frac{1}{2}$

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Twist Drills

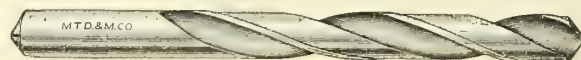
Carbon and High Speed Steel



Morse No. 107, with Straight Shanks

Wire Sizes

Number by Gauge	Carbon Per Dozen	High Speed Per Dozen	Decimals of 1 Inch	Approximate Length Inches	Twist Cut Inches
1	\$2.35	\$7.35	.2280	4	$2\frac{31}{32}$
2	2.35	7.35	.2210	$3\frac{15}{16}$	$2\frac{5}{8}$
3	2.35	7.35	.2130	$3\frac{15}{16}$	$2\frac{5}{8}$
4	2.35	7.35	.2090	$3\frac{7}{8}$	$2\frac{19}{32}$
5	2.35	7.35	.2055	$3\frac{13}{16}$	$2\frac{9}{16}$
6	2.25	7.35	.2040	$3\frac{13}{16}$	$2\frac{17}{32}$
7	2.25	7.35	.2010	$3\frac{3}{4}$	$2\frac{1}{2}$
8	2.25	7.35	.1990	$3\frac{11}{16}$	$2\frac{15}{32}$
9	2.25	7.35	.1960	$3\frac{11}{16}$	$2\frac{7}{16}$
10	2.25	7.35	.1935	$3\frac{5}{8}$	$2\frac{3}{8}$
11	2.10	7.35	.1910	$3\frac{9}{16}$	$2\frac{11}{32}$
12	2.10	7.35	.1890	$3\frac{9}{16}$	$2\frac{5}{16}$
13	2.10	7.50	.1850	$3\frac{1}{2}$	$2\frac{9}{32}$
14	2.10	7.50	.1820	$3\frac{7}{16}$	$2\frac{1}{4}$
15	2.10	7.50	.1800	$3\frac{7}{16}$	$2\frac{7}{32}$
16	1.95	7.50	.1770	$3\frac{3}{8}$	$2\frac{7}{16}$
17	1.95	7.50	.1730	$3\frac{5}{16}$	$2\frac{5}{32}$
18	1.95	7.50	.1695	$3\frac{5}{16}$	$2\frac{1}{8}$
19	1.95	7.50	.1660	$3\frac{1}{4}$	$2\frac{3}{32}$
20	1.95	7.50	.1610	$3\frac{3}{16}$	$2\frac{1}{16}$
21	1.75	7.50	.1590	$3\frac{3}{16}$	$2\frac{1}{16}$
22	1.75	7.50	.1570	$3\frac{1}{8}$	2
23	1.75	8.50	.1540	$3\frac{1}{8}$	$1\frac{31}{32}$
24	1.75	8.50	.1520	$3\frac{1}{16}$	$1\frac{15}{16}$
25	1.75	8.50	.1495	3	$1\frac{3}{32}$
26	1.55	8.50	.1470	$2\frac{15}{16}$	$1\frac{7}{8}$
27	1.55	8.50	.1440	$2\frac{15}{16}$	$1\frac{7}{8}$
28	1.55	8.50	.1405	$2\frac{7}{8}$	$1\frac{13}{16}$
29	1.55	8.50	.1360	$2\frac{13}{16}$	$1\frac{3}{4}$
30	1.55	8.50	.1285	$2\frac{13}{16}$	$1\frac{3}{32}$
31	1.40	9.00	.1200	$2\frac{3}{4}$	$1\frac{11}{16}$
32	1.40	9.00	.1160	$2\frac{11}{16}$	$1\frac{5}{8}$
33	1.40	9.00	.1130	$2\frac{11}{16}$	$1\frac{5}{8}$
34	1.40	9.00	.1110	$2\frac{5}{8}$	$1\frac{9}{16}$
35	1.40	9.00	.1100	$2\frac{9}{16}$	$1\frac{1}{2}$
36	1.25	9.00	.1065	$2\frac{9}{16}$	$1\frac{1}{2}$
37	1.25	9.00	.1040	$2\frac{1}{2}$	$1\frac{7}{16}$
38	1.25	9.00	.1015	$2\frac{7}{16}$	$1\frac{3}{8}$
39	1.25	9.00	.0995	$2\frac{7}{16}$	$1\frac{11}{32}$
40	1.25	9.00	.0980	$2\frac{3}{8}$	$1\frac{11}{32}$
41	1.10	9.00	.0960	$2\frac{5}{16}$	$1\frac{9}{16}$
42	1.10	10.00	.0935	$2\frac{5}{16}$	$1\frac{1}{4}$
43	1.10	10.00	.0890	$2\frac{1}{4}$	$1\frac{7}{32}$
44	1.10	10.00	.0860	$2\frac{3}{16}$	$1\frac{1}{16}$
45	1.10	10.00	.0820	$2\frac{3}{16}$	$1\frac{1}{8}$
46	.95	10.00	.0810	$2\frac{1}{8}$	$1\frac{1}{8}$
47	.95	10.00	.0785	$2\frac{1}{16}$	$1\frac{3}{32}$
48	.95	12.00	.0760	$2\frac{1}{16}$	$1\frac{1}{16}$
49	.95	12.00	.0730	2	1
50	.95	12.00	.0700	$1\frac{15}{16}$	$\frac{31}{32}$
51	.95	12.00	.0670	$1\frac{15}{16}$	$\frac{15}{16}$
52	.95	12.00	.0635	$1\frac{7}{8}$	$\frac{7}{8}$
53	.95	....	.0595	$1\frac{13}{16}$	$\frac{27}{32}$
54	.95	....	.0550	$1\frac{13}{16}$	$\frac{27}{32}$



Morse No. 106, with Straight Shanks

Letter Sizes

Size by Gauge	Carbon Per Dozen	High Speed Per Dozen	Decimal Equivalent	Whole Length Inches	Twist Cut Inches
A	\$2.90	\$7.35	.234	$3\frac{13}{16}$	$2\frac{19}{32}$
B	3.00	7.35	.238	$3\frac{13}{16}$	$2\frac{19}{32}$
C	3.10	7.35	.242	$3\frac{13}{16}$	$2\frac{19}{32}$
D	3.20	7.35	.246	$3\frac{13}{16}$	$2\frac{19}{32}$
E	3.30	7.35	.250	$3\frac{13}{16}$	$2\frac{9}{16}$
F	3.40	9.10	.257	$4\frac{1}{4}$	3
G	3.50	9.10	.261	$4\frac{1}{4}$	3
H	3.60	9.10	.266	$4\frac{1}{4}$	3
I	3.70	9.10	.272	$4\frac{1}{4}$	3
J	3.80	9.10	.277	$4\frac{1}{4}$	3
K	3.90	9.10	.281	$4\frac{1}{4}$	3
L	4.00	10.50	.290	$4\frac{1}{4}$	$2\frac{31}{32}$
M	4.10	10.50	.295	$4\frac{1}{4}$	$2\frac{31}{32}$
N	4.20	10.50	.302	$4\frac{1}{4}$	$2\frac{31}{32}$
O	4.30	10.50	.316	$4\frac{1}{4}$	$2\frac{15}{16}$
P	4.40	12.00	.323	$4\frac{1}{2}$	$3\frac{3}{16}$
Q	4.60	12.00	.332	$4\frac{5}{8}$	$3\frac{5}{16}$
R	4.80	12.00	.339	$4\frac{5}{8}$	$3\frac{5}{16}$
S	5.00	13.50	.348	$4\frac{3}{4}$	$3\frac{13}{32}$
T	5.20	13.50	.358	$4\frac{3}{4}$	$3\frac{13}{32}$
U	5.40	13.50	.368	$4\frac{7}{8}$	$3\frac{17}{32}$
V	5.60	13.50	.377	5	$3\frac{5}{8}$
W	5.80	15.00	.386	5	$3\frac{5}{8}$
X	6.00	15.00	.397	$5\frac{1}{8}$	$3\frac{3}{4}$
Y	6.40	15.00	.404	$5\frac{1}{8}$	$3\frac{3}{4}$
Z	6.80	17.00	.413	$5\frac{1}{4}$	$3\frac{27}{32}$



Morse No. 107 (Continued)

Number by Gauge	Carbon Per Dozen	Decimals of 1 Inch	Approximate Length Inches	Twist Cut Inches
55	\$.95	.0520	$1\frac{3}{4}$	$\frac{13}{16}$
56	.95	.0465	$1\frac{11}{16}$	$\frac{23}{32}$
57	.95	.0430	$1\frac{11}{16}$	$\frac{23}{32}$
58	.95	.0420	$1\frac{5}{8}$	$\frac{23}{32}$
59	.95	.0410	$1\frac{9}{16}$	$\frac{11}{16}$
60	.95	.0400	$1\frac{9}{16}$	$\frac{11}{16}$
61	.90	.0390	$1\frac{1}{2}$	$\frac{5}{8}$
62	.90	.0380	$1\frac{1}{2}$	$\frac{5}{8}$
63	.90	.0370	$1\frac{1}{2}$	$\frac{5}{8}$
64	.90	.0360	$1\frac{1}{2}$	$\frac{5}{8}$
65	.90	.0350	$1\frac{1}{2}$	$\frac{5}{8}$
66	.90	.0330	$1\frac{1}{2}$	$\frac{9}{16}$
67	.90	.0320	$1\frac{7}{16}$	$\frac{9}{16}$
68	.90	.0310	$1\frac{7}{16}$	$\frac{9}{16}$
69	.90	.0292	$1\frac{3}{8}$	$\frac{9}{16}$
70	.90	.0280	$1\frac{5}{16}$	$\frac{9}{16}$
71	1.00	.0260	$1\frac{5}{16}$	$\frac{1}{2}$
72	1.00	.0250	$1\frac{1}{4}$	$\frac{7}{16}$
73	1.00	.0240	$1\frac{3}{16}$	$\frac{3}{8}$
74	1.00	.0225	$1\frac{1}{8}$	$\frac{5}{16}$
75	1.00	.0210	$1\frac{1}{16}$	$\frac{1}{4}$
76	1.00	.0200	1	$\frac{1}{4}$
77	1.00	.0180	$\frac{15}{16}$	$\frac{7}{32}$
78	1.00	.0160	$\frac{7}{8}$	$\frac{7}{32}$
79	1.00	.0145	$\frac{13}{16}$	$\frac{3}{16}$
80	1.00	.0135	$\frac{3}{4}$	$\frac{3}{16}$

For prices of these Drills in sets, see pages 48 and 49

Twist Drills

Jewelers

Carbon Steel

Bit Stock



Morse No. 107 B, with Straight Shanks

Wire Gauge Sizes



Morse No. 109

For Metal or Wood

Number by Gauge	Per Dozen	Decimals of 1 Inch	Whole Length Inches	Twist Cut Inches	Diameter Inches	Per Dozen	Whole Length Inches	Twist Cut Inches	Length from Shank to Point Inches
30	\$1.55	.1285	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	\$1.25	2 ⁷ / ₈	9 ¹⁶ / ₁₆	1 ¹ / ₁₆
31	1.40	.1200	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	1.40	3 ³ / ₁₆	2 ⁵ / ₁₆	1 ³ / ₈
32	1.40	.1160	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	1.50	3 ⁵ / ₁₆	7 ⁸ / ₈	1 ¹ / ₂
33	1.40	.1130	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	1.60	3 ⁷ / ₁₆	1 ³ / ₃₂	1 ²¹ / ₃₂
34	1.40	.1110	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	1.65	3 ⁵ / ₈	1 ¹ / ₄	1 ²⁷ / ₃₂
35	1.40	.1100	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	1.90	3 ⁷ / ₈	1 ¹ / ₂	2 ³ / ₃₂
36	1.25	.1065	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	2.10	3 ⁵ / ₈	1 ³ / ₄	2 ⁹ / ₃₂
37	1.25	.1040	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	2.35	3 ¹¹ / ₁₆	1 ¹³ / ₁₆	2 ¹¹ / ₃₂
38	1.25	.1015	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	2.60	3 ¹⁵ / ₁₆	2	2 ¹⁹ / ₃₂
39	1.25	.0995	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	2.85	4 ¹ / ₈	2 ⁵ / ₃₂	2 ²⁵ / ₃₂
40	1.25	.0980	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	3.10	4 ⁵ / ₁₆	2 ⁵ / ₁₆	2 ³¹ / ₃₂
41	1.10	.0960	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	3.35	4 ³ / ₈	2 ⁷ / ₁₆	3 ³ / ₃₂
42	1.10	.0935	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	3.60	4 ¹¹ / ₁₆	2 ⁵ / ₈	3 ¹¹ / ₃₂
43	1.10	.0890	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	3.85	5 ³ / ₁₆	3 ³ / ₁₆	3 ¹⁵ / ₁₆
44	1.10	.0860	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	4.10	5 ³ / ₁₆	3 ³ / ₁₆	3 ¹⁵ / ₁₆
45	1.10	.0820	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	4.40	5 ³ / ₈	3 ³ / ₈	4 ¹ / ₈
46	.95	.0810	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	4.70	5 ³ / ₈	3 ³ / ₈	4 ¹ / ₈
47	.95	.0785	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	5.05	5 ¹ / ₂	3 ¹ / ₂	4 ¹ / ₄
48	.95	.0760	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	5.40	5 ¹ / ₂	3 ¹ / ₂	4 ¹ / ₄
49	.95	.0730	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	5.85	5 ⁷ / ₈	3 ⁷ / ₈	4 ⁵ / ₈
50	.95	.0700	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	6.30	5 ⁷ / ₈	3 ⁷ / ₈	4 ⁵ / ₈
51	.95	.0670	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	7.20	5 ⁷ / ₈	3 ⁷ / ₈	4 ⁵ / ₈
52	.95	.0635	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	8.00	5 ⁷ / ₈	3 ⁵ / ₈	4 ¹ / ₈
53	.95	.0595	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	8.80	6 ¹ / ₄	4	4 ¹ / ₂
54	.95	.0550	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	9.60	6 ⁵ / ₈	4 ³ / ₈	4 ⁷ / ₈
55	.95	.0520	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	10.30	6 ³ / ₄	4 ⁷ / ₁₆	5
56	.95	.0465	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	11.00	7 ¹ / ₂	5 ³ / ₁₆	5 ³ / ₄
57	.95	.0430	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	14.35	7 ¹ / ₂	5 ³ / ₁₆	5 ³ / ₄
58	.95	.0420	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	15.55	7 ¹ / ₂	5 ³ / ₁₆	5 ³ / ₄
59	.95	.0410	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	16.15	7 ¹ / ₂	5 ³ / ₁₆	5 ³ / ₄
60	.95	.0400	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	17.35	7 ¹ / ₂	5 ³ / ₁₆	5 ³ / ₄
61	.90	.039	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	17.95	7 ¹ / ₂	5 ³ / ₁₆	5 ³ / ₄
62	.90	.038	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	19.15	7 ¹ / ₂	5 ³ / ₁₆	5 ³ / ₄
63	.90	.037	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	19.75	7 ¹ / ₂	5	5 ³ / ₄
64	.90	.036	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	20.95	7 ¹ / ₂	5	5 ³ / ₄
65	.90	.035	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	21.55	7 ¹ / ₂	5	5 ³ / ₄
66	.90	.033	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	22.75	7 ¹ / ₂	5	5 ³ / ₄
67	.90	.032	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	23.35	7 ¹ / ₂	5	5 ³ / ₄
68	.90	.031	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	24.55	7 ¹ / ₂	5	5 ³ / ₄
69	.90	.029	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	25.75	7 ¹ / ₂	4 ¹⁵ / ₁₆	5 ³ / ₄
70	.90	.028	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	26.95	7 ¹ / ₂	4 ¹⁵ / ₁₆	5 ³ / ₄
71	1.00	.026	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	28.15	7 ¹ / ₂	4 ¹⁵ / ₁₆	5 ³ / ₄
72	1.00	.025	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	35.95	7 ¹ / ₂	4 ¹⁵ / ₁₆	5 ³ / ₄
73	1.00	.024	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	40.15	7 ¹ / ₂	4 ⁷ / ₈	5 ³ / ₄
74	1.00	.0225	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	43.15	7 ¹ / ₂	4 ⁷ / ₈	5 ³ / ₄
75	1.00	.021	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂	44.95	7 ¹ / ₂	4 ⁷ / ₈	5 ³ / ₄
76	1.00	.02	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂				
77	1.00	.018	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂				
78	1.00	.016	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂				
79	1.00	.0145	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂				
80	1.00	.0135	1 ²⁹ / ₃₂	1 ⁵ / ₁₆	1 ³ / ₃₂				

Morse No. 107 C, with Straight Shanks

Diameter Inch	Per Dozen	Decimals of 1 Inch	Whole Length Inches	Twist Cut Inches
1 ³ / ₃₂	\$.90	.0312	1 ⁷ / ₁₆	9 ¹⁶ / ₁₆
3 ³ / ₆₄	.95	.0468	1 ¹¹ / ₁₆	2 ⁵ / ₁₆
1 ¹ / ₁₆	1.00	.0625	1 ⁷ / ₈	3 ³ / ₈
5 ³ / ₆₄	1.10	.0781	2	1 ¹ / ₄
3 ³ / ₃₂	1.20	.0937	2	1 ¹ / ₄
7 ³ / ₆₄	1.30	.1093	2	1 ¹ / ₄
1 ¹ / ₈	1.45	.1250	2	1 ¹ / ₄

For prices of sets of Jewelers Drills see page 49.

These Bit Stock Drills will fit any brace in the market, and will drill steel, iron or other metals as well as wood. They are not injured by contact with screws or nails, and will bore straight any kind of wood without splitting it.

For prices of these Drills in sets see page 49.

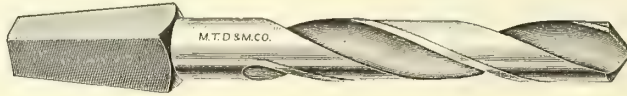
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Twist and Flat Drills

Carbon and High Speed Steel

Twist



Morse No. 109 E, with Taper Square Shanks. Fitting Ratchets

Small Shank or No. 1. Size of Shank $\frac{3}{8}$ inch x $\frac{5}{8}$ inch x $1\frac{1}{2}$ inches
Large Shank or No. 2. Size of Shank, $\frac{1}{2}$ inch x $\frac{3}{4}$ inch x $1\frac{3}{4}$ inches
No. 1 Shank always furnished unless otherwise specified.

Carbon, Shank No. 1

High Speed, Shanks Nos. 1 and 2

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches
$\frac{1}{8}$	\$.90	....	$4\frac{3}{16}$	$1\frac{1}{16}$	$\frac{27}{32}$	\$1.90	\$4.20	$7\frac{1}{4}$	$4\frac{1}{16}$
$\frac{5}{32}$	.95	....	$4\frac{7}{16}$	$2\frac{3}{32}$	$\frac{7}{8}$	2.05	4.50	$7\frac{1}{2}$	$5\frac{3}{16}$
$\frac{3}{16}$	.95	....	$4\frac{11}{16}$	$2\frac{5}{16}$	$\frac{29}{32}$	2.20	4.70	$7\frac{3}{4}$	$5\frac{7}{16}$
$\frac{7}{32}$	1.00	....	$4\frac{13}{16}$	$2\frac{7}{16}$	$\frac{15}{16}$	2.30	5.00	8	$5\frac{11}{16}$
$\frac{1}{4}$	1.00	\$2.50	5	$2\frac{9}{16}$	$\frac{31}{32}$	2.40	5.25	$8\frac{1}{4}$	$5\frac{15}{16}$
$\frac{9}{32}$	1.05	2.55	5	$2\frac{11}{16}$	1	2.55	5.50	$8\frac{1}{2}$	$6\frac{1}{16}$
$\frac{5}{16}$	1.10	2.60	5	$2\frac{13}{16}$	$1\frac{1}{32}$	2.70	5.75	$8\frac{3}{4}$	$6\frac{5}{16}$
$\frac{11}{32}$	1.15	2.65	5	$2\frac{3}{4}$	$\frac{1}{16}$	2.85	6.00	9	$6\frac{9}{16}$
$\frac{13}{32}$	1.20	2.70	6	$3\frac{1}{4}$	$1\frac{1}{8}$	3.00	6.30	9	$6\frac{11}{16}$
$\frac{3}{8}$	1.25	2.75	$6\frac{1}{4}$	4	$1\frac{1}{4}$	3.10	6.70	9	$6\frac{13}{16}$
$\frac{7}{16}$	1.25	2.80	$6\frac{1}{4}$	4	$1\frac{3}{8}$	3.25	7.00	9	$6\frac{15}{16}$
$\frac{15}{32}$	1.30	2.85	$6\frac{1}{4}$	4	$1\frac{1}{2}$	3.35	7.30	9	$6\frac{11}{16}$
$\frac{1}{2}$	1.30	2.90	$6\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{5}{8}$	3.50	7.60	9	$6\frac{11}{16}$
$\frac{17}{32}$	1.35	2.95	$6\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{3}{4}$	3.65	7.90	9	$6\frac{11}{16}$
$\frac{9}{16}$	1.35	3.00	$6\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{7}{8}$	3.75	8.25	9	$6\frac{11}{16}$
$\frac{19}{32}$	1.40	3.10	$6\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{1}{2}$	3.90	8.60	9	$6\frac{11}{16}$
$\frac{5}{8}$	1.40	3.20	$6\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{11}{16}$	4.05	9.00	9	$6\frac{11}{16}$
$\frac{21}{32}$	1.45	3.30	$6\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{3}{8}$	4.20	9.40	9	$6\frac{11}{16}$
$\frac{11}{16}$	1.45	3.40	$6\frac{1}{2}$	$4\frac{3}{16}$	$1\frac{13}{16}$	4.35	9.80	9	$6\frac{11}{16}$
$\frac{23}{32}$	1.50	3.50	$6\frac{1}{2}$	$4\frac{3}{16}$	$1\frac{7}{8}$	4.50	10.20	9	$6\frac{11}{16}$
$\frac{3}{4}$	1.55	3.65	$6\frac{1}{2}$	$4\frac{3}{16}$	$1\frac{15}{16}$	4.65	10.60	9	$6\frac{11}{16}$
$\frac{25}{32}$	1.65	3.80	$6\frac{3}{4}$	$4\frac{1}{16}$	$1\frac{1}{2}$	4.80	11.00	9	$6\frac{11}{16}$
$\frac{13}{16}$	1.75	4.00	7	$4\frac{1}{16}$					

Carbon, Shank No. 2

Diameter Inch	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches
$\frac{1}{8}$	\$.90	$4\frac{7}{16}$	$1\frac{1}{16}$	$\frac{1}{2}$	\$1.40	$6\frac{1}{2}$	4	$1\frac{9}{32}$	\$3.00	9	$6\frac{7}{16}$	$1\frac{9}{16}$	\$5.10	9	$6\frac{7}{16}$
$\frac{5}{32}$	.95	$4\frac{11}{16}$	$2\frac{3}{32}$	$\frac{5}{8}$	1.40	$6\frac{1}{2}$	4	$1\frac{11}{32}$	3.10	9	$6\frac{7}{16}$	$1\frac{11}{16}$	5.25	9	$6\frac{7}{16}$
$\frac{3}{16}$	.95	$4\frac{15}{16}$	$2\frac{5}{16}$	$\frac{3}{4}$	1.45	$6\frac{1}{2}$	4	$1\frac{13}{32}$	3.25	9	$6\frac{7}{16}$	$1\frac{13}{16}$	5.40	9	$6\frac{7}{16}$
$\frac{7}{32}$	1.00	$5\frac{1}{16}$	$2\frac{7}{16}$	$\frac{7}{8}$	1.45	$6\frac{1}{2}$	4	$1\frac{15}{32}$	3.35	9	$6\frac{7}{16}$	$1\frac{15}{16}$	5.55	9	$6\frac{7}{16}$
$\frac{1}{4}$	1.00	5	$2\frac{9}{16}$	$\frac{1}{2}$	1.50	$6\frac{1}{2}$	4	$1\frac{17}{32}$	3.50	9	$6\frac{7}{16}$	$1\frac{17}{16}$	5.75	9	$6\frac{7}{16}$
$\frac{9}{32}$	1.05	5	$2\frac{11}{16}$	$\frac{11}{16}$	1.55	$6\frac{1}{2}$	4	$1\frac{19}{32}$	3.65	9	$6\frac{7}{16}$	$1\frac{19}{16}$	5.90	9	$6\frac{7}{16}$
$\frac{5}{16}$	1.10	5	$2\frac{13}{16}$	$\frac{3}{4}$	1.65	$6\frac{3}{4}$	$4\frac{3}{16}$	$1\frac{21}{32}$	3.75	9	$6\frac{7}{16}$	$1\frac{21}{16}$	6.10	9	$6\frac{7}{16}$
$\frac{11}{32}$	1.15	5	$2\frac{15}{16}$	$\frac{7}{8}$	1.75	7	$4\frac{7}{16}$	$1\frac{23}{32}$	3.90	9	$6\frac{7}{16}$	$1\frac{23}{16}$	6.30	9	$6\frac{7}{16}$
$\frac{3}{8}$	1.20	6	$3\frac{1}{2}$	$\frac{1}{2}$	1.90	$7\frac{1}{4}$	$4\frac{11}{16}$	$1\frac{25}{32}$	4.05	9	$6\frac{7}{16}$	$1\frac{25}{16}$	6.50	9	$6\frac{7}{16}$
$\frac{13}{32}$	1.25	$6\frac{1}{4}$	$3\frac{3}{4}$	$\frac{3}{4}$	2.05	$7\frac{1}{2}$	$4\frac{15}{16}$	$1\frac{27}{32}$	4.20	9	$6\frac{7}{16}$	$1\frac{27}{16}$	6.70	9	$6\frac{7}{16}$
$\frac{7}{16}$	1.25	$6\frac{1}{4}$	$3\frac{3}{4}$	$\frac{1}{2}$	2.20	$7\frac{3}{4}$	$5\frac{3}{16}$	$1\frac{29}{32}$	4.35	9	$6\frac{7}{16}$	$1\frac{29}{16}$	6.90	9	$6\frac{7}{16}$
$\frac{15}{32}$	1.30	$6\frac{1}{4}$	$3\frac{3}{4}$	$\frac{11}{16}$	2.30	8	$5\frac{7}{16}$	$1\frac{31}{32}$	4.50	9	$6\frac{7}{16}$	$1\frac{31}{16}$	7.10	9	$6\frac{7}{16}$
$\frac{1}{2}$	1.30	$6\frac{1}{2}$	4	$\frac{3}{4}$	2.40	$8\frac{1}{4}$	$5\frac{11}{16}$	$1\frac{33}{32}$	4.65	9	$6\frac{7}{16}$	$1\frac{33}{16}$	7.30	9	$6\frac{7}{16}$
$\frac{9}{16}$	1.35	$6\frac{1}{2}$	4	1	2.55	$8\frac{1}{2}$	$5\frac{15}{16}$	$1\frac{35}{32}$	4.80	9	$6\frac{7}{16}$	$1\frac{35}{16}$	7.50	9	$6\frac{7}{16}$
	1.35	$6\frac{1}{2}$	4	$1\frac{1}{32}$	2.70	$8\frac{3}{4}$	$6\frac{3}{16}$	$1\frac{37}{32}$	4.95	9	$6\frac{7}{16}$	2	7.75	9	$6\frac{7}{16}$
				$1\frac{1}{16}$	2.85	9	$6\frac{7}{16}$								

When ordering Taper Square Shank Drills for Packer Ratchets please state number of ratchet and name of manufacturer. 64th sizes furnished at price of next larger size.

Flat

Carbon, for Metal



For Ratchets. 6 Inches Long

	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$ inches
Each...	\$.40	.40	.40	.45	.45	.45	.50	.55	.60	.65

Carbon, for Metal or Tile



For Brace

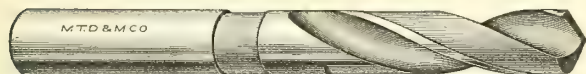
	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$ inches
Per Dozen	\$1.25	1.25	1.25	1.25	1.35	1.50

Twist Drills

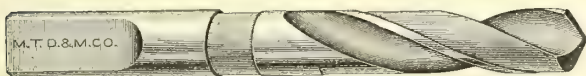
Carbon Steel

Morse No. 110

Fitting Coe Blacksmiths Drill Press and
Prentice Drill Press No. 3



Style No. 1



Style No. 2

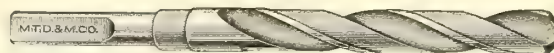
Shanks .647 inch exact diameter (about $\frac{11}{16}$ inch) and $2\frac{1}{4}$ inches long
Style No. 2 always furnished unless otherwise ordered

Morse No. 111, Taper Length

Fitting the Prentice Blacksmiths Drill Presses
Nos. 1 and 2



Style No. 1



Style No. 2

Shanks $\frac{1}{2}$ inch diameter, $2\frac{1}{2}$ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter Inch	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches
$\frac{1}{8}$	\$.55	$4\frac{7}{8}$	$2\frac{3}{16}$	$\frac{49}{64}$	\$1.30	6	3	$\frac{1}{8}$	\$.45	$5\frac{1}{8}$	$2\frac{3}{16}$	$\frac{45}{64}$	\$1.70	$9\frac{1}{2}$	$6\frac{1}{4}$
$\frac{9}{64}$	.58	5	$2\frac{5}{16}$	$\frac{25}{32}$	1.30	6	3	$\frac{9}{64}$	.45	$5\frac{1}{4}$	$2\frac{5}{16}$	$\frac{23}{32}$	1.70	$9\frac{1}{2}$	$6\frac{1}{4}$
$\frac{5}{32}$	.58	$5\frac{1}{8}$	$2\frac{7}{16}$	$\frac{51}{64}$	1.35	6	3	$\frac{5}{32}$	.45	$5\frac{3}{8}$	$2\frac{7}{16}$	$\frac{47}{64}$	1.85	$9\frac{3}{4}$	$6\frac{1}{2}$
$\frac{11}{64}$	.60	$5\frac{1}{4}$	$2\frac{9}{16}$	$\frac{13}{16}$	1.35	6	3	$\frac{11}{64}$	.50	$5\frac{1}{2}$	$2\frac{9}{16}$	$\frac{3}{4}$	1.85	$9\frac{3}{4}$	$6\frac{1}{2}$
$\frac{3}{16}$	.60	$5\frac{1}{2}$	$2\frac{11}{16}$	$\frac{53}{64}$	1.40	6	3	$\frac{3}{16}$	.50	$5\frac{3}{4}$	$2\frac{11}{16}$	$\frac{49}{64}$	2.00	$9\frac{7}{8}$	$6\frac{5}{8}$
$\frac{13}{64}$	.65	$5\frac{5}{8}$	$2\frac{7}{8}$	$\frac{27}{32}$	1.40	6	3	$\frac{13}{64}$	.55	$5\frac{7}{8}$	$2\frac{7}{8}$	$\frac{25}{32}$	2.00	$9\frac{7}{8}$	$6\frac{5}{8}$
$\frac{7}{32}$	.65	$5\frac{3}{4}$	3	$\frac{55}{64}$	1.45	6	3	$\frac{7}{32}$	.55	6	3	$\frac{51}{64}$	2.15	10	$6\frac{3}{4}$
$\frac{15}{64}$	.70	$5\frac{7}{8}$	3	$\frac{7}{8}$	1.45	6	3	$\frac{15}{64}$	.60	$6\frac{1}{8}$	3	$\frac{13}{16}$	2.15	10	$6\frac{3}{4}$
$\frac{1}{4}$	.70	6	3	$\frac{57}{64}$	1.55	6	3	$\frac{1}{4}$	.60	$6\frac{1}{8}$	3	$\frac{53}{64}$	2.30	$10\frac{1}{4}$	7
$\frac{17}{64}$	.73	6	3	$\frac{29}{32}$	1.55	6	3	$\frac{17}{64}$	.65	$6\frac{1}{4}$	3	$\frac{27}{32}$	2.30	$10\frac{1}{4}$	7
$\frac{9}{32}$	.73	6	3	$\frac{59}{64}$	1.60	6	3	$\frac{9}{32}$	.65	$6\frac{1}{4}$	3	$\frac{55}{64}$	2.45	$10\frac{1}{2}$	$7\frac{1}{4}$
$\frac{19}{64}$	.75	6	3	$\frac{15}{16}$	1.60	6	3	$\frac{19}{64}$	.70	$6\frac{3}{8}$	$3\frac{1}{8}$	$\frac{7}{8}$	2.45	$10\frac{1}{2}$	$7\frac{1}{4}$
$\frac{5}{16}$	.75	6	3	$\frac{61}{64}$	1.70	6	3	$\frac{5}{16}$	.70	$6\frac{3}{8}$	$3\frac{1}{8}$	$\frac{57}{64}$	2.60	$10\frac{5}{8}$	$7\frac{3}{8}$
$\frac{21}{64}$	.80	6	3	$\frac{31}{32}$	1.70	6	3	$\frac{21}{64}$	.75	$6\frac{1}{2}$	$3\frac{1}{4}$	$\frac{29}{32}$	2.60	$10\frac{5}{8}$	$7\frac{3}{8}$
$\frac{11}{32}$	.80	6	3	$\frac{63}{64}$	1.80	6	3	$\frac{11}{32}$	.75	$6\frac{1}{2}$	$3\frac{1}{4}$	$\frac{59}{64}$	2.75	$10\frac{3}{4}$	$7\frac{1}{2}$
$\frac{23}{64}$	.85	6	3	1	1.80	6	3	$\frac{23}{64}$	.80	$6\frac{3}{4}$	$3\frac{1}{2}$	$\frac{15}{16}$	2.75	$10\frac{3}{4}$	$7\frac{1}{2}$
$\frac{3}{8}$	.85	6	3	$1\frac{1}{32}$	1.90	6	3	$\frac{3}{8}$	.80	$6\frac{3}{4}$	$3\frac{1}{2}$	$\frac{61}{64}$	2.90	$10\frac{7}{8}$	$7\frac{5}{8}$
$\frac{25}{64}$	.88	6	3	$1\frac{1}{16}$	2.00	6	3	$\frac{25}{64}$	.85	7	$3\frac{3}{4}$	$\frac{31}{32}$	2.90	$10\frac{7}{8}$	$7\frac{5}{8}$
$\frac{13}{32}$	.88	6	3	$1\frac{3}{32}$	2.10	6	3	$\frac{13}{32}$	.85	7	$3\frac{3}{4}$	$\frac{63}{64}$	3.00	11	$7\frac{3}{4}$
$\frac{27}{64}$	.90	6	3	$1\frac{1}{8}$	2.20	6	3	$\frac{27}{64}$	.90	$7\frac{1}{4}$	4	1	3.00	11	$7\frac{3}{8}$
$\frac{7}{16}$	.90	6	3	$1\frac{5}{32}$	2.25	6	3	$\frac{7}{16}$	.90	$7\frac{1}{4}$	4	$1\frac{1}{32}$	3.20	$11\frac{1}{8}$	$7\frac{1}{2}$
$\frac{29}{64}$	.93	6	3	$1\frac{3}{16}$	2.30	6	3	$\frac{29}{64}$	.95	$7\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{1}{16}$	3.40	$11\frac{1}{4}$	$7\frac{5}{8}$
$\frac{15}{32}$	.93	6	3	$1\frac{7}{32}$	2.35	6	3	$\frac{15}{32}$	.95	$7\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{3}{32}$	3.60	$11\frac{1}{2}$	$7\frac{7}{8}$
$\frac{31}{64}$	.95	6	3	$1\frac{1}{4}$	2.40	6	3	$\frac{31}{64}$	1.00	$7\frac{3}{4}$	$4\frac{1}{2}$	$1\frac{1}{8}$	3.80	$11\frac{3}{4}$	8
$\frac{1}{2}$	.95	6	3	$1\frac{9}{32}$	2.50	6	3	$\frac{1}{2}$	1.00	$7\frac{3}{4}$	$4\frac{1}{2}$	$1\frac{5}{32}$	4.00	$11\frac{7}{8}$	$8\frac{1}{8}$
$\frac{33}{64}$	.98	6	3	$1\frac{5}{16}$	2.60	6	3	$\frac{33}{64}$	1.10	8	$4\frac{3}{4}$	$1\frac{3}{16}$	4.20	12	$8\frac{1}{4}$
$\frac{17}{32}$	.98	6	3	$1\frac{11}{32}$	2.70	6	3	$\frac{17}{32}$	1.10	8	$4\frac{3}{4}$	$1\frac{7}{32}$	4.40	$12\frac{1}{8}$	$8\frac{3}{8}$
$\frac{35}{64}$	1.00	6	3	$1\frac{3}{8}$	2.80	6	3	$\frac{35}{64}$	1.20	$8\frac{1}{4}$	5	$1\frac{1}{4}$	4.50	$12\frac{1}{2}$	$8\frac{3}{8}$
$\frac{9}{16}$	1.00	6	3	$1\frac{13}{32}$	2.90	6	3	$\frac{9}{16}$	1.20	$8\frac{1}{4}$	5	$1\frac{9}{32}$	4.65	$12\frac{1}{2}$	$8\frac{5}{8}$
$\frac{37}{64}$	1.03	6	3	$1\frac{7}{16}$	3.00	6	3	$\frac{37}{64}$	1.30	$8\frac{1}{2}$	$5\frac{1}{4}$	$1\frac{5}{16}$	4.80	$12\frac{1}{2}$	$8\frac{5}{8}$
$\frac{19}{32}$	1.03	6	3	$1\frac{15}{32}$	3.10	6	3	$\frac{19}{32}$	1.30	$8\frac{1}{2}$	$5\frac{1}{4}$	$1\frac{11}{32}$	5.00	$12\frac{1}{2}$	$8\frac{5}{8}$
$\frac{39}{64}$	1.05	6	3	$1\frac{1}{2}$	3.20	6	3	$\frac{39}{64}$	1.40	$8\frac{3}{4}$	$5\frac{1}{2}$	$1\frac{3}{8}$	5.20	$12\frac{1}{2}$	$8\frac{1}{2}$
$\frac{5}{8}$	1.05	6	3	$1\frac{9}{16}$	3.40	6	3	$\frac{5}{8}$	1.40	$8\frac{3}{4}$	$5\frac{1}{2}$	$1\frac{13}{32}$	5.40	$12\frac{1}{2}$	$8\frac{1}{2}$
$\frac{41}{64}$	1.10	6	3	$1\frac{5}{8}$	3.60	6	3	$\frac{41}{64}$	1.50	9	$5\frac{3}{4}$	$1\frac{7}{16}$	5.60	$12\frac{1}{2}$	$8\frac{1}{2}$
$\frac{21}{32}$	1.10	6	3	$1\frac{11}{16}$	3.80	6	3	$\frac{21}{32}$	1.50	9	$5\frac{3}{4}$	$1\frac{15}{32}$	5.80	$12\frac{1}{2}$	$8\frac{1}{2}$
$\frac{43}{64}$	1.15	6	3	$1\frac{3}{4}$	4.05	6	3	$\frac{43}{64}$	1.60	$9\frac{1}{4}$	6	$1\frac{1}{2}$	6.00	$12\frac{1}{2}$	$8\frac{3}{8}$
$\frac{11}{16}$	1.15	6	3	$1\frac{17}{16}$	4.30	6	3	$\frac{11}{16}$	1.60	$9\frac{1}{4}$	6				
$\frac{45}{64}$	1.20	6	3	$1\frac{7}{8}$	4.50	6	3								
$\frac{23}{32}$	1.20	6	3	$1\frac{15}{16}$	4.75	6	3								
$\frac{47}{64}$	1.25	6	3	2	5.00	6	3								
$\frac{3}{4}$	1.25	6	3												

32nd sizes not listed furnished at intermediate prices, and 64th sizes at price of next larger 32nd size. High Speed Steel Drills of these styles are listed on following pages.
For list of Drill Presses see page 37

SINCE
1848

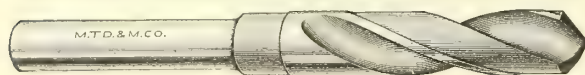
HAMMACHER SCHLEMMER & CO. NEW YORK

Twist Drills

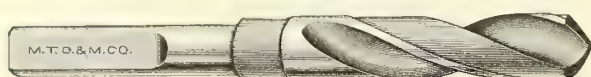
Carbon and High Speed Steel

Morse No. 112, Carbon Steel, Short Length

Fitting Silver & Deming and Prentice Blacksmiths
Drill Presses Nos. 1 and 2



Style No. 1

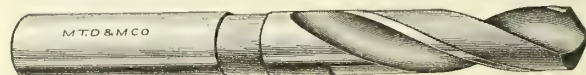


Style No. 2

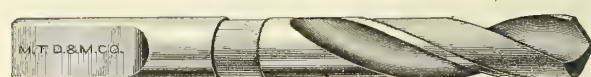
Shanks $\frac{1}{2}$ inch diameter, $2\frac{1}{2}$ inches long
Style No. 2 always furnished unless otherwise ordered

Morse No. 110, High Speed Steel

Fitting Coe Blacksmiths Drill Press and Prentice
Drill Press No. 3



Style No. 1



Style No. 2

Shanks .647 inch exact diameter (about $\frac{5}{16}$ inch) and $2\frac{1}{4}$ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter Inch	Each	Whole Length Inches	Diameter Inch	Each	Whole Length Inches
$\frac{1}{8}$	\$.45	$5\frac{1}{8}$	$2\frac{3}{16}$	$\frac{45}{64}$	\$1.20	6	$2\frac{3}{4}$	$\frac{1}{4}$	\$1.20	6	$\frac{29}{32}$	\$3.50	6
$\frac{9}{64}$	.45	$5\frac{1}{4}$	$2\frac{1}{16}$	$\frac{23}{32}$	1.20	6	$2\frac{3}{4}$	$\frac{3}{32}$	1.30	6	$\frac{15}{16}$	3.70	6
$\frac{5}{32}$	.45	$5\frac{3}{8}$	$2\frac{1}{16}$	$\frac{47}{64}$	1.25	6	$2\frac{3}{4}$	$\frac{5}{16}$	1.40	6	$\frac{31}{32}$	3.90	6
$\frac{11}{64}$	.50	$5\frac{1}{2}$	$2\frac{9}{16}$	$\frac{3}{4}$	1.25	6	$2\frac{3}{4}$	$\frac{11}{32}$	1.50	6	1	4.10	6
$\frac{3}{16}$	.50	$5\frac{3}{4}$	$2\frac{13}{16}$	$\frac{49}{64}$	1.30	6	$2\frac{3}{4}$	$\frac{3}{8}$	1.55	6	$1\frac{1}{32}$	4.30	6
$\frac{13}{64}$	.55	$5\frac{7}{8}$	$2\frac{7}{8}$	$\frac{25}{32}$	1.30	6	$2\frac{3}{4}$	$\frac{13}{32}$	1.65	6	$1\frac{1}{16}$	4.50	6
$\frac{7}{32}$	.55	6	3	$\frac{51}{64}$	1.35	6	$2\frac{3}{4}$	$\frac{7}{16}$	1.70	6	$1\frac{3}{32}$	4.75	6
$\frac{15}{64}$	.60	6	3	$\frac{13}{16}$	1.35	6	$2\frac{3}{4}$	$\frac{15}{32}$	1.80	6	$1\frac{1}{8}$	5.00	6
$\frac{1}{4}$	.60	6	3	$\frac{53}{64}$	1.40	6	$2\frac{3}{4}$	$\frac{1}{2}$	1.85	6	$1\frac{5}{32}$	5.25	6
$\frac{17}{64}$	.65	6	$2\frac{3}{4}$	$\frac{27}{32}$	1.40	6	$2\frac{3}{4}$	$\frac{17}{32}$	1.95	6	$1\frac{3}{16}$	5.50	6
$\frac{9}{32}$	.65	6	$2\frac{3}{4}$	$\frac{55}{64}$	1.45	6	$2\frac{3}{4}$	$\frac{9}{16}$	2.05	6	$1\frac{5}{32}$	5.80	3
$\frac{19}{64}$	.70	6	$2\frac{3}{4}$	$\frac{7}{8}$	1.45	6	$2\frac{3}{4}$	$\frac{19}{32}$	2.20	6	$1\frac{1}{4}$	6.10	6
$\frac{5}{16}$	.70	6	$2\frac{3}{4}$	$\frac{57}{64}$	1.55	6	$2\frac{3}{4}$	$\frac{5}{8}$	2.30	6	$1\frac{3}{8}$	6.40	6
$\frac{21}{64}$	.73	6	$2\frac{3}{4}$	$\frac{29}{32}$	1.55	6	$2\frac{3}{4}$	$\frac{21}{32}$	2.40	6	$1\frac{5}{16}$	6.70	6
$\frac{11}{32}$	.73	6	$2\frac{3}{4}$	$\frac{59}{64}$	1.60	6	$2\frac{3}{4}$	$\frac{11}{16}$	2.50	6	$1\frac{11}{32}$	7.00	6
$\frac{23}{64}$	.75	6	$2\frac{3}{4}$	$\frac{15}{16}$	1.60	6	$2\frac{3}{4}$	$\frac{23}{32}$	2.65	6	$1\frac{3}{8}$	7.40	6
$\frac{3}{8}$	.75	6	$2\frac{3}{4}$	$\frac{61}{64}$	1.70	6	$2\frac{3}{4}$	$\frac{3}{4}$	2.75	6	$1\frac{13}{32}$	7.80	6
$\frac{25}{64}$	.78	6	$2\frac{3}{4}$	$\frac{31}{32}$	1.70	6	$2\frac{3}{4}$	$\frac{25}{32}$	2.90	6	$1\frac{7}{16}$	8.20	6
$\frac{13}{32}$	.78	6	$2\frac{3}{4}$	$\frac{63}{64}$	1.80	6	$2\frac{3}{4}$	$\frac{13}{16}$	3.00	6	$1\frac{15}{32}$	8.60	6
$\frac{27}{64}$	.80	6	$2\frac{3}{4}$	1	1.80	6	$2\frac{3}{4}$	$\frac{27}{32}$	3.15	6	$1\frac{1}{2}$	9.00	6
$\frac{7}{16}$	.80	6	$2\frac{3}{4}$	$1\frac{1}{32}$	1.90	6	$2\frac{3}{4}$	$\frac{7}{8}$	3.30	6			
$\frac{29}{64}$	.83	6	$2\frac{3}{4}$	$1\frac{1}{16}$	2.00	6	$2\frac{3}{4}$						
$\frac{15}{32}$	.83	6	$2\frac{3}{4}$	$1\frac{3}{32}$	2.10	6	$2\frac{3}{4}$						
$\frac{31}{64}$	.85	6	$2\frac{3}{4}$	$1\frac{1}{8}$	2.20	6	$2\frac{3}{4}$						
$\frac{1}{2}$	.85	6	$2\frac{3}{4}$	$1\frac{5}{32}$	2.25	6	$2\frac{3}{4}$						
$\frac{33}{64}$	.88	6	$2\frac{3}{4}$	$1\frac{3}{16}$	2.30	6	$2\frac{3}{4}$						
$\frac{17}{32}$	.88	6	$2\frac{3}{4}$	$1\frac{7}{32}$	2.35	6	$2\frac{3}{4}$						
$\frac{35}{64}$	.90	6	$2\frac{3}{4}$	$1\frac{1}{4}$	2.40	6	$2\frac{3}{4}$						
$\frac{9}{16}$	.90	6	$2\frac{3}{4}$	$1\frac{9}{32}$	2.50	6	$2\frac{3}{4}$						
$\frac{37}{64}$	1.00	6	$2\frac{3}{4}$	$1\frac{5}{16}$	2.60	6	$2\frac{3}{4}$						
$\frac{19}{32}$	1.00	6	$2\frac{3}{4}$	$1\frac{11}{32}$	2.70	6	$2\frac{3}{4}$						
$\frac{39}{64}$	1.05	6	$2\frac{3}{4}$	$1\frac{3}{8}$	2.80	6	$2\frac{3}{4}$						
$\frac{5}{8}$	1.05	6	$2\frac{3}{4}$	$1\frac{13}{32}$	2.90	6	$2\frac{3}{4}$						
$\frac{41}{64}$	1.10	6	$2\frac{3}{4}$	$1\frac{7}{16}$	3.00	6	$2\frac{3}{4}$						
$\frac{21}{32}$	1.10	6	$2\frac{3}{4}$	$1\frac{15}{32}$	3.10	6	$2\frac{3}{4}$						
$\frac{43}{64}$	1.15	6	$2\frac{3}{4}$	$1\frac{1}{2}$	3.20	6	$2\frac{3}{4}$						
$\frac{11}{16}$	1.15	6	$2\frac{3}{4}$										

64th sizes not listed furnished at price of next larger size.

High Speed Steel Drills of this style are listed on following page.

Note—What is Meant by “Constant Angle”

In the “Constant Angle” drill the increase of area of groove toward the shank is obtained by a gradual variation of the angle of the cutters to the axis of the drill as the groove is milled, a uniform speed of rotation of the drill being maintained to produce a groove of uniform pitch. This variation widens the groove toward the shank of the drill, and compensates for the reduction of the area, which would otherwise result from its diminishing depth, without impairing the efficiency of the cutting lip of the drill at any point by changing the pitch of the groove.

By this means any desired proportion of area of the groove at the point and at the shank can be obtained, the fact remaining that in any form of twist drill the more the groove is enlarged toward the shank the greater the extent to which the torsional strength of the drill is impaired.

In the “Constant Angle” drills the contour, angle, and area of the groove at all parts of its length are proportioned to combine the maximum torsional strength, the most efficient chip clearance, and the best form of cutting lip.

See Note “Increase Twist” on page 39.

Twist Drills

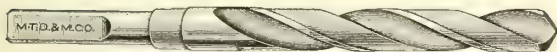
High Speed Steel

Morse No. 111, Taper Length

Fitting the Prentice Blacksmiths Drill
Presses Nos. 1 and 2



Style No. 1

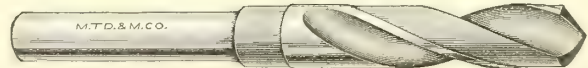


Style No. 2

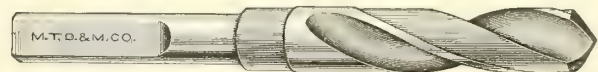
Shanks $\frac{1}{2}$ inch diameter, $2\frac{1}{2}$ inches long
Style No. 2 always furnished unless otherwise ordered

Morse No. 112, Short Length

Fitting Silver & Deming and Prentice Blacksmiths Drill
Presses Nos. 1 and 2



Style No. 1



Style No. 2

Shanks $\frac{1}{2}$ inch diameter, $2\frac{1}{2}$ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches	Diameter Inch	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches
$\frac{1}{4}$	\$1.10	$6\frac{1}{8}$	$\frac{29}{32}$	\$5.15	$10\frac{5}{8}$	$\frac{1}{4}$	\$1.10	6	$\frac{29}{32}$	\$3.50	6
$\frac{9}{32}$	1.20	$6\frac{1}{4}$	$\frac{15}{16}$	5.50	$10\frac{3}{4}$	$\frac{9}{32}$	1.20	6	$\frac{15}{16}$	3.70	6
$\frac{5}{16}$	1.30	$6\frac{3}{8}$	$\frac{31}{32}$	5.90	$10\frac{7}{8}$	$\frac{5}{16}$	1.30	6	$\frac{31}{32}$	3.90	6
$\frac{11}{32}$	1.40	$6\frac{1}{2}$	1	6.25	11	$\frac{11}{32}$	1.40	6	1	4.10	6
$\frac{3}{8}$	1.50	$6\frac{3}{4}$	$1\frac{1}{32}$	6.75	$11\frac{1}{8}$	$\frac{3}{8}$	1.45	6	$1\frac{1}{32}$	4.30	6
$\frac{13}{32}$	1.65	7	$1\frac{1}{16}$	7.25	$11\frac{1}{4}$	$\frac{13}{32}$	1.55	6	$1\frac{1}{16}$	4.50	6
$\frac{7}{16}$	1.75	$7\frac{1}{4}$	$1\frac{3}{32}$	7.75	$11\frac{1}{2}$	$\frac{7}{16}$	1.60	6	$1\frac{3}{32}$	4.75	6
$\frac{15}{32}$	1.90	$7\frac{1}{2}$	$1\frac{1}{8}$	8.25	$11\frac{3}{4}$	$\frac{15}{32}$	1.70	6	$1\frac{1}{8}$	5.00	6
$\frac{1}{2}$	2.00	$7\frac{3}{4}$	$1\frac{5}{32}$	8.90	$11\frac{7}{8}$	$\frac{1}{2}$	1.75	6	$1\frac{5}{32}$	5.25	6
$\frac{17}{32}$	2.15	8	$1\frac{1}{16}$	9.50	12	$\frac{17}{32}$	1.90	6	$1\frac{1}{16}$	5.50	6
$\frac{9}{16}$	2.25	$8\frac{1}{4}$	$1\frac{7}{32}$	10.15	$12\frac{1}{8}$	$\frac{9}{16}$	2.05	6	$1\frac{7}{32}$	5.80	6
$\frac{19}{32}$	2.40	$8\frac{1}{2}$	$1\frac{1}{4}$	10.75	$12\frac{1}{2}$	$\frac{19}{32}$	2.20	6	$1\frac{1}{4}$	6.10	6
$\frac{5}{8}$	2.50	$8\frac{3}{4}$	$1\frac{9}{32}$	11.50	$12\frac{1}{2}$	$\frac{5}{8}$	2.30	6	$1\frac{9}{32}$	6.40	6
$\frac{21}{32}$	2.75	9	$1\frac{5}{16}$	12.25	$12\frac{1}{2}$	$\frac{21}{32}$	2.40	6	$1\frac{5}{16}$	6.70	6
$\frac{11}{16}$	3.00	$9\frac{1}{4}$	$1\frac{11}{32}$	13.00	$12\frac{1}{2}$	$\frac{11}{16}$	2.50	6	$1\frac{11}{32}$	7.00	6
$\frac{23}{32}$	3.25	$9\frac{1}{2}$	$1\frac{3}{8}$	13.75	$12\frac{1}{2}$	$\frac{23}{32}$	2.65	6	$1\frac{3}{8}$	7.40	6
$\frac{3}{4}$	3.50	$9\frac{3}{4}$	$1\frac{13}{32}$	14.65	$12\frac{1}{2}$	$\frac{3}{4}$	2.75	6	$1\frac{13}{32}$	7.80	6
$\frac{25}{32}$	3.75	$9\frac{7}{8}$	$1\frac{7}{16}$	15.50	$12\frac{1}{2}$	$\frac{25}{32}$	2.90	6	$1\frac{7}{16}$	8.20	6
$\frac{13}{16}$	4.00	10	$1\frac{15}{32}$	16.40	$12\frac{1}{2}$	$\frac{13}{16}$	3.00	6	$1\frac{15}{32}$	8.60	6
$\frac{27}{32}$	4.40	$10\frac{1}{4}$	$1\frac{1}{2}$	17.25	$12\frac{1}{2}$	$\frac{27}{32}$	3.15	6	$1\frac{1}{2}$	9.00	6
$\frac{7}{8}$	4.75	$10\frac{1}{2}$				$\frac{7}{8}$	3.30	6			

The above furnished in 64th sizes if ordered and take price of the next larger size listed

Drills with Shanks as per Lists Nos. 111 and 112 on
pages 35 and 36 will fit Drill Presses of

Boynton & Plummer, Worcester, Mass.....All sizes except Nos. 14, 15, 16
 Buffalo Forge Co., Buffalo, N. Y.....All sizes
 Canedy Otto Mfg. Co., Chicago Heights, Ill.
 Champion Blower & Forge Co., Lancaster, Pa.....All sizes
 Asa Goddard, Worcester, Mass.....Nos. 2, 4
 Illinois Iron & Bolt Co., Carpentersville, Ill.....Bailey Nos. 2, 3, 4; 0, 1, Handy
 D. H. Potts, Lancaster, Pa.....All sizes
 Francis Reed Co., Worcester, Mass.....Nos. 0, 1, $1\frac{1}{2}$, 2, 5, 8, 9, 11, 13, 18
 Silver Mfg. Co., Salem, Ohio.....Nos. 1, $1\frac{1}{2}$, 2, 3, 12, 13, 14
 Geo. C. Taft, Worcester, Mass.....No. 2 old or new style or horizontal, $2\frac{1}{2}$, 3
 Wiley & Russell Mfg. Co., Greenfield, Mass.....Nos. 701, 706, 730, 734, 740, 751
 M. L. Edwards Co., Salem, Ohio.....All sizes
 B. B. Noyes & Co., Greenfield, Mass.....Nos. 2, 4, 5, 6, 12, 14, 16, 18, D5
 Geo. S. Comstock, Mechanicsburg, Pa.....Comstock's Ball Bearing Fig. 500

Drills with Shanks as per List No. 110 on pages 35 and 36
will fit Drill Presses of

Boynton & Plummer, Worcester, Mass.....All sizes except Nos. 14, 15, 16
 Buda Foundry & Mfg. Co., Harvey, Ill.....Paulus Track Drills
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Asa Goddard, Worcester, Mass.....No. 3
 Illinois Iron & Bolt Co., Carpentersville, Ill.....Bailey No. 5 and Illinois Upright
 B. B. Noyes & Co., Greenfield, Mass.....All sizes Little Giant Drills
 Francis Reed Co., Worcester, Mass.....Nos. 3, 6, 7, 12, 14, 19
 Silver Mfg. Co., Salem, Ohio.....Nos. 3, 4
 Wiley & Russell Mfg. Co., Greenfield, Mass.....Nos. 732, 742, 743, 744, 745
 Champion Blower Forge Co., Lancaster, Pa.....All sizes if ordered
 D. H. Potts, Lancaster, Penn.....Nos. 1, 2, $3\frac{1}{2}$, 10, 11, 12

Straightway Drills

Carbon Steel



Morse No. 114B, with Taper Shanks

Diameter Inches	Carbon Each	Whole Length Inches	Length of Flute Inches	Morse Taper Shank	Diameter Inches	Carbon Each	Whole Length Inches	Length of Flute Inches	Morse Taper Shank
$\frac{1}{4}$	\$.60	$6\frac{1}{8}$	3	No. 1	$1\frac{7}{16}$	\$5.60	$14\frac{3}{4}$	$9\frac{1}{8}$	No. 4
$\frac{9}{32}$	.65	$6\frac{1}{4}$	$2\frac{15}{16}$		$1\frac{1}{2}$	5.80	$14\frac{7}{8}$	$9\frac{1}{4}$
$\frac{5}{16}$	.70	$6\frac{3}{8}$	$3\frac{1}{16}$		$1\frac{1}{2}$	6.00	15	$9\frac{3}{8}$
$\frac{11}{32}$	.75	$6\frac{1}{2}$	$3\frac{3}{16}$		$1\frac{7}{8}$	6.30	15	$9\frac{3}{8}$
$\frac{3}{8}$	.80	$6\frac{3}{4}$	$3\frac{7}{16}$		$1\frac{9}{16}$	6.60	$15\frac{1}{4}$	$9\frac{5}{8}$
$\frac{13}{32}$	.85	7	$3\frac{11}{16}$		$1\frac{11}{16}$	6.90	$15\frac{1}{4}$	$9\frac{5}{8}$
$\frac{7}{16}$	.90	$7\frac{1}{4}$	$3\frac{13}{16}$		$1\frac{5}{8}$	7.20	$15\frac{1}{2}$	$9\frac{7}{8}$
$\frac{15}{32}$	.95	$7\frac{1}{2}$	$4\frac{3}{16}$		$1\frac{21}{32}$	7.50	$15\frac{1}{2}$	$9\frac{7}{8}$
$\frac{1}{2}$	1.00	$7\frac{3}{4}$	$4\frac{7}{16}$		$1\frac{11}{16}$	7.80	$15\frac{3}{4}$	$10\frac{1}{8}$	
$\frac{17}{32}$	1.10	8	$4\frac{11}{16}$		$1\frac{3}{2}$	8.10	$15\frac{3}{4}$	$9\frac{11}{16}$	
$\frac{9}{16}$	1.20	$8\frac{1}{4}$	$4\frac{15}{16}$	No. 2	$1\frac{3}{4}$	8.40	16	$9\frac{15}{16}$	No. 4
$\frac{19}{32}$	1.30	$8\frac{1}{2}$	$4\frac{5}{8}$		$1\frac{5}{8}$	8.60	16	$9\frac{15}{16}$	
$\frac{5}{8}$	1.40	$8\frac{3}{4}$	$4\frac{7}{8}$		$1\frac{13}{16}$	8.80	$16\frac{1}{4}$	$10\frac{1}{8}$	
$\frac{21}{32}$	1.50	9	$5\frac{1}{8}$		$1\frac{27}{32}$	9.00	$16\frac{1}{4}$	$10\frac{1}{8}$	
$\frac{11}{16}$	1.60	$9\frac{1}{4}$	$5\frac{3}{8}$		$1\frac{7}{8}$	9.20	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{23}{32}$	1.70	$9\frac{1}{2}$	$5\frac{5}{8}$		$1\frac{29}{32}$	9.35	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{3}{4}$	1.85	$9\frac{3}{4}$	$5\frac{7}{8}$		$1\frac{15}{16}$	9.50	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{25}{32}$	2.00	$9\frac{7}{8}$	6		$1\frac{31}{32}$	9.65	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{13}{16}$	2.15	10	$6\frac{1}{8}$		2	9.80	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{15}{16}$	2.30	$10\frac{1}{4}$	$6\frac{3}{8}$		$2\frac{1}{32}$	10.20	$16\frac{1}{2}$	$9\frac{1}{2}$	
$\frac{7}{8}$	2.45	$10\frac{1}{2}$	$6\frac{5}{8}$	No. 3	$2\frac{1}{16}$	10.60	17	10	No. 5
$\frac{29}{32}$	2.60	$10\frac{5}{8}$	$6\frac{3}{4}$		$2\frac{1}{8}$	11.20	17	10	
$\frac{15}{16}$	2.75	$10\frac{3}{4}$	$6\frac{1}{8}$		$2\frac{3}{16}$	12.00	17	10	
$\frac{31}{32}$	2.90	$10\frac{7}{8}$	$6\frac{1}{4}$		$2\frac{1}{4}$	12.80	$17\frac{1}{2}$	$10\frac{1}{8}$	
1	3.00	11	$6\frac{3}{8}$		$2\frac{5}{16}$	13.60	$17\frac{1}{2}$	$10\frac{1}{8}$	
$1\frac{1}{32}$	3.20	$11\frac{1}{8}$	$6\frac{1}{2}$		$2\frac{3}{8}$	14.40	18	$10\frac{1}{2}$	
$1\frac{1}{16}$	3.40	$11\frac{1}{4}$	$6\frac{5}{8}$		$2\frac{7}{16}$	15.00	$18\frac{1}{2}$	11	
$1\frac{3}{32}$	3.60	$11\frac{1}{2}$	$6\frac{7}{8}$		$2\frac{1}{2}$	15.60	19	$11\frac{3}{8}$	
$1\frac{1}{8}$	3.80	$11\frac{3}{4}$	$7\frac{1}{8}$		$2\frac{9}{16}$	16.20	$19\frac{1}{4}$	$11\frac{5}{8}$	
$1\frac{5}{32}$	4.00	$11\frac{7}{8}$	$7\frac{1}{4}$		$2\frac{5}{8}$	16.80	$19\frac{1}{2}$	$11\frac{3}{4}$	
$1\frac{3}{16}$	4.20	12	$7\frac{3}{8}$	No. 4	$2\frac{11}{16}$	17.60	20	$12\frac{1}{4}$	
$1\frac{7}{32}$	4.40	$12\frac{1}{8}$	$7\frac{1}{2}$		$2\frac{3}{4}$	19.00	$20\frac{1}{2}$	$12\frac{5}{8}$	
$1\frac{1}{4}$	4.50	$12\frac{1}{2}$	$7\frac{7}{8}$		$2\frac{13}{16}$	20.00	$20\frac{1}{2}$	$12\frac{5}{8}$	
$1\frac{9}{32}$	4.65	$14\frac{1}{8}$	$8\frac{1}{2}$		$2\frac{7}{8}$	21.00	21	13	
$1\frac{5}{16}$	4.80	$14\frac{1}{4}$	$8\frac{5}{8}$		$2\frac{15}{16}$	23.00	21	13	
$1\frac{11}{32}$	5.00	$14\frac{3}{8}$	$8\frac{3}{4}$		3	25.00	22	$13\frac{7}{8}$	
$1\frac{3}{8}$	5.20	$14\frac{1}{2}$	$8\frac{7}{8}$						
$1\frac{13}{32}$	5.40	$14\frac{5}{8}$	9						

32nd sizes not listed, furnished at intermediate prices, and 64th sizes at price of next larger 32nd size

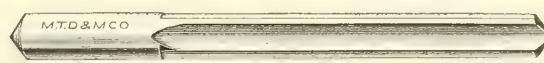
Lubricants for Cutting Tools

Material	Turning	Chuckling	Drilling Milling	Reaming	Tapping
Tool Steel	Dry or Oil	Oil or Soda Water	Oil	Lard Oil	Oil
Soft Steel	Dry or Soda Water	Soda Water	Oil or Soda Water	Lard Oil	Oil
Wrought Iron	Dry or Soda Water	Soda Water	Oil or Soda Water	Lard Oil	Oil
Cast Iron Brass	Dry Dry	Dry Dry	Dry Dry	Dry Dry	Oil Oil
Copper Babbitt Glass	Dry Dry	Oil Dry	Oil Dry Turpentine	Mixture Dry or Kerosene	Oil Oil

Mixture is $\frac{1}{4}$ Crude Petroleum, $\frac{3}{4}$ Lard Oil. Oil is Lard. When two lubricants are mentioned the first is preferable

Straightway Drills

Carbon Steel

Morse No. 114 1/2 B, with Straight Shanks
Taper LengthMorse No. 114 C, with Straight Shanks
Wire Sizes

Diameter Inches	Each	Whole Length Inches	Length of Flute Inches	Diameter Inches	Each	Whole Length Inches	Length of Flute Inches
1/4	\$.60	6 1/8	4	1 3/32	5.40	14 5/8	9 1/2
9/32	.65	6 1/4	4	1 1/16	5.60	14 3/4	9 5/8
5/16	.70	6 3/8	4 1/16	1 1/32	5.80	14 7/8	9 3/4
11/32	.75	6 1/2	4 1/8	1 1/2	6.00	15	9 7/8
3/8	.80	6 3/4	4 1/4	1 5/32	6.30	15	9 1/2
13/32	.85	7	4 3/8	1 9/16	6.60	15 1/4	9 3/4
7/16	.90	7 1/4	4 5/8	1 11/32	6.90	15 1/4	9 3/4
15/32	.95	7 1/2	4 7/8	1 5/8	7.20	15 1/2	10
1/2	1.00	7 3/4	5	1 31/32	7.50	15 1/2	10
17/32	1.10	8	5 1/4	1 11/16	7.80	15 3/4	10 1/4
9/16	1.20	8 1/4	5 3/8	1 23/32	8.10	15 3/4	10 1/4
19/32	1.30	8 1/2	5 5/8	1 3/4	8.40	16	10 1/2
5/8	1.40	8 3/4	5 3/4	1 25/32	8.60	16	10 1/2
21/32	1.50	9	5 7/8	1 13/16	8.80	16 1/4	10 3/4
11/16	1.60	9 1/4	6	1 7/32	9.00	16 1/4	10 3/4
23/32	1.70	9 1/2	6 3/16	1 7/8	9.20	16 1/2	11
3/4	1.85	9 3/4	6 3/8	1 29/32	9.35	16 1/2	11
25/32	2.00	9 7/8	6 1/2	1 15/16	9.50	16 1/2	11
13/16	2.15	10	6 5/8	1 31/32	9.65	16 1/2	11
27/32	2.30	10 1/4	6 3/4	2	9.80	16 1/2	11
7/8	2.45	10 1/2	7	2 1/32	10.20	16 1/2	9 5/8
29/32	2.60	10 5/8	7	2 1/16	10.60	17	10 1/8
15/16	2.75	10 3/4	7	2 1/8	11.20	17	10 1/8
31/32	2.90	10 7/8	7 1/8	2 3/16	12.00	17	10 1/8
1	3.00	11	7 3/16	2 1/4	12.80	17 1/2	10 1/4
1 1/32	3.20	11 1/8	7 5/16	2 5/16	13.60	17 1/2	10 3/4
1 1/16	3.40	11 1/4	7 3/8	2 3/8	14.40	18	10 5/8
1 1/32	3.60	11 1/2	7 5/8	2 7/16	15.00	18 1/2	11 1/8
1 1/8	3.80	11 3/4	7 7/8	2 1/2	15.60	19	11 1/2
1 5/32	4.00	11 7/8	8	2 9/16	16.20	19 1/4	11 3/4
1 3/16	4.20	12	8 1/8	2 5/8	16.80	19 1/2	11 7/8
1 1/32	4.40	12 1/8	8 1/4	2 11/16	17.60	20	12 3/8
1 1/4	4.50	12 1/2	8 1/2	2 3/4	19.00	20 1/2	12 3/4
1 9/32	4.65	12 1/4	9 1/8	2 13/16	20.00	20 1/2	12 3/4
1 1/16	4.80	12 3/4	9 1/4	2 7/8	21.00	21	13 1/8
1 11/32	5.00	13 3/8	9 3/8	2 15/16	23.00	21	13 1/8
1 3/8	5.20	13 1/2	9 1/2	3	25.00	22	14

Number by Gauge	Per Dozen	Each	Number by Gauge	Per Dozen	Each
1 to 5	\$2.35	\$.22	26 to 30	\$1.55	\$.15
6 to 10	2.25	.21	31 to 35	1.40	.14
11 to 15	2.10	.20	36 to 40	1.25	.12
16 to 20	1.95	.19	41 to 45	1.10	.10
21 to 25	1.75	.17	46 to 60	.95	.09

For sizes in decimals of 1 inch, and for lengths, see No. 107 on page 32

Morse No. 114 A, with Straight Shanks. Jobbers Lengths

Diameter Inch	Per Dozen	Whole Length Inches	Length of Flute, Inches
1/16	\$1.00	2 1/2	1 1/4
5/64	1.10	2 5/8	1 3/8
3/32	1.20	2 3/4	1 1/2
7/64	1.30	2 7/8	1 11/16
1/8	1.45	3	1 13/16
9/64	1.60	3 1/8	1 15/16
5/32	1.80	3 1/4	2 3/32
11/64	2.00	3 3/8	2 7/32
3/16	2.20	3 1/2	2 5/16
13/64	2.40	3 5/8	2 7/16
7/32	2.65	3 3/4	2 3/2
15/64	2.90	3 7/8	2 21/32
1/4	3.15	4	2 3/4
17/64	3.40	4 1/8	2 7/8
9/32	3.65	4 1/4	2 31/32
19/64	3.90	4 3/8	3 3/32
5/16	4.20	4 1/2	3 3/16
21/64	4.50	4 5/8	3 5/16
11/32	4.80	4 3/4	3 13/32
23/64	5.10	4 7/8	3 17/32
3/8	5.40	5	3 5/8
25/64	5.70	5 1/8	3 3/4
13/32	6.00	5 1/4	3 21/32
27/64	6.40	5 3/8	3 31/32
7/16	6.80	5 1/2	4 1/16
29/64	7.20	5 5/8	4 3/16
15/32	7.50	5 3/4	4 9/32
31/32	7.75	5 7/8	4 13/32
1/2	8.00	6	4 1/2

Note—What is Meant by “Increase Twist”

In order that a drill may be of sufficient strength to resist the torsional strain to which it is subjected in use, without being at the same time so thick at the point as to require excessive force to make it penetrate the work, it has long been customary to form the grooves of gradually decreasing depth from the point to the shank. By this practice the groove is naturally of less area near the shank and if no means were employed to increase this area there would be a tendency for the chips to clog in the groove.

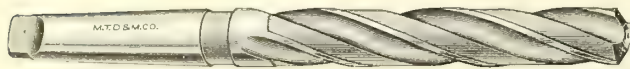
This difficulty is obviated in the “Increase Twist” drill by gradually increasing the rate of forward traverse of the drill while it is fed to the groove milling cutters, the speed of rotation of the drill remaining constant. Through the ensuing change in the angle of the cutters to the groove, the groove is made wider and its area thereby increased.

See Note “Constant Angle,” on page 36.

Twist Drills

Carbon and High Speed Steel

Morse No. 102F, with Taper Shanks

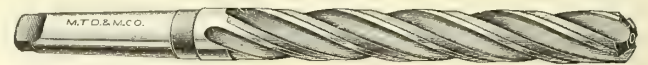


Three-Groove

This Drill supplied in sizes 1/4 inch to 3 inches

It is considered advisable to use two drills when large holes are to be made in solid stock, first using a two-groove drill and following with a three or four-groove drill
A two-groove drill should not be used in cored holes or to follow another drill
The points of the three and four-groove drills show that they are not to be used for drilling solid stock but for enlarging a hole already made

Morse No. 102G, with Taper Shanks



Four-Groove

This Drill supplied in sizes 1/4 inch to 3 inches only

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
1/4	\$1.50	\$2.00	6 1/8	2 1/8	No. 1
1/8	1.60	2.15	6 1/4	2 1/8	
9/32	1.60	2.15	6 1/4	2 1/8	
1/2	1.60	2.25	6 3/8	3 1/8	
5/16	1.60	2.25	6 3/8	3 1/8	
21/64	1.70	2.40	6 1/2	3 1/8	
11/32	1.70	2.40	6 1/2	3 1/8	
23/64	1.70	2.50	6 3/4	3 7/16	
3/8	1.70	2.50	6 3/4	3 7/16	
25/64	1.75	2.65	7	3 11/16	
13/32	1.75	2.65	7	3 11/16	
27/64	1.80	2.75	7 1/4	3 15/16	
7/16	1.80	2.75	7 1/4	3 15/16	
29/64	1.85	2.90	7 1/2	4 3/16	
15/32	1.85	2.90	7 1/2	4 3/16	
31/64	1.90	3.00	7 3/4	4 7/16	No. 2
1/2	1.90	3.00	7 3/4	4 7/16	
33/64	1.95	3.15	8	4 11/16	
17/32	1.95	3.15	8	4 11/16	
35/64	2.00	3.25	8 1/4	4 15/16	
9/16	2.00	3.25	8 1/4	4 15/16	
37/64	2.30	3.50	8 1/2	4 5/8	
19/32	2.30	3.50	8 1/2	4 5/8	
39/64	2.60	3.75	8 3/4	4 7/8	
5/8	2.60	3.75	8 3/4	4 7/8	
41/64	2.70	4.00	9	5 1/8	
21/32	2.70	4.00	9	5 1/8	
43/64	2.75	4.25	9 1/4	5 3/8	
11/16	2.75	4.25	9 1/4	5 3/8	
45/64	2.85	4.65	9 1/2	5 5/8	No. 3
23/32	2.85	4.65	9 1/2	5 5/8	
47/64	2.90	5.00	9 3/4	5 7/8	
3/4	2.90	5.00	9 3/4	5 7/8	
49/64	3.00	5.40	9 7/8	6	
25/32	3.00	5.40	9 7/8	6	
51/64	3.05	5.75	10	6 1/8	
13/16	3.05	5.75	10	6 1/8	
53/64	3.15	6.15	10 1/4	6 3/8	
27/32	3.15	6.15	10 1/4	6 3/8	
55/64	3.20	6.50	10 1/2	6 5/8	
7/8	3.20	6.50	10 1/2	6 5/8	
57/64	3.30	7.00	10 5/8	6 3/4	
29/32	3.30	7.00	10 5/8	6 3/4	
59/64	3.40	7.50	10 3/4	6 1/8	
15/16	3.40	7.50	10 3/4	6 1/8	
61/64	3.50	8.00	10 7/8	6 1/4	No. 4
31/32	3.50	8.00	10 7/8	6 1/4	
63/64	3.60	8.50	11	6 3/8	
1	3.60	8.50	11	6 3/8	No. 4

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
1 1/64	\$3.70	\$9.00	11 1/8	6 1/2	No. 3
1 1/32	3.70	9.00	11 1/8	6 1/2	
1 3/64	3.80	9.50	11 1/4	6 5/8	
1 1/16	3.80	9.50	11 1/4	6 5/8	
1 5/64	3.90	10.25	11 1/2	6 7/8	
1 3/32	3.90	10.25	11 1/2	6 7/8	
1 7/64	4.00	11.00	11 3/4	7 1/8	
1 1/8	4.00	11.00	11 3/4	7 1/8	
1 9/64	4.25	11.75	11 7/8	7 1/4	
1 5/32	4.25	11.75	11 7/8	7 1/4	
1 11/64	4.50	12.50	12	7 3/8	
1 3/16	4.50	12.50	12	7 3/8	
1 13/64	4.65	13.25	12 1/8	7 1/2	
1 7/32	4.65	13.25	12 1/8	7 1/2	
1 15/64	4.80	14.00	12 1/2	7 7/8	
1 1/4	4.80	14.00	12 1/2	7 7/8	
1 17/64	5.00	14.75	14 1/8	8 1/2	No. 4
1 9/32	5.00	14.75	14 1/8	8 1/2	
1 19/64	5.20	15.50	14 1/4	8 5/8	
1 5/16	5.20	15.50	14 1/4	8 5/8	
1 21/64	5.40	16.25	14 3/8	8 3/4	
1 11/32	5.40	16.25	14 3/8	8 3/4	
1 23/64	5.60	17.00	14 1/2	8 7/8	
1 3/8	5.60	17.00	14 1/2	8 7/8	
1 25/64	5.80	17.75	14 5/8	9	
1 13/32	5.80	17.75	14 5/8	9	
1 27/64	6.00	18.50	14 3/4	9 1/8	
1 7/16	6.00	18.50	14 3/4	9 1/8	
1 29/64	6.20	19.25	14 7/8	9 1/4	
1 15/32	6.20	19.25	14 7/8	9 1/4	
1 31/64	6.40	20.00	15	9 3/8	
1 1/2	6.40	20.00	15	9 3/8	
1 33/64	6.65	20.75	15	9 3/8	
1 7/32	6.65	20.75	15	9 3/8	
1 9/16	6.90	21.50	15 1/4	9 5/8	
1 35/64	7.15	22.25	15 1/4	9 5/8	No. 4
1 5/8	7.40	23.00	15 1/2	9 7/8	
1 37/64	7.65	23.75	15 1/2	9 7/8	
1 1/2	7.90	24.50	15 3/4	10 1/8	
1 39/64	8.15	25.50	15 3/4	9 11/16	
1 3/4	8.40	26.50	16	9 15/16	
1 41/64	8.60	27.50	16	9 15/16	
1 13/16	8.80	28.50	16 1/4	10 1/8	
1 3/2	9.00	29.50	16 1/4	10 1/8	
1 7/8	9.20	30.50	16 1/2	10 3/8	
1 43/64	9.35	31.50	16 1/2	10 3/8	
1 15/8	9.50	32.50	16 1/2	10 1/4	
1 31/32	9.65	33.50	16 1/2	10 1/4	
2	9.80	34.50	16 1/2	10 1/4	

Twist Drills

Carbon and High Speed Steel

Morse No. 102F and No. 102G (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
2 1/32	\$10.20	\$36.00	16 1/2	9 1/2	No. 5	2 1/32	\$15.90	\$73.15	19 1/4	11 5/8	No. 5
2 1/16	10.60	37.50	17	10		2 9/32	16.20	76.25	19 1/4	11 5/8	
2 3/32	10.90	39.00	17	10		2 19/32	16.50	79.40	19 1/2	11 7/8	
2 1/8	11.20	40.50	17	10		2 5/8	16.80	82.50	19 1/2	11 3/4	
2 5/32	11.60	42.15	17	10		2 21/32	17.35	85.65	20	12 1/4	
2 3/16	12.00	43.75	17	10		2 1/16	17.90	88.75	20	12 3/4	
2 7/32	12.40	45.65	17 1/2	10 1/2		2 3/32	18.45	91.90	20 1/2	12 3/4	
2 1/4	12.80	47.50	17 1/2	10 3/8		2 3/4	19.00	95.00	20 1/2	12 5/8	
2 9/32	13.20	50.00	17 1/2	10 1/8		2 25/32	19.50	98.75	20 1/2	12 5/8	
2 5/16	13.60	52.50	17 1/2	10 1/8		2 13/16	20.00	102.50	20 1/2	12 5/8	
2 3/8	14.00	56.25	18	10 5/8		2 7/8	20.50	106.25	21	13 1/8	
2 3/4	14.40	60.00	18	10 1/2		2 29/32	21.00	110.00	21	13	
2 13/32	14.70	62.50	18 1/2	11		2 16/32	22.00	113.75	21	13	
2 7/16	15.00	65.00	18 1/2	11		2 31/32	23.00	117.50	21	13	
2 15/32	15.30	67.50	19	11 1/2		3	24.00	121.25	22	14	
2 1/2	15.60	70.00	19	11 3/8			25.00	125.00	22	13 7/8	

Drills larger than 1 1/2 inches are furnished in 1/64th sizes if ordered, and take price of the next larger size listed.

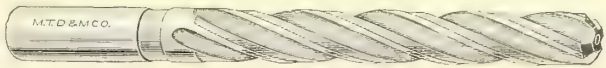
Morse No. 104G, with Straight Shanks



Three-Groove

These Drills 2 3/4 and smaller have regular drill points

Morse No. 104H, with Straight Shanks



Four-Groove

This Drill supplied in sizes 1/2 inch to 3 inches only

It is considered advisable to use two drills when large holes are to be made in solid stock, first using a two-groove drill and following with a three or four-groove drill. A two-groove drill should not be used in cored holes or to follow another drill. The points of the three and four-groove drills show that they are not to be used for drilling solid stock, but for enlarging a hole already made.

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Shank Inch	Length Shank Inches	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Shank Inches	Length Shank Inches
1/4	\$1.30	\$2.00	6 1/8	3 7/8	1/4	1 1/2	7/8	\$3.20	\$6.50	10 1/2	7 1/4	7/8	2 1/2
1/2	1.40	2.15	6 1/4	4	1/4	1 1/2	5/8	3.30	7.00	10 5/8	7 3/8	7/8	2 1/2
3/4	1.40	2.15	6 1/4	4	1/4	1 1/2	3/4	3.30	7.00	10 5/8	7 3/8	7/8	2 1/2
1	1.50	2.25	6 3/8	4 1/8	1/4	1 1/2	15/16	3.40	7.50	10 3/4	7 1/2	7/8	2 1/2
1 1/8	1.50	2.25	6 3/8	4 1/8	1/4	1 1/2	1 1/16	3.40	7.50	10 3/4	7 1/2	7/8	2 1/2
1 1/4	1.60	2.40	6 1/2	4 1/4	1/4	1 1/2	1 1/8	3.50	8.00	10 7/8	7 5/8	7/8	2 1/2
1 1/2	1.60	2.40	6 1/2	4 1/4	1/4	1 1/2	1 1/4	3.50	8.00	10 7/8	7 5/8	7/8	2 1/2
1 3/4	1.70	2.50	6 3/4	4 1/4	3/8	1 3/4	1 1/2	3.60	8.50	11	7 1/2	1	2 3/4
2	1.70	2.50	6 3/4	4 1/4	3/8	1 3/4	1 3/4	3.60	8.50	11	7 1/2	1	2 3/4
2 1/8	1.75	2.65	7	4 1/2	3/8	1 3/4	1 1/2	3.70	9.00	11 1/8	7 5/8	1	2 3/4
2 1/4	1.75	2.65	7	4 1/2	3/8	1 3/4	1 1/8	3.70	9.00	11 1/8	7 5/8	1	2 3/4
2 3/8	1.75	2.65	7	4 1/2	3/8	1 3/4	1 1/4	3.80	9.50	11 1/4	7 3/4	1	2 3/4
2 1/2	1.80	2.75	7 1/4	4 3/4	3/8	1 3/4	1 1/2	3.80	9.50	11 1/4	7 3/4	1	2 3/4
2 5/8	1.85	2.90	7 1/2	5	3/8	1 3/4	1 5/8	3.90	10.25	11 1/2	8	1	2 3/4
2 3/4	1.85	2.90	7 1/2	5	3/8	1 3/4	1 3/4	3.90	10.25	11 1/2	8	1	2 3/4
2 7/8	1.90	3.00	7 3/4	5	1/2	2	1 7/8	4.00	11.00	11 3/4	8 1/4	1	2 3/4
3	1.90	3.00	7 3/4	5	1/2	2	1 3/4	4.00	11.00	11 3/4	8 1/4	1	2 3/4
3 1/8	1.95	3.15	8	5 1/4	1/2	2	1 5/8	4.25	11.75	11 7/8	8 3/8	1	2 3/4
3 1/4	1.95	3.15	8	5 1/4	1/2	2	1 1/2	4.25	11.75	11 7/8	8 3/8	1	2 3/4
3 1/2	2.00	3.25	8 1/4	5 1/2	1/2	2	1 5/16	4.50	12.50	12	8 1/2	1	2 3/4
3 3/4	2.00	3.25	8 1/4	5 1/2	1/2	2	1 3/4	4.50	12.50	12	8 1/2	1	2 3/4
3 7/8	2.30	3.50	8 1/2	5 3/4	1/2	2	1 15/16	4.65	13.25	12 1/8	8 5/8	1	2 3/4
4	2.30	3.50	8 1/2	5 3/4	1/2	2	1 7/8	4.65	13.25	12 1/8	8 5/8	1	2 3/4
4 1/8	2.60	3.75	8 3/4	5 3/4	5/8	2 1/4	1 15/16	4.80	14.00	12 1/2	8 3/4	1 1/4	3
4 1/4	2.60	3.75	8 3/4	5 3/4	5/8	2 1/4	1 3/4	4.80	14.00	12 1/2	8 3/4	1 1/4	3
4 1/2	2.70	4.00	9	6	5/8	2 1/4	1 1/2	5.00	14.75	14 1/8	10 3/8	1 1/4	3
4 3/4	2.70	4.00	9	6	5/8	2 1/4	1 5/8	5.00	14.75	14 1/8	10 3/8	1 1/4	3
4 7/8	2.75	4.25	9 1/4	6 1/4	5/8	2 1/4	1 3/2	5.20	15.50	14 1/4	10 1/2	1 1/4	3
5	2.75	4.25	9 1/4	6 1/4	5/8	2 1/4	1 15/16	5.20	15.50	14 1/4	10 1/2	1 1/4	3
5 1/8	2.85	4.65	9 1/2	6 1/2	5/8	2 1/4	1 3/4	5.40	16.25	14 3/8	10 5/8	1 1/4	3
5 1/4	2.85	4.65	9 1/2	6 1/2	5/8	2 1/4	1 1/2	5.40	16.25	14 3/8	10 5/8	1 1/4	3
5 1/2	2.90	5.00	9 3/4	6 3/4	3/4	2 1/4	1 11/16	5.60	17.00	14 1/2	10 3/4	1 1/4	3
5 3/4	2.90	5.00	9 3/4	6 3/4	3/4	2 1/4	1 3/4	5.60	17.00	14 1/2	10 3/4	1 1/4	3
5 7/8	3.00	5.40	9 7/8	6 7/8	3/4	2 1/4	1 15/16	5.80	17.75	14 5/8	10 7/8	1 1/4	3
6	3.00	5.40	9 7/8	6 7/8	3/4	2 1/4	1 3/2	5.80	17.75	14 5/8	10 7/8	1 1/4	3
6 1/8	3.05	5.75	10	7	3/4	2 1/4	1 27/32	6.00	18.50	14 3/4	11	1 1/4	3
6 1/4	3.05	5.75	10	7	3/4	2 1/4	1 15/16	6.00	18.50	14 3/4	11	1 1/4	3
6 1/2	3.15	6.15	10 1/4	7 1/4	3/4	2 1/4	1 3/4	6.20	19.25	14 7/8	11 1/8	1 1/4	3
6 3/4	3.15	6.15	10 1/4	7 1/4	3/4	2 1/4	1 15/16	6.20	19.25	14 7/8	11 1/8	1 1/4	3
6 7/8	3.20	6.50	10 1/2	7 1/4	7/8	2 1/2	1 31/32	6.40	20.00	15	11 1/4	1 1/4	3

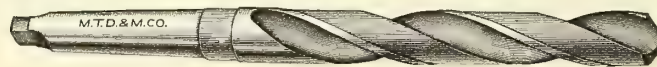
Twist Drills

Carbon and High Speed Steel

Morse No. 104G and No. 104H (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Shank Inches	Length Shank Inches	Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Shank Inches	Length Shank Inches
1 1/2	\$6.40	\$20.00	15	11 1/4	1 1/4	3	2 1/4	\$12.80	\$47.50	17 1/2	12 1/2	1 1/2	3 1/2
1 3/4	6.65	20.75	15	11 1/4	1 1/4	3	2 3/4	13.20	50.00	17 1/2	12 1/2	1 1/2	3 1/2
1 9/16	6.90	21.50	15	11 1/4	1 1/4	3	2 5/8	13.60	52.50	17 1/2	12 1/2	1 1/2	3 1/2
1 5/8	7.15	22.25	15 1/4	11 1/2	1 1/4	3	2 3/2	14.00	56.25	18	13	1 1/2	3 1/2
1 5/8	7.40	23.00	15 1/4	11 1/2	1 1/4	3	2 3/8	14.40	60.00	18	12 7/8	1 1/2	3 1/2
1 21/32	7.65	23.75	15 1/2	11 3/4	1 1/4	3	2 13/32	14.70	62.50	18 1/2	13 3/8	1 1/2	3 1/2
1 11/16	7.90	24.50	15 1/2	11 3/4	1 1/4	3	2 7/16	15.00	65.00	18 1/2	13 3/8	1 1/2	3 1/2
1 23/32	8.15	25.50	15 3/4	12	1 1/4	3	2 15/32	15.30	67.50	19	13 7/8	1 1/2	3 1/2
1 3/4	8.40	26.50	15 3/4	12	1 1/4	3	2 1/2	15.60	70.00	19	13 3/4	1 1/2	3 1/2
1 25/32	8.60	27.50	16	11 7/8	1 1/4	3	2 17/32	15.90	73.15	19 1/4	14	1 1/2	3 1/2
1 13/16	8.80	28.50	16	11 7/8	1 1/4	3	2 9/16	16.20	76.25	19 1/4	14	1 1/2	3 1/2
1 27/32	9.00	29.50	16 1/4	12 1/8	1 1/4	3	2 19/32	16.50	79.40	19 1/2	14 1/4	1 1/2	3 1/2
1 7/8	9.20	30.50	16 1/4	12 1/8	1 1/4	3	2 5/8	16.80	82.50	19 1/2	14 1/8	1 1/2	3 1/2
1 29/32	9.35	31.50	16 1/2	12 1/4	1 1/4	3	2 23/32	17.35	85.65	20	14 5/8	1 1/2	3 1/2
1 15/16	9.50	32.50	16 1/2	12 1/4	1 1/4	3	2 11/16	17.90	88.75	20	14 5/8	1 1/2	3 1/2
1 13/32	9.65	33.50	16 1/2	12 1/4	1 1/4	3	2 3/32	18.45	91.90	20 1/2	15 1/8	1 1/2	3 1/2
2	9.80	34.50	16 1/2	12 1/4	1 1/4	3	2 3/4	19.00	95.00	20 1/2	15	1 1/2	3 1/2
2 1/32	10.20	36.00	16 1/2	12 1/8	1 1/4	3	2 25/32	19.50	98.75	20 1/2	14 1/2	1 3/4	4
2 1/8	10.60	37.50	16 1/2	11 3/4	1 1/2	3 1/2	2 13/32	20.00	102.50	20 1/2	14 1/2	1 3/4	4
2 3/32	10.90	39.00	17	12 1/4	1 1/2	3 1/2	2 27/32	20.50	106.25	21	15	1 3/4	4
2 1/4	11.20	40.50	17	12 1/4	1 1/2	3 1/2	2 7/8	21.00	110.00	21	14 7/8	1 3/4	4
2 5/32	11.60	42.15	17	12 1/8	1 1/2	3 1/2	2 29/32	22.00	113.75	21	14 7/8	1 3/4	4
2 3/16	12.00	43.75	17	12 1/8	1 1/2	3 1/2	2 15/16	23.00	117.50	21	14 7/8	1 3/4	4
2 7/32	12.40	45.65	17 1/2	12 5/8	1 1/2	3 1/2	2 31/32	24.00	121.25	22	15 1/8	1 3/4	4
							3	25.00	125.00	22	15 3/4	1 3/4	4

32nd sizes not listed furnished at intermediate prices, and 64th sizes at price of next larger 32nd size



Morse No. 102E, with Taper Shanks. Metric Sizes

Diameter MM.	Carbon Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Morse Taper Shank	Diameter MM.	Carbon Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Morse Shank Shank
1	\$.35	.0394	92	16		20	\$2.15	.7874	254	156	
1 1/2	.35	.0591	98	21		20 1/2	2.15	.8071	254	156	
2	.40	.0787	105	28		21	2.30	.8267	260	162	
2 1/2	.40	.0984	111	34		21 1/2	2.45	.8464	260	162	
3	.45	.1181	116	43		22	2.45	.8661	267	168	
3 1/2	.45	.1378	130	56		22 1/2	2.60	.8858	270	171	
4	.45	.1575	137	62		23	2.60	.9055	270	171	
4 1/2	.50	.1771	140	65		23 1/2	2.75	.9252	273	156	
5	.55	.1968	149	73		24	2.90	.9449	276	159	
5 1/2	.55	.2165	152	76		24 1/2	2.90	.9646	276	159	
6	.60	.2362	156	76		25	3.00	.9842	279	162	
6 1/2	.65	.2559	156	76		25 1/2	3.20	1.0039	279	162	
7	.65	.2756	159	75		26	3.20	1.0236	282	165	
7 1/2	.70	.2953	162	78		26 1/2	3.40	1.0433	286	168	
8	.75	.3149	162	78		27	3.60	1.0629	286	168	
8 1/2	.75	.3346	165	81		27 1/2	3.60	1.0827	292	175	
9	.80	.3543	172	87		28	3.80	1.1024	298	181	
9 1/2	.80	.3740	172	87		28 1/2	3.80	1.1220	298	181	
10	.85	.3937	178	94		29	4.00	1.1417	302	184	
10 1/2	.90	.4134	184	100		29 1/2	4.20	1.1614	302	184	
11	.90	.4330	184	100		30	4.20	1.1811	305	187	
11 1/2	.95	.4527	191	106		30 1/2	4.40	1.2008	308	190	
12	1.00	.4724	191	106		31	4.50	1.2205	308	190	
12 1/2	1.00	.4921	197	113		31 1/2	4.50	1.2401	317	200	
13	1.10	.5118	203	119		32	4.65	1.2598	317	200	
13 1/2	1.20	.5315	203	119		32 1/2	4.65	1.2795	359	216	
14	1.20	.5512	210	125		33	4.80	1.2992	362	219	
14 1/2	1.30	.5708	216	117		33 1/2	5.00	1.3190	365	222	
15	1.30	.5905	216	117		34	5.00	1.3386	365	222	
15 1/2	1.40	.6102	222	124		34 1/2	5.20	1.3583	368	225	
16	1.50	.6299	222	124		35	5.20	1.3779	368	225	
16 1/2	1.50	.6496	229	130		35 1/2	5.40	1.3977	372	229	
17	1.60	.6693	235	137		36	5.60	1.4173	375	232	
17 1/2	1.70	.6890	235	137		36 1/2	5.60	1.4370	375	232	
18	1.70	.7086	241	143		37	5.80	1.4567	378	235	
18 1/2	1.85	.7283	247	149		37 1/2	6.00	1.4764	381	238	
19	1.85	.7480	247	149		38	6.00	1.4961	381	238	
19 1/2	2.00	.7677	251	152		38 1/2	6.30	1.5157	381	238	

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1848

HAMMACHER SCHLEMMER & CO.

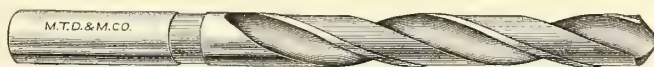
NEW
YORK

Twist Drills

Carbon Steel

Morse No. 102E (Continued)

Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Morse Taper Shank	Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Morse Taper Shank
39	\$6.60	1.5354	381	238	No. 4	57½	\$13.20	2.2637	445	257	No. 5
39½	6.60	1.5551	387	244		58	13.60	2.2835	445	257	
40	6.90	1.5748	387	244		58½	13.60	2.3031	445	257	
40½	6.90	1.5945	387	244		59	14.00	2.3228	457	270	
41	7.20	1.6142	394	251		59½	14.40	2.3425	457	270	
41½	7.50	1.6338	394	251		60	14.40	2.3622	457	270	
42	7.50	1.6536	394	251		60½	14.70	2.3819	470	279	
42½	7.80	1.6733	400	257		61	14.70	2.4015	470	279	
43	8.10	1.6929	400	257		61½	15.00	2.4212	470	279	
43½	8.10	1.7126	400	246		62	15.30	2.4409	470	279	
44	8.40	1.7323	406	252		62½	15.30	2.4606	483	292	
44½	8.40	1.7519	406	252		63	15.60	2.4803	483	292	
45	8.60	1.7717	406	252		63½	15.60	2.5000	483	289	
45½	8.80	1.7914	413	259		64	15.90	2.5197	489	295	
46	8.80	1.8110	413	257		64½	15.90	2.5393	489	295	
46½	9.00	1.8307	413	257		65	16.20	2.5591	489	295	
47	9.20	1.8504	419	264	No. 5	65½	16.50	2.5787	495	302	
47½	9.20	1.8701	419	264		66	16.80	2.5984	495	302	
48	9.35	1.8898	419	264		66½	16.80	2.6181	495	298	
48½	9.35	1.9094	419	264		67	17.20	2.6378	508	311	
49	9.50	1.9291	419	260		67½	17.20	2.6574	508	311	
49½	9.65	1.9488	419	260		68	17.60	2.6772	508	311	
50	9.65	1.9685	419	260		68½	18.30	2.6969	521	324	
50½	9.80	1.9882	419	260		69	18.30	2.7165	521	324	
51	10.20	2.0079	419	241		69½	19.00	2.7362	521	324	
51½	10.20	2.0276	419	241		70	19.00	2.7559	521	321	
52	10.60	2.0473	432	254		70½	19.50	2.7756	521	321	
52½	10.60	2.0670	432	254		71	20.00	2.7952	521	321	
53	10.90	2.0866	432	254		71½	20.00	2.8149	521	321	
53½	11.20	2.1063	432	254		72	20.50	2.8347	533	333	
54	11.20	2.1259	432	254		72½	21.00	2.8543	533	333	
54½	11.60	2.1456	432	254		73	21.00	2.8740	533	330	
55	12.00	2.1654	432	254		73½	22.00	2.8937	533	330	
55½	12.00	2.1851	432	254		74	23.00	2.9134	533	330	
56	12.40	2.2047	445	267		74½	23.00	2.9330	533	330	
56½	12.80	2.2244	445	267		75	24.00	2.9527	559	356	
57	12.80	2.2441	445	257		75½	25.00	2.9724	559	356	
						76	25.00	2.9921	559	352	



Morse No. 104F, with Straight Shanks, Taper Length. Metric Sizes

Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.
1	\$.35	.0394	57	25	11	\$.90	.4330	184	117
1½	.35	.0591	76	32	11½	.95	.4527	191	124
2	.40	.0787	95	35	12	1.00	.4724	191	124
2½	.40	.0984	108	41	12½	1.00	.4921	197	127
3	.45	.1181	130	63	13	1.10	.5118	203	133
3½	.45	.1378	133	70	13½	1.20	.5315	203	133
4	.45	.1575	137	76	14	1.20	.5512	210	137
4½	.50	.1771	140	83	14½	1.30	.5708	216	143
5	.55	.1968	149	95	15	1.30	.5905	216	143
5½	.55	.2165	152	102	15½	1.40	.6102	222	146
6	.60	.2362	156	102	16	1.50	.6299	222	146
6½	.65	.2559	156	102	16½	1.50	.6496	229	149
7	.65	.2756	159	102	17	1.60	.6693	235	152
7½	.70	.2953	162	103	17½	1.70	.6890	235	152
8	.75	.3149	162	103	18	1.70	.7086	241	157
8½	.75	.3346	165	105	18½	1.85	.7283	247	162
9	.80	.3543	172	108	19	1.85	.7480	247	162
9½	.80	.3740	172	108	19½	2.00	.7677	251	165
10	.85	.3937	178	111	20	2.15	.7874	254	168
10½	.90	.4134	181	117					

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Twist Drills

Carbon Steel

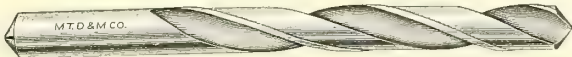
No. 104F (Continued)

Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.
20 ¹ / ₂	\$2.15	.8071	254	168	48 ¹ / ₂	\$9.35	1.9094	419	279
21	2.30	.8267	260	171	49	9.50	1.9291	419	279
21 ¹ / ₂	2.45	.8464	260	171	49 ¹ / ₂	9.65	1.9488	419	279
22	2.45	.8661	267	178	50	9.65	1.9685	419	279
22 ¹ / ₂	2.60	.8858	270	178	50 ¹ / ₂	9.80	1.9882	419	279
23	2.60	.9055	270	178	51	10.20	2.0079	419	244
23 ¹ / ₂	2.75	.9252	273	178	51 ¹ / ₂	10.20	2.0276	419	244
24	2.90	.9449	276	181	52	10.60	2.0473	432	257
24 ¹ / ₂	2.90	.9646	276	181	52 ¹ / ₂	10.60	2.0670	432	257
25	3.00	.9842	279	183	53	10.90	2.0866	432	257
25 ¹ / ₂	3.20	1.0039	279	183	53 ¹ / ₂	11.20	2.1063	432	257
26	3.20	1.0236	282	186	54	11.20	2.1259	432	257
26 ¹ / ₂	3.40	1.0433	286	187	54 ¹ / ₂	11.60	2.1456	432	257
27	3.60	1.0629	286	187	55	12.00	2.1654	432	257
27 ¹ / ₂	3.60	1.0827	292	194	55 ¹ / ₂	12.00	2.1851	432	257
28	3.80	1.1024	298	200	56	12.40	2.2047	445	270
28 ¹ / ₂	3.80	1.1220	298	200	56 ¹ / ₂	12.80	2.2244	445	270
29	4.00	1.1417	302	203	57	12.80	2.2441	445	260
29 ¹ / ₂	4.20	1.1614	302	203	57 ¹ / ₂	13.20	2.2637	445	260
30	4.20	1.1811	305	206	58	13.60	2.2835	445	260
30 ¹ / ₂	4.40	1.2008	308	206	58 ¹ / ₂	13.60	2.3031	445	260
31	4.50	1.2205	308	206	59	14.00	2.3228	457	273
31 ¹ / ₂	4.50	1.2401	317	216	59 ¹ / ₂	14.40	2.3425	457	273
32	4.65	1.2598	317	216	60	14.40	2.3622	457	273
32 ¹ / ₂	4.65	1.2795	359	232	60 ¹ / ₂	14.70	2.3819	470	283
33	4.80	1.2992	362	235	61	14.70	2.4015	470	283
33 ¹ / ₂	5.00	1.3190	365	238	61 ¹ / ₂	15.00	2.4212	470	283
34	5.00	1.3386	365	238	62	15.30	2.4409	470	283
34 ¹ / ₂	5.20	1.3583	368	241	62 ¹ / ₂	15.30	2.4606	483	295
35	5.20	1.3779	368	241	63	15.60	2.4803	483	295
35 ¹ / ₂	5.40	1.3977	372	241	63 ¹ / ₂	15.60	2.5	483	292
36	5.60	1.4173	375	244	64	15.90	2.5197	489	298
36 ¹ / ₂	5.60	1.4370	375	244	64 ¹ / ₂	15.90	2.5393	489	298
37	5.80	1.4567	378	248	65	16.20	2.5591	489	298
37 ¹ / ₂	6.00	1.4764	381	251	65 ¹ / ₂	16.50	2.5787	495	305
38	6.00	1.4961	381	251	66	16.80	2.5984	495	305
38 ¹ / ₂	6.30	1.5157	381	241	66 ¹ / ₂	16.80	2.6181	495	302
39	6.60	1.5354	381	241	67	17.20	2.6378	508	314
39 ¹ / ₂	6.60	1.5551	387	248	67 ¹ / ₂	17.20	2.6574	508	314
40	6.90	1.5748	387	248	68	17.60	2.6772	508	314
40 ¹ / ₂	6.90	1.5945	387	248	68 ¹ / ₂	18.30	2.6969	521	327
41	7.20	1.6142	394	254	69	18.30	2.7165	521	327
41 ¹ / ₂	7.50	1.6338	394	254	69 ¹ / ₂	19.00	2.7362	521	327
42	7.50	1.6536	394	254	70	19.00	2.7559	521	324
42 ¹ / ₂	7.80	1.6733	400	260	70 ¹ / ₂	19.50	2.7756	521	324
43	8.10	1.6929	400	260	71	20.00	2.7952	521	324
43 ¹ / ₂	8.10	1.7126	400	260	71 ¹ / ₂	20.00	2.8149	521	324
44	8.40	1.7323	406	267	72	20.50	2.8347	533	337
44 ¹ / ₂	8.40	1.7519	406	267	72 ¹ / ₂	21.00	2.8543	533	337
45	8.60	1.7717	406	267	73	21.00	2.8740	533	333
45 ¹ / ₂	8.80	1.7914	413	273	73 ¹ / ₂	22.00	2.8937	533	333
46	8.80	1.8110	413	273	74	23.00	2.9134	533	333
46 ¹ / ₂	9.00	1.8307	413	273	74 ¹ / ₂	23.00	2.9330	533	333
47	9.20	1.8504	419	279	75	24.00	2.9527	559	359
47 ¹ / ₂	9.20	1.8701	419	279	75 ¹ / ₂	25.00	2.9724	559	359
48	9.35	1.8898	419	279	76	25.00	2.9921	559	356

Drills 51 to 76 mm. diameter have shanks 45 mm. diameter, 152 mm. long

Twist Drills

Carbon Steel



Morse No. 105A, with Straight Shanks.

Jobbers Lengths.

Metric Sizes

Diameter MM.	Per Dozen	Diameter in Decimals of 1 Inch	Approximate Whole Length MM.	Approximate Length Twist Cut MM.	Diameter MM.	Per Dozen	Diameter in Decimals of 1 Inch	Approximate Whole Length MM.	Approximate Length Twist Cut MM.
.5	\$.90	.0197	25	6.5	4.6	\$2.25	.1811	88	57.
.55	.90	.0216	27	6.5	4.7	2.25	.1850	89	58.
.6	.90	.0236	30	9.5	4.8	2.25	.1890	90	58.5
.65	.90	.0256	31	11.	4.9	2.25	.1929	92	60.5
.7	.90	.0276	34	14.5	5.	2.25	.1968	93	62.
.75	.90	.0296	35	14.5	5.1	2.35	.2008	95	63.5
.8	.90	.0315	37	14.5	5.2	2.35	.2047	96	64.5
.85	.90	.0335	37	14.5	5.3	2.35	.2087	98	66.
.9	.90	.0354	38	16.	5.4	2.35	.2126	99	66.5
.95	.90	.0374	38	16.	5.5	2.35	.2165	100	66.5
1.	.90	.0394	39	17.5	5.6	2.90	.2205	100	66.5
1.05	.95	.0413	39	17.5	5.7	2.90	.2244	100	66.5
1.1	.95	.0433	43	20.	5.8	2.90	.2283	102	67.5
1.15	.95	.0453	43	20.	5.9	2.90	.2323	102	67.5
1.2	.95	.0472	44	20.5	6.	2.90	.2362	102	67.5
1.25	.95	.0492	44	20.5	6.1	3.15	.2402	102	67.5
1.3	.95	.0512	44	20.5	6.2	3.15	.2441	102	67.5
1.35	.95	.0532	45	21.5	6.3	3.15	.2480	102	67.5
1.4	.95	.0551	46	21.5	6.4	3.15	.2520	102	67.5
1.45	.95	.0571	46	21.5	6.5	3.15	.2559	105	73.
1.5	.95	.0591	46	21.5	6.6	3.65	.2598	105	73.
1.55	1.10	.0610	48	22.	6.7	3.65	.2638	105	73.
1.6	1.10	.0630	48	22.	6.8	3.65	.2677	108	76.
1.65	1.10	.0650	49	24.	6.9	3.65	.2716	108	76.
1.7	1.10	.0669	49	24.	7.	3.65	.2756	108	76.
1.75	1.10	.0689	49	24.	7.1	3.90	.2795	108	76.
1.8	1.10	.0709	51	25.5	7.2	3.90	.2835	108	76.
1.85	1.10	.0728	51	25.5	7.3	3.90	.2874	108	76.
1.9	1.10	.0748	52	27.	7.4	3.90	.2913	108	76.
1.95	1.10	.0768	53	28.	7.5	3.90	.2953	111	78.5
2.	1.10	.0787	53	28.	7.6	4.20	.2992	111	78.5
2.05	1.25	.0807	54	28.5	7.7	4.20	.3031	111	78.5
2.1	1.25	.0827	56	30.	7.8	4.20	.3071	111	78.5
2.15	1.25	.0846	56	30.	7.9	4.20	.3110	111	78.5
2.2	1.25	.0866	57	31.	8.	4.20	.3150	114	81.
2.25	1.25	.0886	57	31.	8.1	4.80	.3189	114	81.
2.3	1.25	.0905	58	31.5	8.2	4.80	.3228	117	84.
2.35	1.25	.0925	58	31.5	8.3	4.80	.3268	117	84.
2.4	1.25	.0945	59	33.5	8.4	4.80	.3307	117	84.
2.45	1.25	.0965	59	33.5	8.5	4.80	.3346	117	84.
2.5	1.25	.0984	60	34.	8.6	5.10	.3386	121	87.5
2.6	1.40	.1024	63	36.5	8.7	5.10	.3425	121	87.5
2.7	1.40	.1063	65	38.	8.8	5.10	.3465	121	87.5
2.8	1.40	.1102	67	39.5	8.9	5.10	.3504	121	87.5
2.9	1.40	.1142	69	41.5	9.	5.10	.3543	124	89.5
3.	1.40	.1181	70	43.	9.1	5.40	.3583	124	89.5
3.1	1.55	.1220	70	43.	9.2	5.40	.3622	124	89.5
3.2	1.55	.1260	71	43.5	9.3	5.40	.3661	124	89.5
3.3	1.55	.1299	71	43.5	9.4	5.40	.3701	124	89.5
3.4	1.55	.1339	72	44.5	9.5	5.40	.3740	127	93.
3.5	1.55	.1378	73	46.	9.6	5.70	.3779	127	93.
3.6	1.75	.1417	73	46.	9.7	5.70	.3819	127	93.
3.7	1.75	.1457	74	47.	9.8	5.70	.3858	130	95.
3.8	1.75	.1496	76	48.5	9.9	5.70	.3898	130	95.
3.9	1.75	.1535	78	50.	10.	5.70	.3937	130	95.
4.	1.75	.1575	79	51.	10.5	6.00	.4134	133	97.5
4.1	1.95	.1614	81	52.5	11.	6.80	.4331	140	104.
4.2	1.95	.1653	83	53.	11.5	7.20	.4528	143	106.5
4.3	1.95	.1693	84	54.	12.	7.50	.4724	146	108.5
4.4	1.95	.1732	85	55.	12.5	8.00	.4921	162	111.
4.5	1.95	.1772	86	55.5	13.	10.00	.5118	167	114.5

For prices of these Drills in sets see page 48

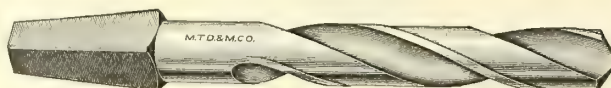
SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Twist Drills

Carbon Steel



Morse No. 109 $\frac{1}{2}$ E, Taper Square Shanks
Fitting Ratchets. Metric Sizes

Small Shank or No. 1—Size of Shank 9 $\frac{1}{2}$ x 16 x 38 mm.

Large Shank or No. 2—Size of Shank, 12 $\frac{1}{2}$ x 19 x 44 $\frac{1}{2}$ mm.

No. 1 or Small Size Shank always furnished unless otherwise specified

When ordering Taper Square Shank Drills for Packer Ratchet, please state number of ratchet and name of manufacturer

Diameter MM.	Each	Small Shank Whole Length MM.	Twist Cut MM.	Large Shank Whole Length MM.	Twist Cut MM.	Diameter in Decimals of 1 Inch	Diameter MM.	Each	Small Shank Whole Length MM.	Twist Cut MM.	Large Shank Whole Length MM.	Twist Cut MM.	Diameter in Decimals of 1 Inch
3	\$.85	106	43	113	43	.1181	19 $\frac{1}{2}$	\$1.65	171	113	171	106	.7677
3 $\frac{1}{2}$	.85	110	46	116	46	.1378	20	1.65	171	113	171	106	.7874
4	.90	113	51	119	51	.1575	20 $\frac{1}{2}$	1.75	178	119	178	113	.8071
4 $\frac{1}{2}$	.90	119	56	125	56	.1772	21	1.85	184	125	184	119	.8268
5	.95	119	62	125	62	.1968	21 $\frac{1}{2}$	1.95	184	125	184	119	.8465
5 $\frac{1}{2}$	1.00	122	67	129	67	.2165	22	2.05	190	132	190	125	.8661
6	1.00	124	67	130	67	.2362	22 $\frac{1}{2}$	2.15	197	138	197	132	.8858
6 $\frac{1}{2}$	1.00	127	65	127	59	.2559	23	2.20	197	138	197	132	.9055
7	1.05	127	65	127	59	.2756	23 $\frac{1}{2}$	2.25	203	144	203	138	.9252
7 $\frac{1}{2}$	1.10	127	65	127	59	.2953	24	2.30	203	144	203	138	.9449
8	1.10	127	65	127	59	.3150	24 $\frac{1}{2}$	2.40	210	151	210	144	.9646
8 $\frac{1}{2}$	1.15	127	70	127	63	.3346	25	2.50	216	157	216	151	.9842
9	1.20	152	95	152	89	.3543	25 $\frac{1}{2}$	2.60	216	157	216	151	1.0039
9 $\frac{1}{2}$	1.20	152	95	152	89	.3740	26	2.70	222	164	222	157	1.0236
10	1.25	159	102	159	95	.3937	26 $\frac{1}{2}$	2.75	229	170	229	164	1.0433
10 $\frac{1}{2}$	1.25	159	102	159	95	.4134	27	2.85	229	170	229	164	1.0630
11	1.25	159	102	159	95	.4331	27 $\frac{1}{2}$	3.00	229	170	229	164	1.0827
11 $\frac{1}{2}$	1.30	159	102	159	95	.4528	28	3.05	229	170	229	164	1.1024
12	1.30	159	102	159	95	.4724	28 $\frac{1}{2}$	3.10	229	170	229	164	1.1220
12 $\frac{1}{2}$	1.30	165	108	165	102	.4921	29	3.25	229	170	229	164	1.1417
13	1.35	165	108	165	102	.5118	29 $\frac{1}{2}$	3.30	229	170	229	164	1.1614
13 $\frac{1}{2}$	1.35	165	108	165	102	.5315	30	3.35	229	170	229	164	1.1811
14	1.35	165	108	165	102	.5512	30 $\frac{1}{2}$	3.40	229	170	229	164	1.2008
14 $\frac{1}{2}$	1.40	165	108	165	102	.5709	31	3.50	229	170	229	164	1.2205
15	1.40	165	108	165	102	.5905	31 $\frac{1}{2}$	3.65	229	170	229	164	1.2402
15 $\frac{1}{2}$	1.40	165	108	165	102	.6102	32	3.70	229	170	229	164	1.2598
16	1.45	165	108	165	102	.6299	33	3.90	229	170	229	164	1.2992
16 $\frac{1}{2}$	1.45	165	106	165	102	.6496	34	4.05	229	170	229	164	1.3386
17	1.45	165	106	165	102	.6693	35	4.20	229	170	229	164	1.3779
17 $\frac{1}{2}$	1.50	165	106	165	102	.6890	36	4.45	229	170	229	164	1.4173
18	1.50	165	106	165	102	.7087	37	4.65	229	170	229	164	1.4567
18 $\frac{1}{2}$	1.55	165	106	165	102	.7283	38	4.80	229	170	229	164	1.4961
19	1.55	165	106	165	102	.7480							

Morse No. 109 $\frac{1}{2}$, Bit Stock. For Metal or Wood. Metric Sizes

For illustration see No. 109, page 33

Diameter MM.	Carbon Per Dozen	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Diameter MM.	Carbon Per Dozen	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.
1	\$1.40	.0394	76	16	13 $\frac{1}{2}$	\$12.70	.5315	190	132
1 $\frac{1}{2}$	1.50	.0591	83	21	14	14.35	.5512	190	132
2	1.65	.0787	87	28	14 $\frac{1}{2}$	14.95	.5709	190	132
2 $\frac{1}{2}$	1.90	.0984	95	34	15	15.55	.5905	190	132
3	2.10	.1181	103	43	15 $\frac{1}{2}$	15.85	.6102	190	132
3 $\frac{1}{2}$	2.35	.1378	94	46	16	16.15	.6299	190	129
4	2.60	.1575	100	51	16 $\frac{1}{2}$	17.35	.6496	190	129
4 $\frac{1}{2}$	3.10	.1772	106	56	17	17.95	.6693	190	129
5	3.35	.1969	113	62	17 $\frac{1}{2}$	18.55	.6890	190	129
5 $\frac{1}{2}$	3.60	.2165	119	67	18	19.15	.7087	190	129
6	3.85	.2362	132	81	18 $\frac{1}{2}$	19.45	.7283	190	129
6 $\frac{1}{2}$	4.10	.2559	132	81	19	19.75	.7480	190	127
7	4.70	.2756	137	86	19 $\frac{1}{2}$	20.35	.7677	190	127
7 $\frac{1}{2}$	5.05	.2953	140	89	20	20.95	.7874	190	127
8	5.40	.3150	140	89	20 $\frac{1}{2}$	21.55	.8071	190	127
8 $\frac{1}{2}$	6.30	.3446	149	98	21	22.75	.8268	190	127
9	6.75	.3543	149	98	21 $\frac{1}{2}$	23.05	.8465	190	127
9 $\frac{1}{2}$	7.20	.3740	149	98	22	23.35	.8661	190	127
10	8.00	.3937	149	92	22 $\frac{1}{2}$	23.95	.8858	190	127
10 $\frac{1}{2}$	8.40	.4134	159	102	23	24.55	.9055	190	127
11	8.80	.4331	159	102	23 $\frac{1}{2}$	25.15	.9252	190	127
11 $\frac{1}{2}$	9.60	.4528	168	111	24	25.75	.9449	190	125
12	9.95	.4724	168	111	24 $\frac{1}{2}$	26.95	.9646	190	125
12 $\frac{1}{2}$	10.30	.4921	171	113	25	28.15	.9842	190	125
13	11.00	.5118	190	132					

These Bit Stock Drills will fit any brace in the market, and will drill steel, iron or other metals as well as wood. They are not injured by contact with screws or nails and will bore straight in any kind of wood without splitting it.

Shell Drills

Carbon Steel



Angle of Spiral, 15 degrees

Morse No. 102 H, with Taper Holes

Morse No. 102½ H, with Straight Holes

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Diameter of Hole Inch	Diameter Inches	Each	Whole Length Inches	Diameter of Hole Inches
1 11⁄16	\$3.80	3 1⁄2	2 3⁄4	1	1 1⁄16	\$1.80	2 5⁄8	1⁄2	3 1⁄16	\$9.90	3	1
1 3⁄4	4.10	3 1⁄2	2 3⁄4	1	1 1⁄8	1.90	2 5⁄8	1⁄2	3 1⁄8	10.20	3	1
1 13⁄16	4.40	3 1⁄2	2 3⁄4	1	1 3⁄16	2.00	2 5⁄8	1⁄2	3 3⁄16	10.60	3	1
1 7⁄8	4.70	3 1⁄2	2 3⁄4	1	1 1⁄4	2.20	2 5⁄8	1⁄2	3 1⁄4	11.00	3 1⁄4	1 1⁄4
1 15⁄16	5.00	3 1⁄2	2 3⁄4	1	1 5⁄16	2.40	2 5⁄8	1⁄2	3 5⁄16	11.50	3 1⁄4	1 1⁄4
2	5.20	3 1⁄2	2 3⁄4	1								
2 1⁄16	5.40	3 3⁄4	3	1 1⁄4	1 3⁄8	2.60	2 3⁄4	5⁄8	3 3⁄8	12.00	3 1⁄4	1 1⁄4
2 1⁄8	5.60	3 3⁄4	3	1 1⁄4	1 7⁄16	2.80	2 3⁄4	5⁄8	3 7⁄16	12.50	3 1⁄4	1 1⁄4
2 1⁄4	5.80	3 3⁄4	3	1 1⁄4	1 1⁄2	3.00	2 3⁄4	5⁄8	3 1⁄2	13.00	3 1⁄4	1 1⁄4
2 1⁄2	6.00	3 3⁄4	3	1 1⁄4	1 9⁄16	3.20	2 3⁄4	5⁄8	3 9⁄16	13.50	3 1⁄4	1 1⁄4
2 5⁄8	6.20	3 3⁄4	3	1 1⁄4	1 5⁄8	3.50	2 3⁄4	5⁄8	3 5⁄8	14.00	3 1⁄4	1 1⁄4
2 3⁄4	6.40	3 3⁄4	3	1 1⁄4	1 11⁄16	3.80	2 3⁄4	5⁄8	3 11⁄16	14.50	3 1⁄4	1 1⁄4
2 7⁄8	6.60	3 3⁄4	3	1 1⁄4								
2 1⁄2	6.80	3 3⁄4	3	1 1⁄4	1 3⁄4	4.10	2 3⁄4	5⁄8	3 3⁄4	15.00	3 5⁄8	1 1⁄2
2 9⁄16	7.00	4	3 1⁄4	1 1⁄2	1 13⁄16	4.40	2 3⁄4	5⁄8	3 13⁄16	15.50	3 5⁄8	1 1⁄2
2 5⁄8	7.30	4	3 1⁄4	1 1⁄2	1 7⁄8	4.70	2 3⁄4	3⁄4	3 7⁄8	16.00	3 5⁄8	1 1⁄2
2 11⁄8	7.60	4	3 1⁄4	1 1⁄2	1 15⁄16	5.00	2 3⁄4	3⁄4	3 15⁄16	17.00	3 5⁄8	1 1⁄2
2 3⁄4	8.00	4	3 1⁄4	1 1⁄2	2	5.20	2 3⁄4	3⁄4	4	18.00	3 5⁄8	1 1⁄2
2 11⁄8	8.40	4	3 1⁄4	1 1⁄2	2 1⁄16	5.40	2 3⁄4	3⁄4	4 1⁄16	18.30	3 5⁄8	1 1⁄2
2 7⁄8	8.80	4	3 1⁄4	1 1⁄2								
2 1⁄2	9.20	4	3 1⁄4	1 1⁄2	2 1⁄8	5.60	2 3⁄4	3⁄4	4 1⁄8	18.60	3 5⁄8	1 1⁄2
3	9.60	4	3 1⁄4	1 1⁄2	2 3⁄16	5.80	2 3⁄4	3⁄4	4 3⁄16	19.00	3 5⁄8	1 1⁄2
3 1⁄16	9.90	4 1⁄2	3 5⁄8	1 3⁄4	2 1⁄4	6.00	2 3⁄4	3⁄4	4 1⁄4	19.40	4	2
3 1⁄8	10.20	4 1⁄2	3 5⁄8	1 3⁄4	2 5⁄16	6.20	2 3⁄4	3⁄4	4 5⁄16	19.80	4	2
3 3⁄16	10.60	4 1⁄2	3 5⁄8	1 3⁄4	2 3⁄8	6.40	2 3⁄4	3⁄4	4 3⁄8	20.20	4	2
3 1⁄4	11.00	4 1⁄2	3 5⁄8	1 3⁄4	2 7⁄16	6.60	2 3⁄4	3⁄4	4 7⁄16	20.60	4	2
3 5⁄16	11.50	4 1⁄2	3 5⁄8	1 3⁄4								
3 3⁄8	12.00	4 1⁄2	3 5⁄8	1 3⁄4	2 1⁄2	6.80	3	1	4 1⁄2	21.00	4	2
3 7⁄16	12.50	4 1⁄2	3 5⁄8	1 3⁄4	2 9⁄16	7.00	3	1	4 9⁄16	21.60	4	2
3 1⁄2	13.00	4 1⁄2	3 5⁄8	1 3⁄4	2 5⁄8	7.30	3	1	4 5⁄8	22.20	4	2
3 9⁄16	13.50	5	4	2	2 11⁄16	7.60	3	1	4 11⁄16	22.80	4	2
3 5⁄8	14.00	5	4	2	2 3⁄4	8.00	3	1	4 3⁄4	23.40	4	2
3 11⁄16	14.50	5	4	2	2 13⁄16	8.40	3	1	4 13⁄16	24.00	4	2
3 3⁄4	15.00	5	4	2								
3 13⁄16	15.50	5	4	2	2 7⁄8	8.80	3	1	4 7⁄8	24.60	4	2
3 7⁄8	16.00	5	4	2	2 15⁄16	9.20	3	1	4 15⁄16	25.20	4	2
3 15⁄16	17.00	5	4	2	3	9.60	3	1	5	26.00	4	2
4	18.00	5	4	2								
4 1⁄16	18.30	5 1⁄2	4 3⁄8	2 1⁄4								
4 1⁄8	18.60	5 1⁄2	4 3⁄8	2 1⁄4								
4 3⁄16	19.00	5 1⁄2	4 3⁄8	2 1⁄4								
4 1⁄4	19.40	5 1⁄2	4 3⁄8	2 1⁄4								
4 5⁄16	19.80	5 1⁄2	4 3⁄8	2 1⁄4								
4 3⁄8	20.20	5 1⁄2	4 3⁄8	2 1⁄4								
4 7⁄16	20.60	5 1⁄2	4 3⁄8	2 1⁄4								
4 1⁄2	21.00	5 1⁄2	4 3⁄8	2 1⁄4								
4 9⁄16	21.60	6	4 3⁄4	2 1⁄2								
4 5⁄8	22.20	6	4 3⁄4	2 1⁄2								
4 11⁄16	22.80	6	4 3⁄4	2 1⁄2								
4 3⁄4	23.40	6	4 3⁄4	2 1⁄2								
4 13⁄16	24.00	6	4 3⁄4	2 1⁄2								
4 7⁄8	24.60	6	4 3⁄4	2 1⁄2								
4 15⁄16	25.20	6	4 3⁄4	2 1⁄2								
5	26.00	6	4 3⁄4	2 1⁄2								

Shell Drills 1 1⁄16 inches to and including 3 1⁄2 inches have four flutes; 3 1⁄8 inches to and including 5 inches have six flutes.

Shell Drills take the same Arbors as regular Shell Reamers. These Arbors are illustrated on pages 85 and 86.

These Drills are made .010 under size, and are intended to be used as a Roughing Tool in a cored or drilled hole.
For Arbors fitting these Drills see pages 85 and 86.
For Shell Reamers used in connection with these Drills, see Nos. 117C, page 66, and 120M A, page 80.

Suggestions for Ordering Drills

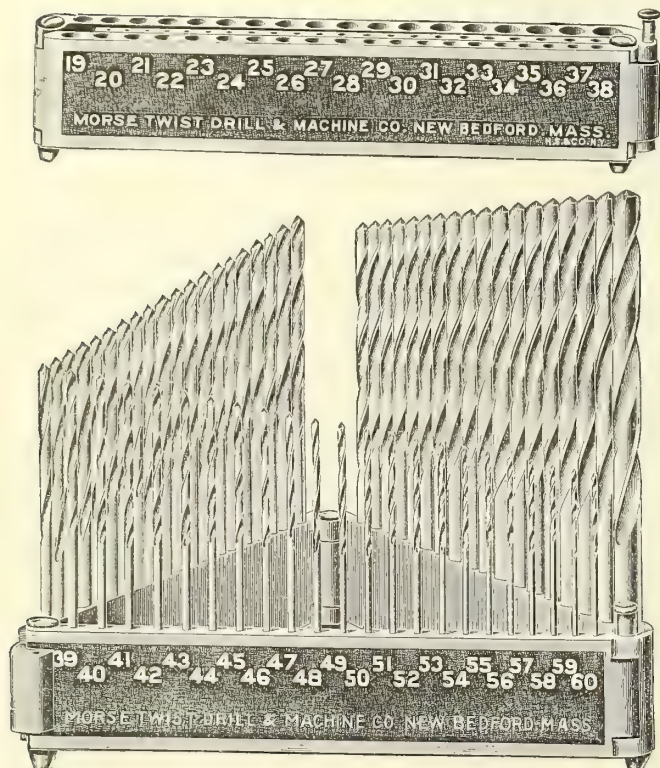
Regular Drills—Always order by catalogue number.
Special Drills—Refer to the catalogue number for general style of tool required, giving also the following information:
Special Straight Shank Drills—Give length over all and length of twist cut.

Special Morse Taper Shank Drills—Give length over all and length of twist cut. If a special taper shank is required, give length of shank and diameter at each end. If the shank has a tang give thickness and length. If no tang so state on the order.

Sets of Drills

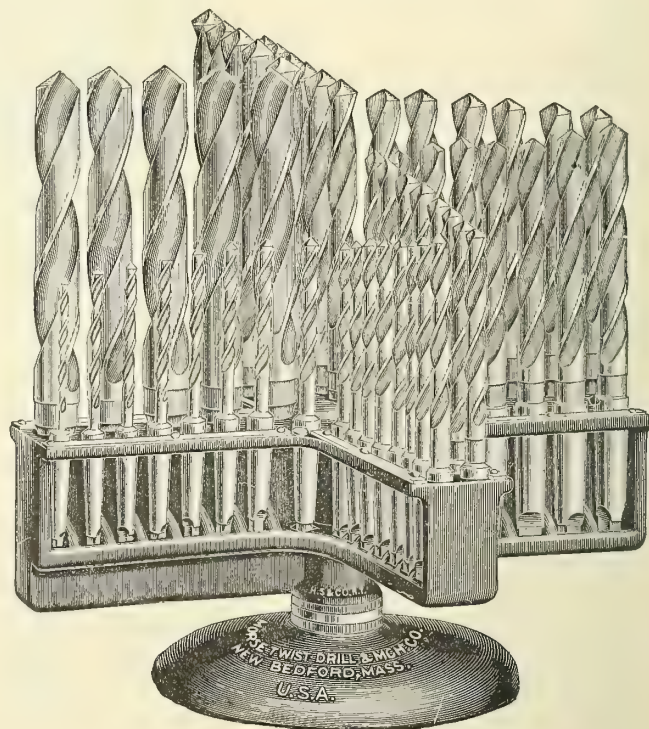
In Holders and Stands

Morse Straight Shank Drills
In Folding or Portable Holders



	Per Set
No. 5 B. Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths, Style No. 105.....	\$12.50
No. 7 B. Set Drills, from No. 60 to $\frac{3}{8}$ inch, Style Nos. 105 and 107.....	12.50
No. 8 B. Set Drills, Wire Drill Gauge from No. 1 to 60, Style No. 107.....	9.75
No. 15 B. Set Drills, Straight Shanks, A to Z, Style No. 106..	12.50
No. 18 B. Set Drills, Straight Shanks, .5 mm. to 6 mm. by $\frac{1}{10}$ mm., Style No. 105 A.....	9.70
No. 19 B. Set Drills, Straight Shanks, 1 mm. to 13 mm. by $\frac{1}{2}$ mm., Style No. 105 A.....	10.85
Holders without Drills, for sets 8B and 18B.....	1.00
Holders without Drills, for sets 5B, 7B, 15B and 19B.....	1.25

Morse Taper Shank Drills
In Revolving Stands



The Revolving Head in which the Drills are placed is mounted on ball bearings.

Holds Taper Shank Drills from $\frac{3}{16}$ to 1 inch by 64ths, Style No. 102.

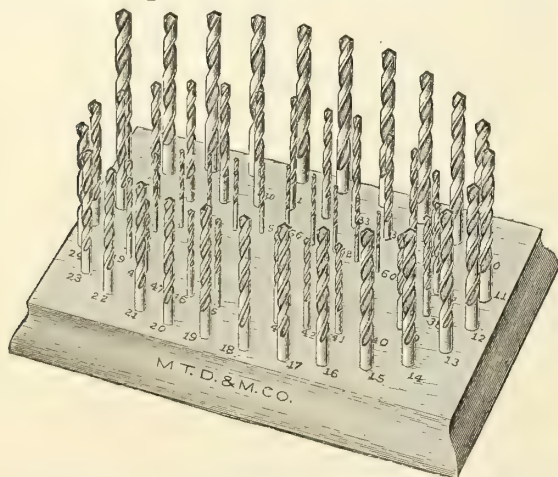
Dimensions of Stand 14 x 14 x 6 $\frac{1}{4}$ inches.

Height including Drills 14 inches.

Set of Drills including Stand..... \$100.00

Stand without Drills..... 7.50

Morse Straight Shank Drills in Wooden Blocks



Mounted as Shown

	Per Set
No. 5. Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths, Style No. 105.....	\$10.00
No. 6. Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 32nds, Style No. 105.....	5.40
No. 7. Set Drills, from No. 60 to $\frac{3}{8}$ inch (65 drills) Style Nos. 105 and 107.....	9.90
No. 8. Set Drills, Wire Drill Gauge, from No. 1 to 60, Style No. 107.....	8.10
No. 9. Half Set Drills, alternate numbers from 1 to 59, Style No. 107.....	4.30
No. 15. Set Drills, Straight Shanks, A to Z, Style No. 106...	10.00
No. 16. Set Drills, Straight Shanks, No. 1 to 70, Style No. 107.....	8.85
No. 17. Set Drills, Straight Shanks, No. 1 to 80, Style 107..	9.70
No. 18. Set Drills, Straight Shanks, .5 mm. to 6 mm. by $\frac{1}{10}$ mm., Style No. 105A.....	8.10
No. 19. Set Drills, Straight Shanks, 1 mm. to 13 mm. by $\frac{1}{2}$ mm., Style No. 105A.....	8.70
Block without Drills for sets Nos. 5, 6, 7, 8, 9, 15.....	.35
Block without Drills for sets Nos. 16, 17, 18.....	.50
Block without Drills for set No. 19.....	.45

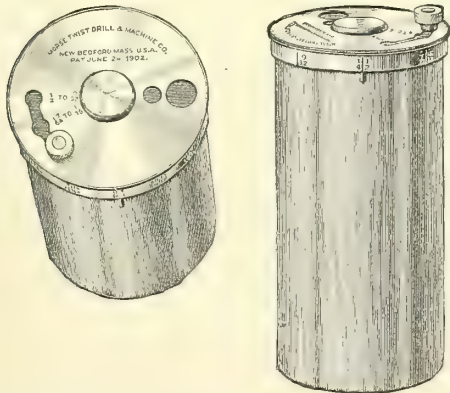
SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Sets of Drills

Morse Straight Shank Drills in Indexed Cases



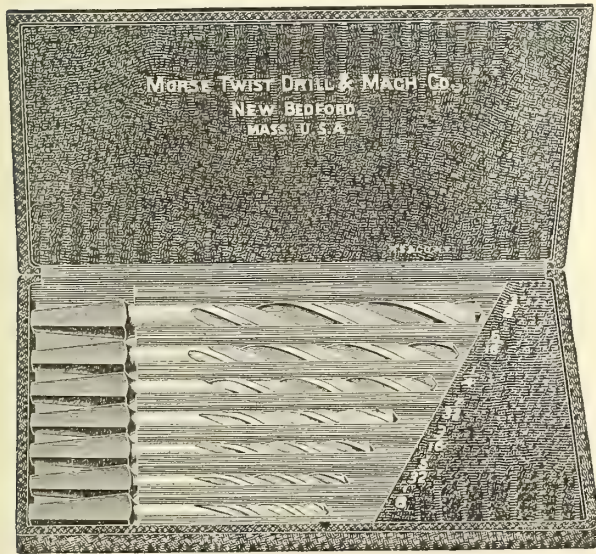
The Drills in Patented Indexed Case, as illustrated above, are contained in holes arranged in concentric circles in the block. Over them is a swinging cover with holes to match each circle. The swinging cover can be moved by the small knob shown, so that its holes will register with the holes in the outer cover or cap. Around the edge of the cap are stamped the sizes of the various drills. The cap is turned to bring any size in line with an index mark and by inverting the case the selected drill will drop out.

	Per Set
No. 5A. Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths, Style No. 105.....	\$11.50
No. 6A. Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 32nds, Style No. 105.....	6.90
No. 7A. Set Drills, from No. 60 to $\frac{3}{8}$ inch, Styles Nos. 105 and 107.....	11.40
No. 8A. Set Drills, Wire Drill Gauge, from No. 1 to 60, Style No. 107.....	9.60
No. 9A. Half Set Drills, alternate numbers from 1 to 59, Style No. 107.....	5.80
No. 13A. Set Bit Stock Drills, $\frac{1}{16}$ to $\frac{1}{4}$ inch by 32nds, $\frac{5}{16}$ to $\frac{3}{8}$ inch by 16ths, Style 109.....	4.10

Morse Indexed Cases Without Drills

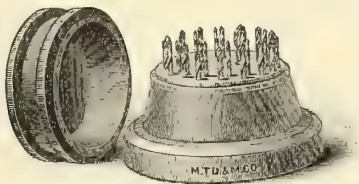
	Each
No. 5A. Holds Straight Shank Drills $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths...	\$1.25
No. 6A. Holds Straight Shank Drills $\frac{1}{16}$ to $\frac{1}{2}$ inch by 32nds.	1.25
No. 7A. Holds Straight Shank Drills from No. 60 to $\frac{3}{8}$ inch..	1.25
No. 8A. Holds Wire Gauge Drills from No. 1 to 60.....	1.25
No. 9A. Holds Half Set Drills, alternate numbers from 1 to 59.	1.25
No. 13A. Holds Bit Stock Drills $\frac{1}{16}$ to $\frac{1}{4}$ by 32nds, $\frac{5}{16}$ to $\frac{3}{8}$ by 16ths.....	1.25

Morse Bit Stock Drills in Leatherette Cases



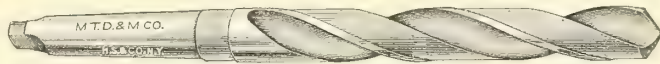
	Per Set
No. 25. Set Bit Stock Drills, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$ inch, in case, Style No. 109.....	\$2.65

Morse Jewelers Drills in Mahogany Cases



	Per Set
No. 10. Jewelers Set of 36 Drills, No. 30 ($\frac{1}{8}$ inch) to No. 65 Wire Drill Gauge.....	\$4.25
Case without Drills.....	.75

Taper Shank Drills



Morse No. 102

	Per Set
No. 1. Set of Taper Shank Drills, $\frac{1}{4}$ to 1 inch varying by 16ths.....	\$20.00
No. 2. Set of Taper Shank Drills, $\frac{3}{8}$ to $1\frac{1}{4}$ inches varying by 16ths.....	34.50
No. 3. Set of Taper Shank Drills, $\frac{3}{8}$ to $\frac{3}{4}$ inch by 32nds, $\frac{13}{16}$ to $1\frac{1}{4}$ inches by 16ths.....	42.00
No. 4. Set of Taper Shank Drills, $\frac{3}{8}$ to $\frac{3}{4}$ inch by 32nds, $\frac{13}{16}$ to $1\frac{1}{2}$ inches by 16ths, $\frac{9}{16}$ to 2 inches by 16ths.....	\$64.00 131.00
No. 11. Set of Taper Shank Drills, $\frac{3}{8}$ to $1\frac{1}{2}$ in. by 32nds, $1\frac{1}{2}$ to 2 inches by 32nds.....	109.85 242.55

Note—Prices of Sets of Straight Shank Taper Length Drills will be the same as above list.

Morse Bit Stock Drills in Wooden Cases



	Per Set
No. 14. Set of Bit Stock Drills, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{5}{16}$ $\frac{3}{8}$ inch, in case.....	\$2.75

Information as to the Use of Drills

With Holes or Channels for Lubricants



not made smaller than $\frac{3}{8}$ diameter except at customer's risk. Sizes $\frac{1}{32}$ and smaller are furnished with one oil hole only. They can be furnished with two if especially ordered, but at customer's risk.

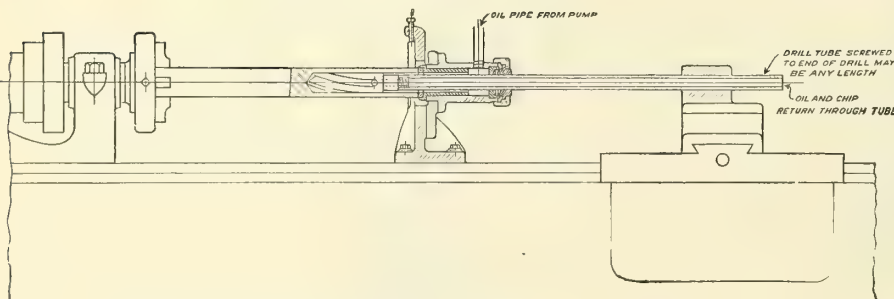
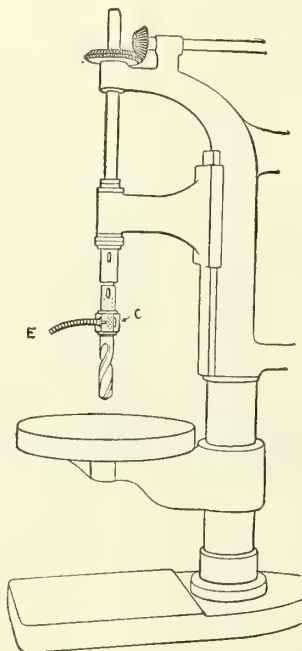
These Drills have holes through the solid metal and have great advantages over any other Drills devised for conveying lubricants as well as air to the points. Air is sometimes used for blowing out the chips and keeping the drill cool.

Cut showing method of supplying a Drill with oil, the Drill revolving.

For Drills with oil holes of this style see No. 102C, page 51.

For Sockets of this style see Nos. 100D and 100E, page 55.

A flexible tube E conveys oil from the oil pump to the chuck C, which admits of passage of oil to the point of the Drill.

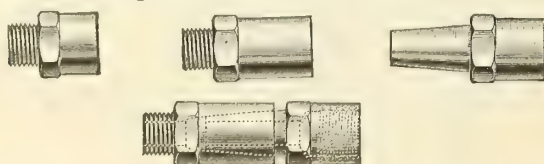


Cut showing manner of applying a Hollow Drill for drilling deep holes.

For Hollow Drills, see No. 114D, on page 53.

In using the Hollow Drill the hole is first to be started by means of a short Drill of the size of the hole desired, and drilled to a depth equal to the length of the body of the Hollow Drill afterwards to be employed. The body of the Hollow Drill acts as a stuffing, compelling the oil to follow the grooves and the chips to flow out through the hollow shank.

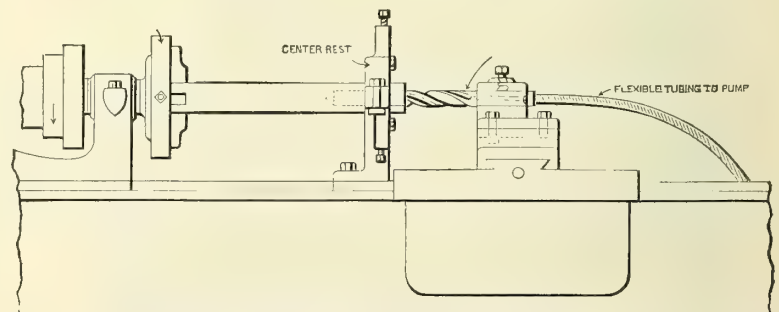
Cups For Use in Oil Drills



In ordering new cups give size of drill in which they are to be used.

Various devices have been used to convey the lubricant to the points, the early methods providing for an inserted tube. The latest improvements, however, provide holes through the solid metal, drills of this style being made solely by the Morse Twist Drill & Machine Co., under patents owned by it, dated September 7, 1897.

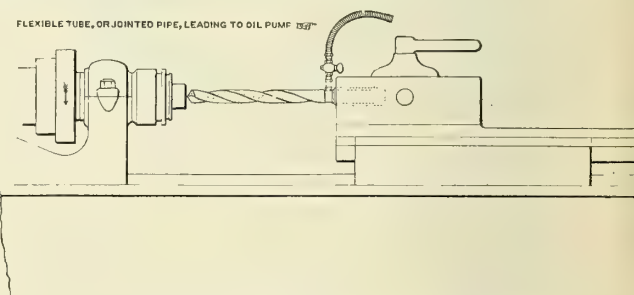
All Oil Drills $2\frac{1}{2}$ inches and smaller in diameter have holes through the solid metal, while with sizes larger than $2\frac{1}{2}$ inches it has been found advisable to mill the oil channels and cover them. These Drills are



Cut showing method of applying a Drill with oil holes; the Drill not to revolve.

The Drills are furnished with Straight or Taper Shanks, as desired.

For Drills with oil holes of this style see Nos. 102B, 104B, 104D, 104E, 104K and 104L on pages 51, 52 and 53.



Cut showing a Drill with oil holes as used in a Turret Head Lathe, the Drill not to revolve.

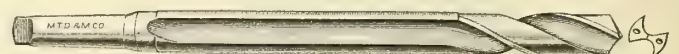
The Drills are furnished with Straight or Taper Shanks, as desired.

For Drills with oil holes of this style, see Nos. 102A and 104A on pages 51 and 52.

Oil Drills of Special Lengths



Morse No. 104C, with Straight Shanks



Morse No. 102D, with Taper Shanks

These cuts are a reproduction on a small scale of Drills which were actually made and used with eminent satisfaction, the proportion of the cuts to the drills being correct. The actual dimensions of the drills were, diameter $3\frac{1}{2}$ inches; whole length 52 inches; length of shank $8\frac{5}{16}$ inches.

SINCE
1848

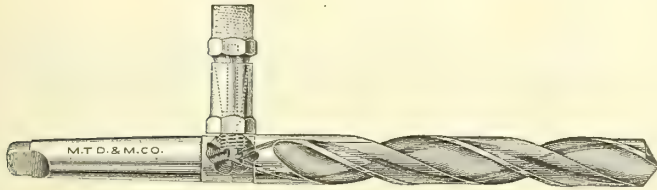
HAMMACHER SCHLEMMER & Co.

NEW
YORK

Oil Twist Drills

Carbon Steel

With Holes Through Solid Metal for Lubricant



Morse No. 102A, with Taper Shanks



Morse No. 102B, with Taper Shanks



Morse No. 102C, with Taper Shanks

Drills $\frac{1}{8}$ and smaller are furnished with one oil hole only. They can be furnished with two if ordered, but at customer's risk
These Drills also furnished in high speed steel. Prices on application

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches No. 102A	Twist Cut Inches Nos. 102B & C	Morse Taper Shank
$\frac{3}{8}$	\$3.00	$6\frac{3}{4}$	$3\frac{5}{16}$	$3\frac{7}{16}$	
$\frac{7}{16}$	3.15	7	$3\frac{9}{16}$	$3\frac{11}{16}$	
$\frac{1}{2}$	3.15	7	$3\frac{9}{16}$	$3\frac{11}{16}$	
$\frac{5}{8}$	3.30	$7\frac{1}{4}$	$3\frac{13}{16}$	$3\frac{15}{16}$	
$\frac{3}{4}$	3.30	$7\frac{1}{4}$	$3\frac{13}{16}$	$3\frac{15}{16}$	
$\frac{7}{8}$	3.85	$7\frac{1}{2}$	$4\frac{1}{16}$	$4\frac{3}{16}$	
$1\frac{1}{8}$	3.85	$7\frac{1}{2}$	$4\frac{1}{16}$	$4\frac{3}{16}$	
$1\frac{1}{4}$	4.00	$7\frac{3}{4}$	$4\frac{5}{16}$	$4\frac{7}{16}$	
$1\frac{3}{8}$	4.00	$7\frac{3}{4}$	$4\frac{5}{16}$	$4\frac{7}{16}$	
$1\frac{1}{2}$	4.15	8	$4\frac{9}{16}$	$4\frac{11}{16}$	
$1\frac{3}{4}$	4.15	8	$4\frac{9}{16}$	$4\frac{11}{16}$	
2	4.30	$8\frac{1}{4}$	$4\frac{13}{16}$	$4\frac{15}{16}$	
$2\frac{1}{4}$	4.30	$8\frac{1}{4}$	$4\frac{13}{16}$	$4\frac{15}{16}$	
$2\frac{1}{2}$	4.50	$8\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{5}{8}$	
$2\frac{3}{4}$	4.50	$8\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{5}{8}$	
3	4.70	$8\frac{3}{4}$	$4\frac{3}{4}$	$4\frac{5}{8}$	
$3\frac{1}{4}$	4.70	$8\frac{3}{4}$	$4\frac{3}{4}$	$4\frac{5}{8}$	
$3\frac{1}{2}$	4.80	9	$4\frac{7}{8}$	$5\frac{1}{8}$	
$3\frac{3}{4}$	4.80	9	$4\frac{7}{8}$	$5\frac{1}{8}$	
4	4.95	$9\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{3}{8}$	
$4\frac{1}{4}$	4.95	$9\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{3}{8}$	
$4\frac{1}{2}$	5.10	$9\frac{1}{2}$	$5\frac{3}{8}$	$5\frac{5}{8}$	
$4\frac{3}{4}$	5.10	$9\frac{1}{2}$	$5\frac{3}{8}$	$5\frac{5}{8}$	
5	5.20	$9\frac{3}{4}$	$5\frac{5}{8}$	$5\frac{7}{8}$	
$5\frac{1}{4}$	5.20	$9\frac{3}{4}$	$5\frac{5}{8}$	$5\frac{7}{8}$	
$5\frac{1}{2}$	5.35	$9\frac{7}{8}$	$5\frac{3}{4}$	6	
$5\frac{3}{4}$	5.35	$9\frac{7}{8}$	$5\frac{3}{4}$	6	
6	5.50	10	$5\frac{7}{8}$	$6\frac{1}{8}$	
$6\frac{1}{4}$	5.50	10	$5\frac{7}{8}$	$6\frac{1}{8}$	
$6\frac{1}{2}$	5.70	$10\frac{1}{4}$	$6\frac{1}{8}$	$6\frac{3}{8}$	
$6\frac{3}{4}$	5.70	$10\frac{1}{4}$	$6\frac{1}{8}$	$6\frac{3}{8}$	
7	5.90	$10\frac{1}{2}$	$6\frac{3}{8}$	$6\frac{5}{8}$	
$7\frac{1}{4}$	5.90	$10\frac{1}{2}$	$6\frac{3}{8}$	$6\frac{5}{8}$	
$7\frac{1}{2}$	6.05	$10\frac{5}{8}$	$6\frac{1}{2}$	$6\frac{3}{4}$	
$7\frac{3}{4}$	6.05	$10\frac{5}{8}$	$6\frac{1}{2}$	$6\frac{3}{4}$	
8	6.20	$10\frac{3}{4}$	$5\frac{7}{8}$	$6\frac{1}{8}$	
$8\frac{1}{4}$	6.20	$10\frac{3}{4}$	$5\frac{7}{8}$	$6\frac{1}{8}$	
$8\frac{1}{2}$	6.35	$10\frac{7}{8}$	6	$6\frac{1}{4}$	
$8\frac{3}{4}$	6.35	$10\frac{7}{8}$	6	$6\frac{1}{4}$	
9	6.50	11	$6\frac{1}{8}$	$6\frac{3}{8}$	
$9\frac{1}{4}$	6.50	11	$6\frac{1}{8}$	$6\frac{3}{8}$	
$9\frac{1}{2}$	6.80	$11\frac{1}{8}$	$6\frac{1}{4}$	$6\frac{1}{2}$	
$9\frac{3}{4}$	6.80	$11\frac{1}{8}$	$6\frac{1}{4}$	$6\frac{1}{2}$	
10	7.10	$11\frac{1}{4}$	$6\frac{3}{8}$	$6\frac{5}{8}$	
$10\frac{1}{4}$	7.10	$11\frac{1}{4}$	$6\frac{3}{8}$	$6\frac{5}{8}$	
$10\frac{1}{2}$	7.45	$11\frac{1}{2}$	$6\frac{5}{8}$	$6\frac{7}{8}$	
$10\frac{3}{4}$	7.45	$11\frac{1}{2}$	$6\frac{5}{8}$	$6\frac{7}{8}$	
11	7.80	$11\frac{3}{4}$	$6\frac{7}{8}$	$7\frac{1}{8}$	
$11\frac{1}{4}$	7.80	$11\frac{3}{4}$	$6\frac{7}{8}$	$7\frac{1}{8}$	
$11\frac{1}{2}$	8.00	$11\frac{7}{8}$	7	$7\frac{1}{4}$	
$11\frac{3}{4}$	8.00	$11\frac{7}{8}$	7	$7\frac{1}{4}$	
12	8.20	12	$7\frac{1}{8}$	$7\frac{3}{8}$	

No. 1

No. 2

No. 3

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches No. 102A	Twist Cut Inches Nos. 102B & C	Morse Taper Shank
$1\frac{1}{8}$	\$8.20	12	$7\frac{1}{8}$	$7\frac{3}{8}$	
$1\frac{1}{4}$	8.40	$12\frac{1}{8}$	$7\frac{1}{4}$	$7\frac{1}{2}$	
$1\frac{1}{2}$	8.40	$12\frac{1}{8}$	$7\frac{1}{4}$	$7\frac{1}{2}$	
$1\frac{3}{4}$	8.70	$12\frac{1}{2}$	$7\frac{5}{8}$	$7\frac{7}{8}$	
2	8.70	$12\frac{1}{2}$	$7\frac{5}{8}$	$7\frac{7}{8}$	
$2\frac{1}{8}$	9.40	$14\frac{1}{8}$	$8\frac{1}{4}$	$8\frac{1}{2}$	
$2\frac{1}{4}$	9.40	$14\frac{1}{8}$	$8\frac{1}{4}$	$8\frac{1}{2}$	
$2\frac{1}{2}$	10.15	$14\frac{1}{4}$	$8\frac{3}{8}$	$8\frac{5}{8}$	
$2\frac{3}{4}$	10.15	$14\frac{1}{4}$	$8\frac{3}{8}$	$8\frac{5}{8}$	
3	10.95	$14\frac{3}{8}$	$8\frac{1}{2}$	$8\frac{3}{4}$	
$3\frac{1}{4}$	10.95	$14\frac{3}{8}$	$8\frac{1}{2}$	$8\frac{3}{4}$	
$3\frac{1}{2}$	11.80	$14\frac{1}{2}$	$8\frac{5}{8}$	$8\frac{7}{8}$	
$3\frac{3}{4}$	11.80	$14\frac{1}{2}$	$8\frac{5}{8}$	$8\frac{7}{8}$	
4	12.30	$14\frac{5}{8}$	$8\frac{5}{8}$	9	
$4\frac{1}{4}$	12.30	$14\frac{5}{8}$	$8\frac{5}{8}$	9	
$4\frac{1}{2}$	12.85	$14\frac{3}{4}$	$8\frac{3}{4}$	$9\frac{1}{8}$	
$4\frac{3}{4}$	12.85	$14\frac{3}{4}$	$8\frac{3}{4}$	$9\frac{1}{8}$	
5	13.35	$14\frac{7}{8}$	$8\frac{7}{8}$	$9\frac{1}{4}$	
$5\frac{1}{4}$	13.35	$14\frac{7}{8}$	$8\frac{7}{8}$	$9\frac{1}{4}$	
$5\frac{1}{2}$	14.00	15	9	$9\frac{3}{8}$	
$5\frac{3}{4}$	14.00	15	9	$9\frac{3}{8}$	
6	14.20	15	9	$9\frac{3}{8}$	
$6\frac{1}{4}$	14.20	15	9	$9\frac{3}{8}$	
$6\frac{1}{2}$	14.40	$15\frac{1}{4}$	$9\frac{1}{4}$	$9\frac{5}{8}$	
$6\frac{3}{4}$	14.40	$15\frac{1}{4}$	$9\frac{1}{4}$	$9\frac{5}{8}$	
$6\frac{1}{2}$	14.70	$15\frac{1}{4}$	$9\frac{1}{4}$	$9\frac{5}{8}$	
$6\frac{3}{4}$	14.70	$15\frac{1}{4}$	$9\frac{1}{4}$	$9\frac{5}{8}$	
7	15.00	$15\frac{1}{2}$	$9\frac{1}{2}$	$9\frac{7}{8}$	
$7\frac{1}{4}$	15.00	$15\frac{1}{2}$	$9\frac{1}{2}$	$9\frac{7}{8}$	
$7\frac{1}{2}$	15.35	$15\frac{1}{2}$	$9\frac{1}{2}$	$9\frac{7}{8}$	
$7\frac{3}{4}$	15.35	$15\frac{1}{2}$	$9\frac{1}{2}$	$9\frac{7}{8}$	
8	15.70	$15\frac{3}{4}$	$9\frac{3}{4}$	$10\frac{1}{8}$	
$8\frac{1}{4}$	15.70	$15\frac{3}{4}$	$9\frac{3}{4}$	$10\frac{1}{8}$	
$8\frac{1}{2}$	16.10	$15\frac{3}{4}$	$9\frac{3}{4}$	$10\frac{1}{8}$	
$8\frac{3}{4}$	16.10	$15\frac{3}{4}$	$9\frac{5}{16}$	$9\frac{11}{16}$	
9	16.50	16	$9\frac{9}{16}$	$9\frac{15}{16}$	
$9\frac{1}{4}$	16.50	16	$9\frac{9}{16}$	$9\frac{15}{16}$	
$9\frac{1}{2}$	16.75	16	$9\frac{9}{16}$	$9\frac{15}{16}$	
$9\frac{3}{4}$	16.75	16	$9\frac{9}{16}$	$9\frac{15}{16}$	
10	17.00	$16\frac{1}{4}$	$9\frac{13}{16}$	$10\frac{3}{16}$	
$10\frac{1}{4}$	17.00	$16\frac{1}{4}$	$9\frac{13}{16}$	$10\frac{3}{16}$	
$10\frac{1}{2}$	17.25	$16\frac{1}{4}$	$9\frac{3}{4}$	$10\frac{1}{8}$	
$10\frac{3}{4}$	17.25	$16\frac{1}{4}$	$9\frac{3}{4}$	$10\frac{1}{8}$	
11	17.50	$16\frac{1}{2}$	10	$10\frac{3}{8}$	
$11\frac{1}{4}$	17.50	$16\frac{1}{2}$	10	$10\frac{3}{8}$	
$11\frac{1}{2}$	17.85	$16\frac{1}{2}$	10	$10\frac{3}{8}$	
$11\frac{3}{4}$	17.85	$16\frac{1}{2}$	10	$10\frac{3}{8}$	
12	18.20	$16\frac{1}{2}$	10	$10\frac{3}{8}$	
$12\frac{1}{4}$	18.20	$16\frac{1}{2}$	$9\frac{7}{8}$	$10\frac{1}{4}$	
$12\frac{1}{2}$	18.60	$16\frac{1}{2}$	$9\frac{7}{8}$	$10\frac{1}{4}$	
$12\frac{3}{4}$	18.60	$16\frac{1}{2}$	$9\frac{7}{8}$	$10\frac{1}{4}$	
13	19.00	$16\frac{1}{2}$	$9\frac{7}{8}$	$10\frac{1}{4}$	
$13\frac{1}{4}$	19.00	$16\frac{1}{2}$	$9\frac{7}{8}$	$10\frac{1}{4}$	

No. 3

No. 4

For Sockets for these Oil Drills see page 55. For information in regard to manner of use see page 50

SINCE
1848

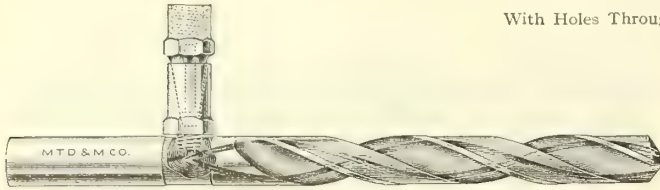
HAMMACHER SCHLEMMER & Co.

NEW
YORK

Oil Twist Drills

Carbon Steel

With Holes Through Solid Metal For Lubricant



Morse No. 104 A, with Straight Shanks



Morse No. 104 D, with Straight Shanks



Morse No. 104 B, with Straight Shanks

These Drills also furnished in High Speed Steel

Prices on Application

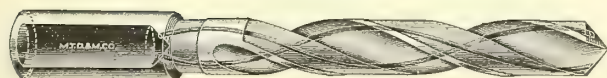
Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter Inches	Whole Length 8½ Inches Each	Whole Length 10½ Inches Each	Whole Length 13 Inches Each	Whole Length 8½ Inches	Twist Cut Whole Length 10½ Inches	Whole Length 13 Inches	
3/8	\$3.00	6¾	4¼	1 1/16	\$8.20	12	8 1/8	31/64	1 1/2	\$4.60	\$5.30	\$5.90	5 1/2	7	9 1/4
25/64	3.15	7	4 3/8	1 1/8	8.40	12 1/8	8 1/8	33/64	1 7/8	4.60	5.30	6.00	5 1/4	7	9 1/4
64	3.15	7	4 3/8	1 3/8	8.40	12 1/8	8 1/8	35/64	2	4.70	5.40	6.00	5 1/4	7	9 1/4
21/32	3.30	7 1/4	4 5/8	1 5/8	8.70	12 1/2	8 1/2	37/64	2 1/8	4.70	5.40	6.10	5 1/4	7	9 1/4
27/64				1 3/4				39/64	2 3/8						
7/16	3.30	7 1/4	4 5/8	1 7/8	8.70	12 1/2	8 1/2	41/64	2 1/2	4.70	5.40	6.10	5 1/4	7	9 1/4
29/64	3.85	7 1/2	4 7/8	1 7/8	9.40	14 1/8	9 1/8	43/64	2 3/4	4.70	5.40	6.20	5 1/4	7	9 1/4
* 15/32	3.85	7 1/2	4 7/8	1 9/8	9.40	14 1/8	9 1/8	45/64	2 7/8	4.80	5.40	6.20	5 1/4	7	9 1/4
31/64	4.00	7 3/4	5	1 3/2	10.15	14 1/4	9 1/4	47/64	3	4.80	5.40	6.30	5 1/4	7	9 1/4
33/64	4.00	7 3/4	5	1 5/8	10.15	14 1/4	9 1/4	49/64	3 1/8	4.80	5.40	6.30	5 1/4	7	9 1/4
1 1/2	4.15	8	5 1/4	1 5/8	10.95	14 3/8	9 3/8	51/64	3 1/4	4.90	5.50	6.40	5 1/4	7	9 1/4
1 1/4	4.15	8	5 1/4	1 3/4	10.95	14 3/8	9 3/8	53/64	3 3/8						
1 3/8	4.30	8 1/4	5 3/8	1 3/4	11.80	14 1/2	9 1/2	55/64	3 1/2	5.00	5.80	6.60	5 1/4	7	9 1/4
1 1/8	4.30	8 1/4	5 3/8	1 3/8	11.80	14 1/2	9 1/2	57/64	3 3/4	5.10	5.90	6.80	5 1/4	7	9 1/4
1 1/8	4.50	8 1/2	5 5/8	1 3/8	12.30	14 5/8	9 1/2	59/64	3 3/4	5.20	6.00	6.90	5 1/4	7	9 1/4
1 1/8	4.50	8 1/2	5 5/8	1 3/8	12.30	14 5/8	9 1/2	61/64	3 3/4	5.30	6.10	7.00	5 1/4	7	9 1/4
1 1/8	4.70	8 3/4	5 5/4	1 3/8	12.85	14 3/4	9 5/8	63/64	3 3/4	5.40	6.20	7.10	5 1/4	7	9 1/4
5/8	4.70	8 3/4	5 5/4	1 3/8	12.85	14 3/4	9 5/8	65/64	3 3/4	5.50	6.30	7.20	5 1/4	7	9 1/4
41/64	4.80	9	5 7/8	1 3/8	13.35	14 7/8	9 3/4	67/64	3 3/4	5.60	6.50	7.40	5	6 3/4	9
21/32	4.80	9	5 7/8	1 3/8	13.35	14 7/8	9 3/4	69/64	3 3/4	5.80	6.80	7.70	5	6 3/4	9
27/64	4.95	9 1/4	6	1 3/8	14.00	15	9 7/8	71/64	3 3/4	6.00	7.00	7.90	5	6 3/4	9
1 1/16	4.95	9 1/4	6	1 3/8	14.00	15	9 7/8	73/64	3 3/4	6.10	7.20	8.10	5	6 3/4	9
1 1/16	5.10	9 1/2	6 3/16	1 3/8	14.20	15	9 1/8	75/64	3 3/4	6.30	7.40	8.30	5	6 3/4	9
23/64	5.10	9 1/2	6 3/16	1 3/8	14.20	15	9 1/8	77/64	3 3/4	6.50	7.60	8.60	5	6 3/4	9
29/64	5.20	9 3/4	6 3/8	1 3/8	14.40	15 1/4	9 3/8	79/64	3 3/4	6.70	7.80	8.80	5	6 3/4	9
35/64	5.20	9 3/4	6 3/8	1 3/8	14.40	15 1/4	9 3/8	81/64	3 3/4	6.80	7.90	9.00	5	6 3/4	9
41/64	5.35	9 7/8	6 1/2	1 3/8	14.70	15 1/4	9 3/8	83/64	3 3/4	7.10	8.30	9.30	5	6 3/4	9
47/64	5.35	9 7/8	6 1/2	1 3/8	14.70	15 1/4	9 3/8	85/64	3 3/4	7.40	8.60	9.60	5	6 3/4	9
53/64	5.50	10	6 5/8	1 3/8	15.00	15 1/2	9 5/8	87/64	3 3/4	7.70	9.00	10.00	5	6 3/4	9
13/16	5.50	10	6 5/8	1 3/8	15.00	15 1/2	9 5/8	89/64	3 3/4	8.00	9.30	10.30	5	6 3/4	9
59/64	5.70	10 1/4	6 3/4	1 3/8	15.35	15 1/2	9 5/8	91/64	3 3/4	8.30	9.60	10.70	5	6 3/4	9
65/64	5.70	10 1/4	6 3/4	1 3/8	15.35	15 1/2	9 5/8	93/64	3 3/4	8.60	9.90	11.20	5	6 3/4	9
71/64	5.90	10 1/2	7	1 3/8	15.70	15 3/4	9 7/8	95/64	3 3/4	8.90	10.30	11.50	5	6 3/4	9
77/64	5.90	10 1/2	7	1 3/8	15.70	15 3/4	9 7/8	97/64	3 3/4	9.20	10.50	11.90	5	6 3/4	9
83/64	6.05	10 5/8	7	1 3/8	16.10	15 3/4	9 7/8	99/64	3 3/4	9.40	10.70	12.00	4 3/4	6 1/2	8 3/4
89/64	6.05	10 5/8	7	1 3/8	16.10	15 3/4	9 7/8	101/64	3 3/4	9.60	10.90	12.10	4 3/4	6 1/2	8 3/4
95/64	6.20	10 3/4	7	1 3/8	16.50	16	10 1/8	103/64	3 3/4	9.80	11.00	12.20	4 3/4	6 1/2	8 3/4
101/64	6.20	10 3/4	7	1 3/8	16.50	16	10 1/8	105/64	3 3/4	10.00	11.20	12.40	4 3/4	6 1/2	8 3/4
107/64	6.35	10 7/8	7 1/8	1 3/8	16.75	16	10 1/8	107/64	3 3/4	10.20	11.40	12.50	4 3/4	6 1/2	8 3/4
113/64	6.35	10 7/8	7 1/8	1 3/8	16.75	16	10 1/8	109/64	3 3/4	10.30	11.50	12.70	4 3/4	6 1/2	8 3/4
119/64	6.50	11	7 1/16	1 3/8	17.00	16 1/4	10 3/8	111/64	3 3/4	10.40	11.60	12.90	4 3/4	6 1/2	8 3/4
125/64	6.50	11	7 1/16	1 3/8	17.00	16 1/4	10 3/8	113/64	3 3/4	10.50	11.80	13.00	4 3/4	6 1/2	8 3/4
131/64	6.80	11 1/8	7 1/8	1 3/8	17.25	16 1/4	10 3/8	115/64	3 3/4	10.70	12.00	13.20	4 3/4	6 1/2	8 3/4
137/64	6.80	11 1/8	7 1/8	1 3/8	17.25	16 1/4	10 3/8	117/64	3 3/4	10.90	12.20	13.40	4 3/4	6 1/2	8 3/4
143/64	7.10	11 1/4	7 3/8	1 3/8	17.50	16 1/2	10 5/8	119/64	3 3/4	11.00	12.40	13.60	4 3/4	6 1/2	8 3/4
149/64	7.10	11 1/4	7 3/8	1 3/8	17.50	16 1/2	10 5/8	121/64	3 3/4	11.20	12.50	13.70	4 3/4	6 1/2	8 3/4
155/64	7.45	11 1/2	7 5/8	1 3/8	17.85	16 1/2	10 5/8	123/64	3 3/4	11.40	12.70	14.00	4 3/4	6 1/2	8 3/4
161/64	7.45	11 1/2	7 5/8	1 3/8	17.85	16 1/2	10 5/8	125/64	3 3/4	11.60	12.90	14.20	4 3/4	6 1/2	8 3/4
167/64	7.80	11 3/4	7 7/8	1 3/8	18.20	16 1/2	10 5/8	127/64	3 3/4	11.90	13.10	14.40	4 3/4	6 1/2	8 3/4
173/64	7.80	11 3/4	7 7/8	1 3/8	18.20	16 1/2	10 5/8	129/64	3 3/4	12.10	13.30	14.60	4 3/4	6 1/2	8 3/4
179/64	8.00	11 7/8	8	1 3/8	18.60	16 1/2	10 5/8	131/64	3 3/4						
185/64	8.00	11 7/8	8	1 3/8	18.60	16 1/2	10 5/8	133/64	3 3/4						
191/64	8.20	12	8 1/8	1 3/8	19.00	16 1/2	10 5/8	135/64	3 3/4						
197/64	8.20	12	8 1/8	1 3/8	19.00	16 1/2	10 5/8	137/64	3 3/4						
203/64				1 3/8	19.00	16 1/2	10 5/8	139/64	3 3/4						
209/64				1 3/8	19.00	16 1/2	10 5/8	141/64	3 3/4						
215/64				1 3/8	19.00	16 1/2	10 5/8	143/64	3 3/4						
221/64				1 3/8	19.00	16 1/2	10 5/8	145/64	3 3/4						
227/64				1 3/8	19.00	16 1/2	10 5/8	147/64	3 3/4						
233/64				1 3/8	19.00	16 1/2	10 5/8	149/64	3 3/4						
239/64				1 3/8	19.00	16 1/2	10 5/8	151/64	3 3/4						
245/64				1 3/8	19.00	16 1/2	10 5/8	153/64	3 3/4						
251/64				1 3/8	19.00	16 1/2	10 5/8	155/64	3 3/4						
257/64				1 3/8	19.00	16 1/2	10 5/8	157/64	3 3/4						
263/64				1 3/8	19.00	16 1/2	10 5/8	159/64	3 3/4						
269/64				1 3/8	19.00	16 1/2	10 5/8	161/64	3 3/4						
275/64				1 3/8	19.00	16 1/2	10 5/8	163/64	3 3/4						
281/64				1 3/8	19.00	16 1/2	10 5/8	165/64	3 3/4						
287/64				1 3/8	19.00	16 1/2	10 5/8	167/64	3 3/4						
293/64				1 3/8	19.00	16 1/2	10 5/8	169/64	3 3/4						
299/64				1 3/8	19.00	16 1/2	10 5/8	171/64	3 3/4						
305/64				1 3/8	19.00	16 1/2	10 5/8	173/64	3 3/4						
311/64				1 3/8	19.00	16 1/2	10 5/8	175/64	3 3/4						
317/64				1 3/8	19.00	16 1/2	10 5/8	177/64	3 3/4						
323/64				1 3/8	19.00	16 1/2	10 5/8	179/64	3 3/4						
329/64				1 3/8	19.00	16 1/2	10 5/8								

Oil Twist and Hollow Drills

Carbon Steel

With Holes through Solid Metal for Lubricant

Oil Twist

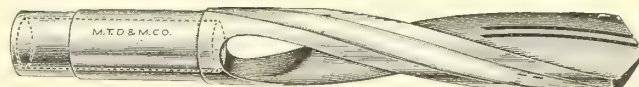


Morse No. 104 E, with Straight Shanks

For Screw or Chucking Machines

Shanks 1 1/4 Inches Diameter, 3 Inches Long

Hollow



Morse No. 114 D

For Deep Drilling or Long Holes

Diameter Inches	Whole Length 8½ Inches Twist Cut 4½ Inches Each	Whole Length 10½ Inches Twist Cut 6½ Inches Each	Whole Length 13 Inches Twist Cut 9 Inches Each	
$\frac{31}{64}$	$\frac{1}{2}$	\$5.80	\$6.80	\$7.80
$\frac{33}{64}$	$\frac{17}{32}$	5.80	6.80	7.80
$\frac{35}{64}$	$\frac{9}{16}$	5.80	6.70	7.70
$\frac{37}{64}$	$\frac{19}{32}$	5.70	6.70	7.70
$\frac{39}{64}$	$\frac{5}{8}$	5.70	6.70	7.60
$\frac{41}{64}$	$\frac{21}{32}$	5.70	6.60	7.60
$\frac{43}{64}$	$\frac{11}{16}$	5.60	6.60	7.50
$\frac{45}{64}$	$\frac{23}{32}$	5.60	6.50	7.50
$\frac{47}{64}$	$\frac{3}{4}$	5.60	6.50	7.40
$\frac{49}{64}$	$\frac{25}{32}$	5.70	6.60	7.40
$\frac{51}{64}$	$\frac{13}{16}$	5.70	6.60	7.50
$\frac{53}{64}$	$\frac{27}{32}$	5.80	6.70	7.50
$\frac{55}{64}$	$\frac{7}{8}$	5.80	6.70	7.60
$\frac{57}{64}$	$\frac{29}{32}$	5.90	6.80	7.60
$\frac{59}{64}$	$\frac{15}{16}$	5.90	6.80	7.70
$\frac{61}{64}$	$\frac{31}{32}$	6.00	6.90	7.80
$\frac{63}{64}$	1	6.00	6.90	7.90
$1\frac{1}{64}$	$1\frac{1}{32}$	6.10	7.00	8.00
$1\frac{3}{64}$	$1\frac{1}{16}$	6.20	7.10	8.20
$1\frac{5}{64}$	$1\frac{3}{32}$	6.30	7.20	8.40
$1\frac{7}{64}$	$1\frac{1}{8}$	6.40	7.40	8.50
$1\frac{9}{64}$	$1\frac{5}{32}$	6.50	7.50	8.60
$1\frac{11}{64}$	$1\frac{1}{6}$	6.60	7.60	8.80
$1\frac{13}{64}$	$1\frac{7}{32}$	6.70	7.80	8.90
$1\frac{15}{64}$	$1\frac{1}{4}$	6.80	7.90	9.00
$1\frac{17}{64}$	$1\frac{9}{32}$	7.10	8.40	9.40
$1\frac{19}{64}$	$1\frac{5}{16}$	7.50	8.70	9.80
$1\frac{21}{64}$	$1\frac{11}{32}$	7.80	9.20	10.20
$1\frac{23}{64}$	$1\frac{3}{8}$	8.20	9.60	10.60
$1\frac{25}{64}$	$1\frac{13}{32}$	8.60	9.90	11.00
$1\frac{27}{64}$	$1\frac{7}{16}$	9.00	10.20	11.40
$1\frac{29}{64}$	$1\frac{15}{32}$	9.20	10.50	11.80
$1\frac{31}{64}$	$1\frac{1}{2}$	9.50	10.80	12.20
$1\frac{33}{64}$	$1\frac{17}{32}$	9.70	11.00	12.30
$1\frac{35}{64}$	$1\frac{9}{16}$	9.90	11.20	12.50
$1\frac{37}{64}$	$1\frac{19}{32}$	10.10	11.40	12.60
$1\frac{39}{64}$	$1\frac{5}{8}$	10.40	11.60	12.80
$1\frac{41}{64}$	$1\frac{21}{32}$	10.50	11.80	13.00
$1\frac{43}{64}$	$1\frac{11}{16}$	10.60	12.00	13.20
$1\frac{45}{64}$	$1\frac{23}{32}$	10.80	12.10	13.40
$1\frac{47}{64}$	$1\frac{3}{4}$	11.00	12.30	13.50
$1\frac{49}{64}$	$1\frac{25}{32}$	11.20	12.50	13.70
$1\frac{51}{64}$	$1\frac{13}{16}$	11.40	12.70	13.90
$1\frac{53}{64}$	$1\frac{27}{32}$	11.60	12.90	14.00
$1\frac{55}{64}$	$1\frac{7}{8}$	11.80	13.00	14.20
$1\frac{57}{64}$	$1\frac{29}{32}$	12.00	13.20	14.40
$1\frac{59}{64}$	$1\frac{15}{16}$	12.20	13.40	14.60
$1\frac{61}{64}$	$1\frac{31}{32}$	12.40	13.60	14.80
$1\frac{63}{64}$	2	12.60	13.80	15.00

Diameter Inches	Each	Whole Length Inches	Size of Hole Inches	Diameter Inches	Each	Whole Length Inches	Size of Hole Inches
5/8	\$3.20	6	3/8	1 7/8	\$8.00	9	1 1/8
11/16	3.40	6	3/8	1 5/8	8.40	9	1 1/8
3/4	3.60	6	7/16	2	8.80	9	1 1/8
13/16	3.70	6 1/2	7/16	2 1/16	9.10	10	1 1/4
7/8	3.80	6 1/2	1/2	2 1/8	9.40	10	1 1/4
15/16	3.90	6 1/2	1/2	2 3/16	9.70	10	1 1/4
1	4.20	7	9/16	2 1/4	10.00	10	1 3/8
1 1/16	4.30	7	5/8	2 5/16	10.40	10	1 3/8
1 1/8	4.40	7	5/8	2 3/8	10.80	10	1 3/8
1 1/4	4.50	7	11/16	2 7/16	11.20	10	1 3/8
1 3/8	4.80	7 1/2	3/4	2 1/2	11.60	10	1 3/8
1 5/8	5.00	7 1/2	13/16	2 9/16	12.00	12	1 1/2
1 3/4	5.20	7 1/2	7/8	2 5/8	12.40	12	1 1/2
1 7/8	5.40	7 1/2	7/8	2 11/16	12.80	12	1 1/2
1 1/2	5.80	8	15/16	2 3/4	13.20	12	1 1/2
1 9/16	6.10	8	15/16	2 13/16	13.60	12	1 1/2
1 5/8	6.40	8	1	2 7/8	14.00	12	1 1/2
1 11/16	6.70	8	1	2 5/8	14.50	12	1 1/2
1 3/4	7.20	9	1 1/8	3	15.00	12	1 1/2
1 13/16	7.60	9	1 1/8				

The above drills have a hole lengthwise through the shank connecting with the grooves of the drill. The shank can be threaded and fitted to a metal tube of such length as desired.

The lubricant is conveyed to the point of the drill on the outside of tube, as illustrated on page 50, while the hollow tube admits of the passage of oil and chips from the point.

Tubes are made to order and to fit any size of drill. When ordering give diameter of drill and depth of hole to be drilled.

These drills are accurately ground on centers.

In drilling crucible steel the best results are obtained by revolving the work at a speed equalling a periphery speed for the drill of 20 feet per minute and feeding at the rate of .0025 inch per revolution. Machinery steel will admit of increased revolution to 40 feet per minute, and a feed of .0035 inch per revolution.

Suggestions for the Use of High Speed Drills

We recommend in starting, a periphery speed of about 55 feet per minute and a feed from .005 to .010 inch per revolution, for drills larger than 1/2 inch. These speeds and feeds may be then increased and a maximum speed and feed obtained for the material drilled by observing the following: If the drill wears away on the outside edge the speed is too great; if it chips on the cutting edge the feed is too coarse.

By following the above carefully the best practical result will be obtained.

For steel or wrought iron use an abundant supply of good lard oil or cutting compound. For cast iron, an air blast gives the best results.

Care should be taken to see that the work is properly secured to the table of the machine and should have a support directly under the part to be drilled to avoid any spring from the pressure of the drill, and prevent the drill from "pulling ahead" when breaking through the work.

These Drills furnished in metric sizes as No. 104 L. Prices on application.

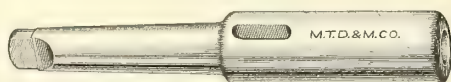
Steel Drill Sockets



Morse No. 100, for Morse Taper Shank Drills

Size	Each
No. 1. Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive.....	\$1.20
Whole length 7 inches; blank end, $1\frac{1}{16}$ inches diameter, 4 inches long.	
No. 2. Holds $\frac{3}{8}$ to $\frac{29}{32}$ inch, inclusive.....	1.80
Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	
No. 3. Holds $\frac{5}{8}$ to $1\frac{1}{4}$ inches, inclusive.....	2.50
Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	
No. 4. Holds $1\frac{7}{8}$ to 2 inches, inclusive.....	4.00
Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	
No. 5. Holds $2\frac{1}{4}$ to 3 inches, inclusive.....	7.50
Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	
No. 6. Holds $3\frac{1}{4}$ to 6 inches, inclusive.....	14.00
Whole length, 22 inches; blank end, $3\frac{5}{8}$ inches diameter, $12\frac{3}{4}$ inches long.	
Plugs are furnished with these sockets for turning shanks true.	

These Sockets can be furnished hardened and ground, inside and out, at special prices.

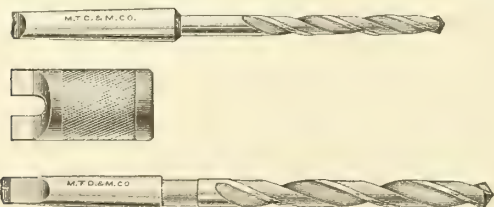


Morse No. 100A, for Morse Taper Shank Drill

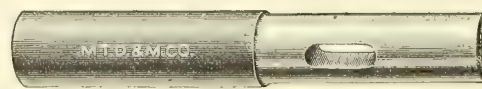
Size	Each
No. 1. With Shank fitted to No. 2 Socket.....	\$ 2.00
No. 1. With Shank fitted to No. 3 Socket.....	2.50
No. 1. With Shank fitted to No. 4 Socket.....	3.20
No. 1. With Shank fitted to No. 5 Socket.....	4.80
No. 2. With Shank fitted to No. 3 Socket.....	2.50
No. 2. With Shank fitted to No. 4 Socket.....	3.20
No. 2. With Shank fitted to No. 5 Socket.....	4.80
No. 3. With Shank fitted to No. 2 Socket.....	3.20
No. 3. With Shank fitted to No. 3 Socket.....	3.20
No. 3. With Shank fitted to No. 4 Socket.....	3.20
No. 3. With Shank fitted to No. 5 Socket.....	4.80
No. 4. With Shank fitted to No. 3 Socket.....	4.80
No. 4. With Shank fitted to No. 4 Socket.....	4.80
No. 4. With Shank fitted to No. 5 Socket.....	4.80
No. 4. With Shank fitted to No. 6 Socket.....	12.00
No. 5. With Shank fitted to No. 4 Socket.....	12.00
No. 5. With Shank fitted to No. 5 Socket.....	12.00
No. 5. With Shank fitted to No. 6 Socket.....	12.00

These Sockets can be furnished hardened and ground inside and out at special prices.

Morse Tang Gauge for Short Shank Sockets



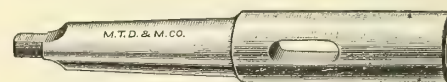
Prices on application.



Morse 100 M, for Short Shanks, Morse Taper

Size	Each
No. 1. Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive.....	\$1.20
Whole length, 7 inches; blank end, $1\frac{1}{16}$ inches diameter, 4 inches long.	
No. 2. Holds $\frac{3}{8}$ to $\frac{29}{32}$ inch, inclusive.....	1.80
Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	
No. 3. Holds $\frac{5}{8}$ to $1\frac{1}{4}$ inches, inclusive.....	2.50
Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	
No. 4. Holds $1\frac{7}{8}$ to 2 inches, inclusive.....	4.00
Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	
No. 5. Holds $2\frac{1}{4}$ to 3 inches, inclusive.....	7.50
Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	
No. 6. Holds $3\frac{1}{4}$ to 6 inches, inclusive.....	14.00
Whole length 22 inches; blank end $3\frac{5}{8}$ inches diameter, $12\frac{3}{4}$ inches long.	

Plugs are furnished with these Sockets for turning shanks true.



Morse No. 100 N, for Short Shanks, Morse Taper

Size	Each
No. 1. With Shank fitted to No. 2.....	\$2.00
No. 1. With Shank fitted to No. 3.....	2.50
No. 2. With Shank fitted to No. 3.....	2.50
No. 2. With Shank fitted to No. 4.....	3.20
No. 3. With Shank fitted to No. 4.....	3.20
No. 3. With Shank fitted to No. 5.....	4.80
No. 4. With Shank fitted to No. 5.....	4.80
No. 4. With Shank fitted to No. 6.....	12.00
No. 5. With Shank fitted to No. 6.....	12.00

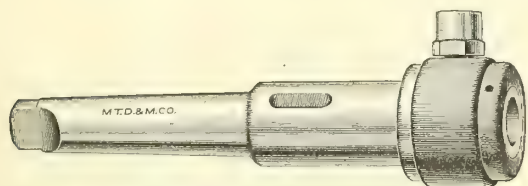
Short Shank Sockets are for use with drills on which the original tangs have been broken, the shanks reduced in length and fitted with thicker and wider tangs, thus insuring a strong drive. Gauges for fitting drills with broken tangs to Short Shank Sockets can be furnished on receipt of order.



Morse No. 100P, Sleeves for Short Shanks, Morse Taper

Size	Each
No. 1. Fitted to No. 2 Socket.....	\$1.80
No. 1. Fitted to No. 3 Socket.....	2.40
No. 2. Fitted to No. 3 Socket.....	2.40
No. 2. Fitted to No. 4 Socket.....	3.00
No. 3. Fitted to No. 4 Socket.....	3.00
No. 3. Fitted to No. 5 Socket.....	4.40
No. 4. Fitted to No. 5 Socket.....	4.40
No. 4. Fitted to No. 6 Socket.....	10.00
No. 5. Fitted to No. 6 Socket.....	10.00

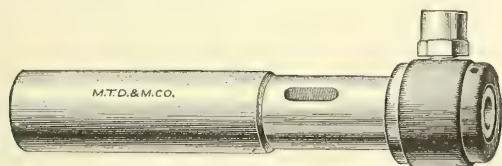
Steel Drill Sockets



Morse No. 100E, Morse Taper
For Oil Drills

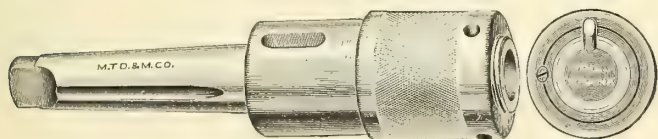
Size	Each
No. 1. With Shank fitted to No. 2 Socket.....	\$4.50
No. 1. With Shank fitted to No. 3 Socket.....	4.50
No. 2. With Shank fitted to No. 3 Socket.....	5.50
No. 2. With Shank fitted to No. 4 Socket.....	6.75
No. 3. With Shank fitted to No. 4 Socket.....	7.00
No. 4. With Shank fitted to No. 5 Socket.....	10.00

Sockets Nos. 100D and 100E are used in connection with oil drills No. 102 C which are illustrated on page 51 and the method of using is illustrated on page 50. As the use of oil sockets and oil drills is now quite generally understood we do not furnish further explanation in this catalogue, but will gladly do so when requested.



Morse No. 100D, Morse Taper.
For Oil Drills
See note above

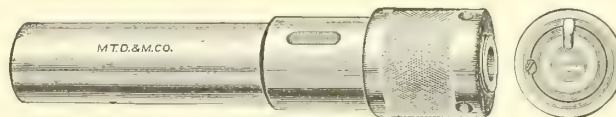
Size	Each
No. 1. Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive.....	\$4.00
Whole length, 7 inches; blank end, $1\frac{1}{8}$ inches diameter, 4 inches long.	
No. 2. Holds $\frac{3}{8}$ to $\frac{3}{4}$ inch, inclusive.....	5.00
Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	
No. 3. Holds $\frac{5}{8}$ to $1\frac{1}{4}$ inches, inclusive.....	6.50
Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	
No. 4. Holds $1\frac{1}{4}$ to 2 inches, inclusive.....	9.25
Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	
No. 5. Holds $2\frac{1}{4}$ to 3 inches, inclusive.....	10.25
Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	



Morse No. 100H, Andrew Patent
For Morse Taper Shank Drills

Size	Each
No. 1. With Shank fitted to No. 2 Socket.....	\$5.80
No. 1. With Shank fitted to No. 3 Socket.....	5.80
No. 2. With Shank fitted to No. 3 Socket.....	7.20
No. 2. With Shank fitted to No. 4 Socket.....	8.60
No. 3. With Shank fitted to No. 4 Socket.....	9.70
No. 4. With Shank fitted to No. 5 Socket.....	12.80
No. 5. With Shank fitted to No. 6 Socket.....	19.50

For illustration of Drills fitting these Sockets see No. 102 $\frac{1}{2}$, page 30.



Morse No. 100G, Andrew Patent
For Morse Taper Shank Drills

These Sockets are fitted with a Key sliding in a radial slot in the holding head. The Key bears upon the inclined seat in the shank of the drill and is forced to its seat by a cap fitting over the holding head. Turning the cap by the hand in one direction holds the drill firmly in place while turning it in the opposite direction releases its grip so that the drill can be easily removed.

Size	Each
No. 1. Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive.....	\$5.00
Whole length, 7 inches; blank end, $1\frac{1}{8}$ inches diameter, 4 inches long.	
No. 2. Holds $\frac{3}{8}$ to $\frac{3}{4}$ inch, inclusive.....	6.50
Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	
No. 3. Holds $\frac{5}{8}$ to $1\frac{1}{4}$ inches, inclusive.....	9.00
Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	
No. 4. Holds $1\frac{1}{4}$ to 2 inches, inclusive.....	12.00
Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	
No. 5. Holds $2\frac{1}{4}$ to 3 inches, inclusive.....	15.00
Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	



Morse No. 100T, Solid
With Morse Taper Holes

Number	Morse Taper Hole Number	Diameter of Shank Inches	Length of Shank Inches	Whole Length Inches	Each
1	1	1	$3\frac{1}{2}$	$3\frac{1}{2}$	\$2.00
2	1	$1\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	2.00
3	1	$1\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	2.00
4	2	1	$3\frac{5}{8}$	4	2.65
5	2	$1\frac{1}{4}$	$3\frac{5}{8}$	4	2.65
6	2	$1\frac{1}{2}$	$3\frac{5}{8}$	4	2.65
7	2	$1\frac{3}{4}$	$3\frac{5}{8}$	4	2.65
8	2	2	$3\frac{5}{8}$	4	2.65
9	3	$1\frac{1}{2}$	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
10	3	$1\frac{1}{2}$	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
11	3	$1\frac{3}{4}$	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
12	3	2	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
13	4	$1\frac{1}{2}$	$4\frac{5}{8}$	6	4.10
14	4	$1\frac{3}{4}$	$4\frac{5}{8}$	6	4.10
15	4	2	$4\frac{5}{8}$	6	4.10

Nos. 100S, page 57, and 100T Sockets are for use in the turrets of Chucking Machines, Screw Machines and Boring Mills for holding Reamers and Arbors with Morse Taper Shanks.

Other sizes made to order.

Steel Drill Sockets



Armstrong Blacksmiths, with Morse Taper Shank



"Use-Em-Up," Socket Type

Number	Size of Socket	Size of Shank Morse Taper	Each
02	1/2 inch diameter	No. 2	\$1.50
03	1/2 inch diameter	No. 3	1.75
003	5/8 inch diameter	No. 3	1.75
04	1/2 inch diameter	No. 4	2.00
004	5/8 inch diameter	No. 4	2.00

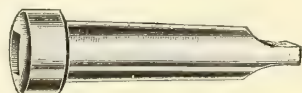
Taking Blacksmiths Drills from 1/8 inch to 1 1/2 inches with Shanks 1/2 inch or 5/8 inch diameter.



Armstrong Blacksmiths, with Square Taper Shank

Number	Size of Socket	Size of Shank Square Taper	Each
0	1/2 inch diameter	No. 1	\$1.25
00	5/8 inch diameter	No. 1	1.25
01	1/2 inch diameter	No. 2	1.50
001	5/8 inch diameter	No. 2	1.50

Taking Blacksmiths Drills from 1/8 inch to 1 1/2 inches with Shanks 1/2 inch or 5/8 inch diameter.



Armstrong Square Taper, with Morse Taper Shank

Number	Size of Socket Square Taper	Size of Shank Morse Taper	Each
1	No. 1—3/8x5/8 inch	No. 1	\$1.00
2	No. 1—3/8x5/8 inch	No. 2	1.25
3	No. 1—3/8x5/8 inch	No. 3	1.50
4	No. 2—1/2x3/4 inch	No. 4	1.75
5	No. 2—1/2x3/4 inch	No. 5	2.50

Size	Description	Each
1-2	Has No. 1 Hole and No. 2 Shank	\$2.00
1-3	Has No. 1 Hole and No. 3 Shank	2.50
1-4	Has No. 1 Hole and No. 4 Shank	3.20
1-5	Has No. 1 Hole and No. 5 Shank	4.80
2-3	Has No. 2 Hole and No. 3 Shank	2.50
2-4	Has No. 2 Hole and No. 4 Shank	3.20
2-5	Has No. 2 Hole and No. 5 Shank	4.80
3-2	Has No. 3 Hole and No. 2 Shank	3.20
3-3	Has No. 3 Hole and No. 3 Shank	3.20
3-4	Has No. 3 Hole and No. 4 Shank	3.20
3-5	Has No. 3 Hole and No. 5 Shank	4.80
4-3	Has No. 4 Hole and No. 3 Shank	4.80
4-4	Has No. 4 Hole and No. 4 Shank	4.80
4-5	Has No. 4 Hole and No. 5 Shank	4.80
4-6	Has No. 4 Hole and No. 6 Shank	12.00
5-4	Has No. 5 Hole and No. 4 Shank	12.00
5-5	Has No. 5 Hole and No. 5 Shank	12.00
5-6	Has No. 5 Hole and No. 6 Shank	12.00



"Use-Em-Up," Sleeve Type

Size	Size of Socket Morse Taper	Size of Shank Morse Taper	Each
1-2	No. 1	No. 2	\$1.80
1-3	No. 1	No. 3	2.40
1-4	No. 1	No. 4	3.00
1-5	No. 1	No. 5	4.40
2-3	No. 2	No. 3	2.40
2-4	No. 2	No. 4	3.00
2-5	No. 2	No. 5	4.40
3-4	No. 3	No. 4	3.00
3-5	No. 3	No. 5	4.40
4-5	No. 4	No. 5	4.40
4-6	No. 4	No. 6	10.00
5-6	No. 5	No. 6	10.00

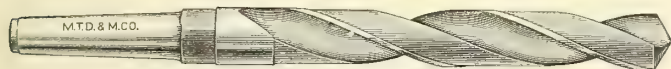
Steel Drill Sockets and Sleeves



Morse No. 100B Sleeves
For Morse Taper Shank Drills

Size		Each
No. 1.	Fitted to No. 2 Socket	\$1.80
No. 1.	Fitted to No. 3 Socket	2.40
No. 1.	Fitted to No. 4 Socket	3.00
No. 1.	Fitted to No. 5 Socket	4.40
No. 2.	Fitted to No. 3 Socket	2.40
No. 2.	Fitted to No. 4 Socket	3.00
No. 2.	Fitted to No. 5 Socket	4.40
No. 3.	Fitted to No. 4 Socket	3.00
No. 3.	Fitted to No. 5 Socket	4.40
No. 4.	Fitted to No. 5 Socket	4.40
No. 4.	Fitted to No. 6 Socket	10.00
No. 5.	Fitted to No. 6 Socket	10.00

These Sleeves can be furnished hardened and ground, inside and out, at special prices.



Morse No. 100R Sleeves, with Clutch Drive
For Morse Taper Shank Drills

Designed for use with High Speed Drills or where a strong positive drive is necessary. The drill has no tang, being driven entirely by the clutch. Prices on application.

Center Keys



Morse No. 100C
For Sockets and Sleeves

Size		Each
No. 1.	Key for No. 1 Socket or Sleeve	\$.30
No. 2.	Key for No. 2 Socket or Sleeve .....	.35
No. 3.	Key for No. 3 Socket or Sleeve .....	.40
No. 4.	Key for No. 4 Socket or Sleeve .....	.50
No. 5.	Key for No. 5 Socket or Sleeve .....	.60
No. 6.	Key for No. 6 Socket or Sleeve .....	.75

These Keys are drop-forged from steel, and are finished and hardened.



Morse No. 100S Floating Sockets, with Morse Taper Holes

Nos. 100S and 100T (page 55) sockets are for use in the turrets of chucking machines, screw machines and boring mills for holding reamers and arbors with Morse taper shanks. Other sizes made to order.

Number	Morse Taper Hole Number	Diameter of Collet Inches	Length of Collet Inches	Whole Length Inches	Each
1	1	1 1/4	3	4 1/2	\$3.50
2	1	1 1/2	3 1/4	5 1/4	3.50
3	1	1 3/4	3 1/4	5 1/4	3.50
4	2	1 1/4	3	4 1/2	4.00
5	2	1 1/2	3 1/4	5 1/4	4.00
6	2	1 3/4	3 1/4	5 1/4	4.00
7	3	1 1/2	3 1/4	5 1/4	4.75
8	3	1 3/4	3 1/4	5 1/4	4.75
9	3	2	3 1/2	6 1/4	4.75
10	4	2	3 1/2	6 1/4	5.30

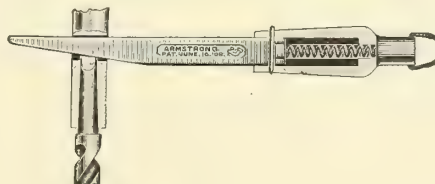


Morse No. 100F Lathe Sockets
For Morse Taper Shank Drills

Size		Each
No. 1.	Holds 1/4 to 9/16 inch, inclusive	\$1.20
No. 2.	Holds 3/8 to 1/2 inch, inclusive	1.80
No. 3.	Holds 5/8 to 1 1/4 inches, inclusive	2.50
No. 4.	Holds 1 1/4 to 2 inches, inclusive	4.00
No. 5.	Holds 2 1/4 to 3 inches, inclusive	7.50

The end fitting the Lathe Center is deeply countersunk to insure a good bearing. These Sockets are hardened.

Drill Drifts



Armstrong Automatic

The heavy handle or driver is slidably mounted upon the blade, which is kept extended, when not in operation, by a low tension coil spring.

In operating, the point of the blade is inserted in the slot of drill socket and the handle driven forcibly up the blade, until it strikes the butt end of drift blade—it will strike a blow sufficiently heavy to remove the most stubborn drill.

Size	Capacity Morse Taper	Recommended for	Each	Extra Blades
No. 1A	No. 1, 2 or 3	No. 1 or 2	\$1.25	\$.40
No. 2A	No. 2, 3 or 4	No. 2 or 3	1.50	.50
No. 3A	No. 3, 4 or 5	No. 3 or 4	2.00	.65
No. 4A	No. 4, 5 or 6	No. 4 or 5	3.00	1.00

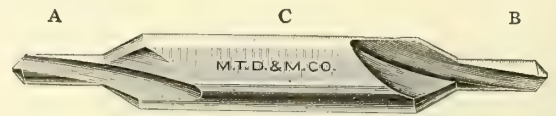
Combined Drills and Countersinks



Morse No. 109B

Included angle, 60 degrees. Other angles made to order at special prices

Size Number	Diameter of Drill at A B	Approximate Fractional Equivalents	Per Dozen	Diameter of Body, C Inch	Decimal Equivalents A B
1	No. 57 x No. 57	$\frac{3}{64}$	\$1.50	$\frac{1}{8}$	.043 x .043
2	No. 55 x No. 55	.....	1.50	$\frac{13}{64}$	.052 x .052
3	No. 52 x No. 52	$\frac{1}{16}$	1.50	$\frac{13}{64}$	.063 x .063
4	No. 49 x No. 49	.....	1.50	$\frac{15}{64}$	.073 x .073
5	No. 49 x No. 45	.....	1.50	$\frac{15}{64}$	.073 x .082
6	No. 46 x No. 46	$\frac{5}{64}$	1.50	$\frac{15}{64}$	.081 x .081
7	No. 42 x No. 42	$\frac{3}{32}$	1.50	$\frac{3}{10}$	.093 x .093
8	No. 42 x No. 30	$\frac{3}{32}$ x $\frac{1}{8}$	1.50	$\frac{3}{10}$	.093 x .128
9	No. 30 x No. 30	$\frac{1}{8}$	1.50	$\frac{3}{10}$	.128 x .128
10	No. 22 x No. 22	$\frac{5}{32}$	3.00	$\frac{7}{16}$	.157 x .157
11	No. 13 x No. 13	$\frac{3}{16}$	3.00	$\frac{7}{16}$	.185 x .185
12	$\frac{3}{64}$ x $\frac{3}{64}$	.....	1.50	$\frac{5}{32}$	.046 x .046
14	$\frac{1}{16}$ x No. 45	.....	1.50	$\frac{13}{64}$	.062 x .082
15	$\frac{3}{16}$ x $\frac{5}{32}$	.....	3.00	$\frac{7}{16}$	.187 x .156

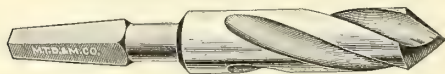


Morse No. 109 1/2 B

For Drilling and Countersinking Wagon Tires and Irons

Size Number	Diameter of Drill at A B	Per Dozen	Diameter of Body C, Inch
1	$\frac{7}{32}$ x $\frac{7}{32}$	\$4.60	$\frac{1}{2}$
2	$\frac{7}{32}$ x $\frac{9}{32}$	4.60	$\frac{1}{2}$
3	$\frac{9}{32}$ x $\frac{9}{32}$	4.60	$\frac{1}{2}$
4	$\frac{11}{32}$ x $\frac{11}{32}$	5.00	$\frac{1}{2}$
5	$\frac{11}{32}$ x $\frac{13}{32}$	5.00	$\frac{1}{2}$
6	$\frac{13}{32}$ x $\frac{13}{32}$	5.00	$\frac{1}{2}$
7	$\frac{7}{32}$ x $\frac{7}{32}$	7.25	$\frac{5}{8}$
8	$\frac{7}{32}$ x $\frac{9}{32}$	7.25	$\frac{5}{8}$
9	$\frac{9}{32}$ x $\frac{9}{32}$	7.25	$\frac{5}{8}$
10	$\frac{11}{32}$ x $\frac{11}{32}$	7.75	$\frac{5}{8}$
11	$\frac{11}{32}$ x $\frac{13}{32}$	7.75	$\frac{5}{8}$
12	$\frac{13}{32}$ x $\frac{13}{32}$	7.75	$\frac{5}{8}$

Three-Groove Bit Stock Countersinks

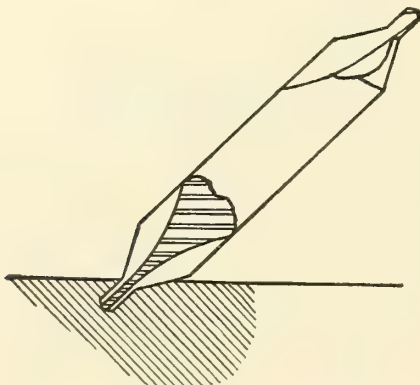


Morse No. 109A

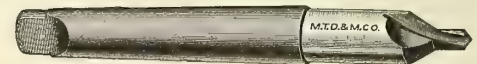
Included angle of cutting point is 82 degrees. Countersinks with other angles made to order at special prices

Diameter Inch	Each	Whole Length Inches	Diameter Inch	Each	Whole Length Inches
$\frac{3}{8}$	\$.50	4 1/4	$\frac{3}{4}$	\$.90	5
$\frac{1}{2}$	.60	4 1/4	$\frac{7}{8}$	1.05	5
$\frac{5}{8}$	.75	4 1/4	1	1.20	5

Illustrating a Use of Combined Drill and Countersink



A Combined Drill and Countersink starting a hole at an angle, for which purpose this tool is probably better fitted than any other.

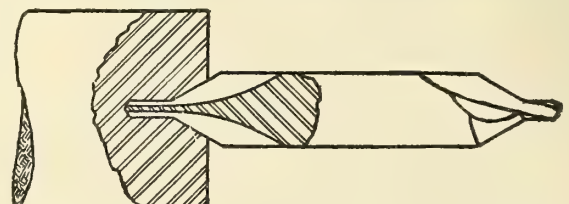


Morse No. 109C

With No. 1 Morse Taper Shanks

Size Number	Diameter of Drill, Inch	Each	Diameter of Body, Inch
1	$\frac{1}{16}$	\$.75	$\frac{7}{16}$
2	$\frac{3}{32}$	.75	$\frac{7}{16}$
3	$\frac{1}{8}$	.75	$\frac{7}{16}$
4	$\frac{5}{32}$	.75	$\frac{7}{16}$
5	$\frac{3}{16}$	.75	$\frac{7}{16}$

Illustrating a Use of Combined Drill and Countersink



The most common use of a Combined Drill and Countersink—that of centering shafts.

They are made of different angles, and sometimes used in thin pieces for drilling and countersinking for screw heads.

Countersinks

For Metals



Concave Lips

No. 15, per dozenInch 1/2 5/8 3/4 \$3.50 3.50 3.50



80 Degrees

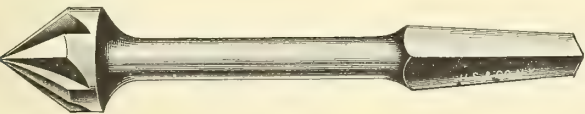
For screw heads, 3/4 inch, per dozen\$2.50



For Use in Drilling Machines For Use in Bit Brace

Made with different Tapers: 82 degrees for Machine or Wood Screws, 54 degrees for Bolts.

1/2 inch Round Shanks	Brace Shanks	Diameter Inch	Degrees	Each	Per Dozen
No. 01	No. 02	5/8	54	\$.50	\$5.75
No. 01 1/2	No. 02 1/2	5/8	82	.50	5.75
No. 03	No. 04	3/4	54	.75	8.50
No. 03 1/2	No. 04 1/2	3/4	82	.75	8.50
No. 05	No. 06	7/8	54	1.00	11.00
No. 05 1/2	No. 06 1/2	7/8	82	1.00	11.00
No. 07	No. 8	1	54	1.25	14.00
No. 07 1/2	No. 8 1/2	1	82	1.25	14.00



Rose

82 degrees for Machine or Wood Screws

Inch 1/2 5/8 3/4 7/8 1 As'td to 3/4
No. 20—Brace Shank, \$6.00 \$6.00 \$8.00 \$12.00 \$16.00 \$7.00 per doz.
Round Shank, 6.00 6.00 8.00 12.00 16.00 7.00 per doz.

For Wood and Soft Metals

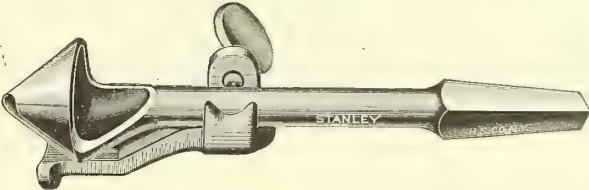


Rose

No. 10. Deep relieved cutter, extra quality
No. 10 1/2. Good quality, somewhat cheaper than No. 10

Inch 1/2 5/8 3/4 7/8 1
No. 10, per dozen\$4.50 \$4.50 \$5.00 \$6.00 \$7.30
No. 10 1/2, per dozen 2.70 3.20 4.00 4.50 8.00

For Wood

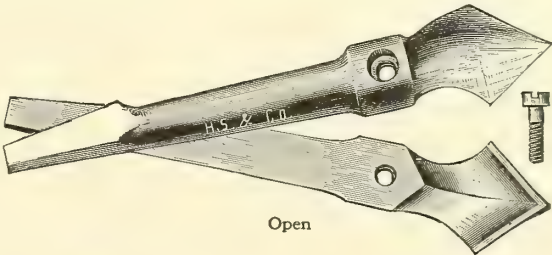


With Gauge

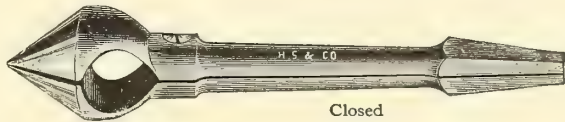


Without Gauge

No. 20. Wheeler's patent. With gauge, 7/8 inch, per dozen\$4.50
No. 18. Wheeler's patent. Without gauge, 7/8 inch, per dozen 3.00



Open



Closed

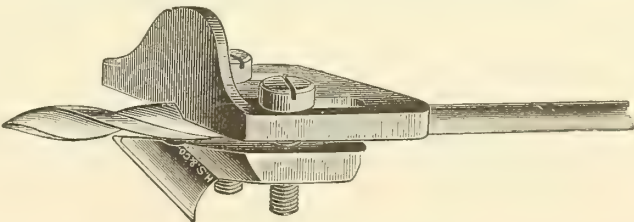
Clark's Double Cut

7/8 inch, per dozen\$4.00



Snail

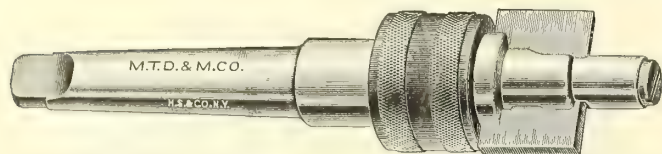
Inch 1/2 5/8 3/4
No. 5. Deep spiral cutter, per dozen\$4.00 \$4.00 \$4.50



Smith's Adjustable

3/4 inch, with depth gauge, will hold bits up to 3/8 inch
Without bits, per dozen\$4.80

Counterbores



Morse No. 109F

With Interchangeable Blades and Guides

Size Number	Without Blade and Guide Each	With One Blade and One Guide Each See Lists Below	Capacity Blades Inches	Capacity Guides Inches	Morse Taper Shank Number
1	\$3.50	\$5.00	$\frac{3}{4}$ to $1\frac{1}{2}$	$\frac{1}{2}$ to 1	2
2	4.55	6.25	$1\frac{9}{16}$ to $2\frac{1}{2}$	$\frac{7}{8}$ to $1\frac{1}{4}$	3
3	5.60	8.00	$2\frac{9}{16}$ to $3\frac{1}{2}$	$1\frac{1}{8}$ to 2	4

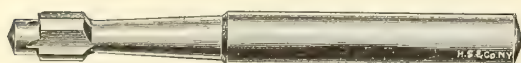
Blades

	Each
$\frac{3}{4}$ to 1 inch by 16ths.....	\$.75
$1\frac{1}{16}$ to $1\frac{1}{2}$ inches by 16ths.....	.85
$1\frac{9}{16}$ to 2 inches by 16ths.....	.95
$2\frac{1}{16}$ to $2\frac{1}{2}$ inches by 16ths.....	1.25
$2\frac{9}{16}$ to 3 inches by 16ths.....	1.65
$3\frac{1}{16}$ to $3\frac{1}{2}$ inches by 16ths.....	1.85

Guides

	Each
$\frac{1}{2}$ to 1 inch by 16ths.....	\$.75
$1\frac{1}{16}$ to $1\frac{9}{16}$ inches by 16ths.....	.75
$1\frac{5}{8}$ to 2 inches by 16ths.....	.85

Special sizes made to order. Prices quoted on application



For Round and Fillister Head Machine Screws

	Each
For Numbers 2, 4 and 6 screws.....	\$.25
For Numbers 8, 10, 12 and 14 screws.....	.35

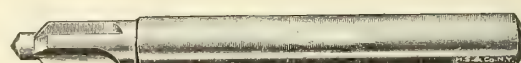


Morse No. 109D, Taper Shank

The Counterbores are furnished to the diameters of the heads of screws and the Guides to the body size.

These Counterbores can be furnished with straight shanks at special prices.

Diameter Counterbore Inches	Diameter Guide Inch	Each	Whole Length Inches	Morse Taper Shank
$\frac{3}{8}$	$\frac{1}{4}$	\$1.40	$4\frac{9}{16}$	No. 1
$\frac{7}{16}$	$\frac{5}{16}$	1.40	$4\frac{9}{16}$	
$\frac{1}{2}$	$\frac{3}{8}$	1.40	$4\frac{13}{16}$	
$\frac{9}{16}$	$\frac{3}{8}$	1.40	$4\frac{13}{16}$	
$\frac{5}{8}$	$\frac{7}{16}$	1.40	$4\frac{13}{16}$	
$\frac{11}{16}$	$\frac{7}{16}$	1.50	$5\frac{3}{16}$	No. 2
$\frac{3}{4}$	$\frac{1}{2}$	1.50	$5\frac{3}{16}$	
$\frac{13}{16}$	$\frac{1}{2}$	1.50	$5\frac{3}{16}$	
$\frac{7}{8}$	$\frac{9}{16}$	1.80	$6\frac{1}{16}$	
$\frac{15}{16}$	$\frac{5}{8}$	1.80	$6\frac{1}{16}$	
1	$\frac{3}{4}$	1.80	$6\frac{1}{16}$	No. 3
$1\frac{1}{16}$	$\frac{3}{4}$	1.80	$6\frac{5}{16}$	
$1\frac{1}{8}$	$\frac{13}{16}$	2.00	$6\frac{5}{16}$	
$1\frac{3}{16}$	$\frac{13}{16}$	2.00	$6\frac{5}{16}$	
$1\frac{1}{4}$	$\frac{7}{8}$	2.00	$6\frac{5}{16}$	
$1\frac{5}{16}$	$\frac{7}{8}$	2.20	$7\frac{1}{16}$	No. 3
$1\frac{3}{8}$	$\frac{15}{16}$	2.40	$7\frac{1}{16}$	
$1\frac{7}{16}$	$\frac{15}{16}$	2.60	$7\frac{1}{16}$	
$1\frac{1}{2}$	1	2.80	$7\frac{1}{16}$	



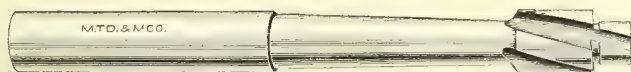
For Flat Head Machine Screws

	Each
For Numbers 2, 4 and 6 screws.....	\$.25
For Numbers 8 and 10 screws.....	.35

Above tools are perfectly relieved and can be used for working hard rubber, fiber and similar materials as well as metal.

The guide is the diameter of the body of the screw and the counterbore cuts for the head of screw.

Counterbores



Morse No. 109L, with Straight Shanks



Morse No. 109K, with Taper Shanks

Counterbores given in the table below are furnished either singly or in sets. A set consists of one counterbore for head of screw with guide of body size, one counterbore for head with guide of tap drill size, and one counterbore to enlarge a tap drill hole to body size. Counterbores of other sizes are made to order at special prices.

Counterbores given in the table below are furnished either singly or in sets. A set consists of one counterbore for head of screw with guide of body size, one counterbore for head with guide of tap drill size, and one counterbore to enlarge a tap drill hole to body size. Counterbores of other sizes are made to order at special prices.

Diameter of Screw and Pitch U. S. Standard	Each	Diameter of Counterbore, Inches		Diameter of Guide, Inch		Whole Length Inches	Shank	
		For Head of Screw	For Body of Screw	For Body Size Hole	For Tap Drill Hole		Length Inches	Diam. Inch
1/4	20	\$1.50	3/8	..	1/4	5 3/4	2 9/16	1/2
1/4	20	1.50	3/8	..	.1865	5 3/4	2 9/16	1/2
1/4	20	1.50	..	1/4	.1865	5 3/4	2 9/16	1/2
5/16	18	1.50	7/16	..	5/16	6 1/8	2 9/16	1/2
5/16	18	1.50	7/16	..	.241	6 1/8	2 9/16	1/2
5/16	18	1.50	..	5/16	.241	6 1/8	2 9/16	1/2
3/8	16	1.50	9/16	..	3/8	6 1/2	2 9/16	1/2
3/8	16	1.50	9/16	..	.301	6 1/2	2 9/16	1/2
3/8	16	1.50	..	3/8	.301	6 1/2	2 9/16	1/2
7/16	14	1.60	5/8	..	7/16	7	3 1/8	1 1/16
7/16	14	1.60	5/8	..	.347	7	3 1/8	1 1/16
7/16	14	1.60	..	7/16	.347	7	3 1/8	1 1/16
1/2	13	1.60	3/4	..	1/2	7 1/4	3 1/8	1 1/16
1/2	13	1.60	3/4	..	.402	7 1/4	3 1/8	1 1/16
1/2	13	1.60	..	1/2	.402	7 1/4	3 1/8	1 1/16
9/16	12	1.75	1 1/16	..	9/16	7 1/2	3 1/8	1 1/16
9/16	12	1.75	1 1/16	..	.452	7 1/2	3 1/8	1 1/16
9/16	12	1.75	..	9/16	.452	7 1/2	3 1/8	1 1/16
5/8	11	2.00	7/8	..	5/8	7 3/4	3 1/8	1 1/16
5/8	11	2.00	7/8	..	.5146	7 3/4	3 1/8	1 1/16
5/8	11	2.00	..	5/8	.5146	7 3/4	3 1/8	1 1/16
1 1/16	11	2.10	1 1/16	..	1 1/16	8 1/2	3 7/8	1 5/16
1 1/16	11	2.10	1 1/16	..	.5771	8 1/2	3 7/8	1 5/16
1 1/16	11	2.10	..	1 1/16	.5771	8 1/2	3 7/8	1 5/16
3/4	10	2.20	1	..	3/4	9	3 7/8	1 5/16
3/4	10	2.20	1	..	.624	9	3 7/8	1 5/16
3/4	10	2.20	..	3/4	.624	9	3 7/8	1 5/16
1 3/16	10	2.30	1 1/16	..	1 3/16	9	3 7/8	1
1 3/16	10	2.30	1 1/16	..	.6865	9	3 7/8	1
1 3/16	10	2.30	..	1 3/16	.6865	9	3 7/8	1
7/8	9	2.40	1 1/8	..	7/8	9 1/4	3 7/8	1
7/8	9	2.40	1 1/8	..	.7333	9 1/4	3 7/8	1
7/8	9	2.40	..	7/8	.7333	9 1/4	3 7/8	1
1 5/16	9	2.40	1 3/16	..	1 5/16	9 1/4	3 7/8	1
1 5/16	9	2.40	1 3/16	..	.7958	9 1/4	3 7/8	1
1 5/16	9	2.40	..	1 5/16	.7958	9 1/4	3 7/8	1
1	8	2.60	1 1/4	..	1	9 1/2	3 7/8	1
1	8	2.60	1 1/4	..	.8427	9 1/2	3 7/8	1
1	8	2.60	..	1	.8427	9 1/2	3 7/8	1

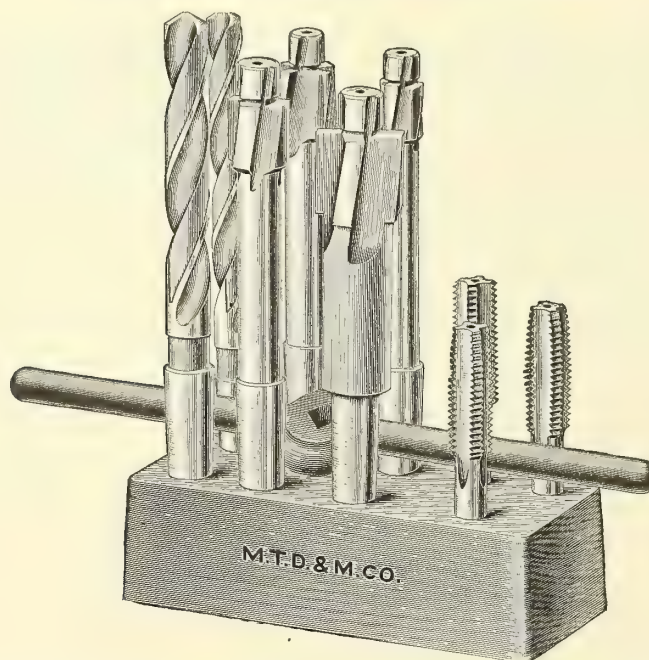
Diameter of Screw and Pitch U. S. Standard	Each	Diameter of Counterbore, Inches		Diameter of Guide, Inch		Whole Length Inches	Morse Taper Shank
		For Head of Screw	For Body of Screw	For Body Size Hole	For Tap Drill Hole		
1/4	20	\$1.50	3/8	..	1/4	5 3/4	No. 1
1/4	20	1.50	3/8	..	.1865	5 3/4	
1/4	20	1.50	..	1/4	.1865	5 3/4	
5/16	18	1.50	7/16	..	5/16	6 1/8	
5/16	18	1.50	7/16	..	.241	6 1/8	
5/16	18	1.50	..	5/16	.241	6 1/8	
3/8	16	1.50	9/16	..	3/8	6 1/2	No. 2
3/8	16	1.50	9/16	..	.301	6 1/2	
3/8	16	1.50	..	3/8	.301	6 1/2	
7/16	14	1.60	5/8	..	7/16	7	
7/16	14	1.60	5/8	..	.347	7	
7/16	14	1.60	..	7/16	.347	7	
1/2	13	1.60	3/4	..	1/2	7 1/4	No. 3
1/2	13	1.60	3/4	..	.402	7 1/4	
1/2	13	1.60	..	1/2	.402	7 1/4	
9/16	12	1.75	1 1/16	..	9/16	7 1/2	
9/16	12	1.75	1 1/16	..	.452	7 1/2	
9/16	12	1.75	..	9/16	.452	7 1/2	
5/8	11	2.00	7/8	..	5/8	7 3/4	No. 3
5/8	11	2.00	7/8	..	.5146	7 3/4	
5/8	11	2.00	..	5/8	.5146	7 3/4	
1 1/16	11	2.10	1 1/16	..	1 1/16	8 1/2	
1 1/16	11	2.10	1 1/16	..	.5771	8 1/2	
1 1/16	11	2.10	..	1 1/16	.5771	8 1/2	
3/4	10	2.20	1	..	3/4	9	No. 3
3/4	10	2.20	1	..	.624	9	
3/4	10	2.20	..	3/4	.624	9	
1 3/16	10	2.30	1 1/16	..	1 3/16	9	
1 3/16	10	2.30	1 1/16	..	.6865	9	
1 3/16	10	2.30	..	1 3/16	.6865	9	
7/8	9	2.40	1 1/8	..	7/8	9 1/4	No. 3
7/8	9	2.40	1 1/8	..	.7333	9 1/4	
7/8	9	2.40	..	7/8	.7333	9 1/4	
1 5/16	9	2.40	1 3/16	..	1 5/16	9 1/4	
1 5/16	9	2.40	1 3/16	..	.7958	9 1/4	
1 5/16	9	2.40	..	1 5/16	.7958	9 1/4	
1	8	2.60	1 1/4	..	1	9 1/2	No. 3
1	8	2.60	1 1/4	..	.8427	9 1/2	
1	8	2.60	..	1	.8427	9 1/2	

For sets of Counterbores, Taps, Tap Drills and Wrench in Blocks see next page

SINCE
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HAMMACHER SCHLEMMER & CO. NEW YORK

Screw Sets in Blocks



They are supplied regularly for U.S. Standard Screws and A.S.M.E. Standard Machine Screws only. Each set complete with Drills, Taps, Counterbores and Wrench as listed

U. S. Standard Screws

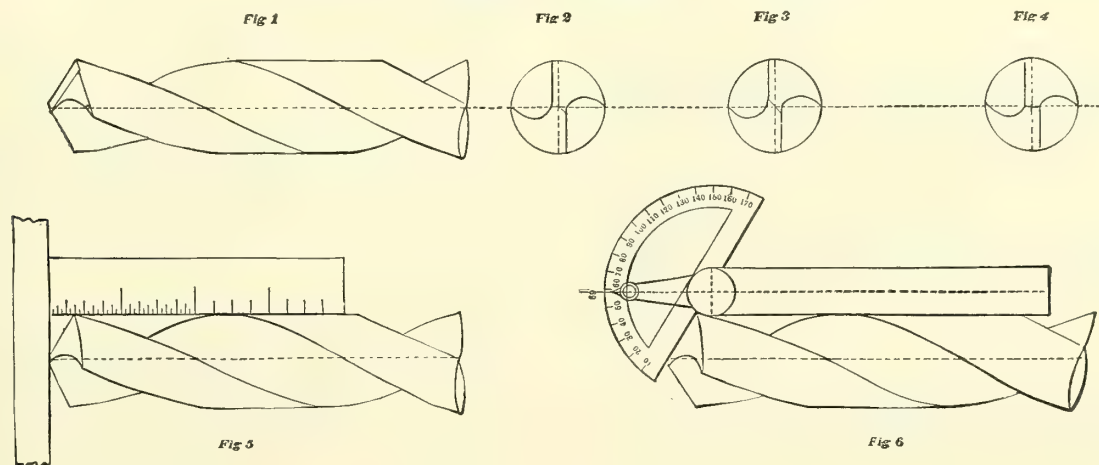
Diameter and Pitch of Screw		Per Set	TAPER SHANK COUNTERBORES												Taps Taper Plug Bottoming	Wrench Size Number
			Taper Shank Drills		Tap Size For Body		Tap Size For Fil. Head		Body Size For Fil. Head		Body Size Seat Hex. Head					
					Diameter Guide	Diameter Bore	Diameter Guide	Diameter Bore	Diameter Guide	Diameter Bore	Diameter Guide	Diameter Bore				
													Tap Size	Body Size		
*1/4	20	\$21.60	3/16	1/4	3/16	1/4	3/16	3/8	1/4	3/8	1/4	5/8	1/4	20	4	
5/16	18	19.50	C	5/16	C	5/16	C	7/16	5/16	7/16	5/16	11/16	5/16	18	5	
3/8	16	20.60	N	3/8	N	3/8	N	9/16	3/8	9/16	3/8	13/16	3/8	16	6	
7/16	14	22.50	S	7/16	S	7/16	S	5/8	7/16	5/8	7/16	15/16	7/16	14	7	
1/2	13	23.10	13/32	1/2	13/32	1/2	13/32	3/4	1/2	3/4	1/2	1 1/16	1/2	13	7	
1/2	12	23.10	25/64	1/2	25/64	1/2	25/64	3/4	1/2	3/4	1/2	1 1/16	1/2	12	7	
9/16	12	24.75	29/64	9/16	29/64	9/16	29/64	13/16	9/16	13/16	9/16	1 1/8	9/16	12	8	
5/8	11	27.30	33/64	5/8	33/64	5/8	33/64	7/8	5/8	7/8	5/8	1 1/4	5/8	11	8	
3/4	10	31.00	5/8	3/4	5/8	3/4	5/8	1	3/4	1	3/4	1 1/2	3/4	10	9	
7/8	9	40.25	47/64	7/8	47/64	7/8	47/64	1 1/8	7/8	1 1/8	7/8	1 1/2	7/8	9	10	
1	8	51.25	27/32	1	27/32	1	27/32	1 1/4	1	1 1/4	1	1 1/2	1	8	12	

*For $\frac{1}{4}$ 20 Set only there is furnished in addition to the Counterbores listed, one for flat head screws: Diameter of guide $\frac{1}{4}$, diameter of bore $\frac{3}{8}$. Price on this size only includes five Counterbores.

A.S.M.E. Standard Machine Screws

STRAIGHT SHANK COUNTERBORES																
Number and Pitch of Screw	Per Set	Straight Shank Drills		Tap Size For Body		Tap Size For Fil. Head		Body Size For Fil. Head		Body Size For Round Head		Body Size For Flat Head		Taps Taper Plug Bottoming	Wrench Size Number	
				Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore			
		Tap Size	Body Size													
0—80	\$21.00	No. 56	$\frac{1}{16}$	.046	.062	.046	.090	.062	.090	.062	.136	.062	.136	0—80	1
1—72	21.00	No. 53	No. 49	.059	.075	.059	.112	.073	.112	.073	.159	.073	.159	1—72	1	
2—64	21.00	No. 50	No. 44	.070	.088	.070	.134	.086	.134	.086	.185	.086	.185	2—64	1	
3—56	21.00	No. 47	No. 39	.078	.101	.078	.155	.099	.155	.099	.209	.099	.209	3—56	1	
4—48	21.00	No. 43	No. 33	.089	.114	.089	.176	.113	.176	.113	.232	.113	.232	4—48	1	
5—44	21.50	No. 39	$\frac{1}{8}$	.099	.127	.099	.198	.125	.198	.125	.256	.125	.256	5—44	2
6—40	21.50	No. 35	No. 28	.110	.140	.110	.219	.140	.219	.140	.280	.140	.280	6—40	2	
7—36	21.50	No. 31	No. 24	.120	.153	.120	.240	.152	.240	.152	.304	.152	.304	7—36	2	
8—36	21.50	No. 29	No. 19	.136	.166	.136	.262	.166	.262	.166	.328	.166	.328	8—36	3	
9—32	21.50	No. 28	No. 16	.140	.179	.140	.284	.177	.284	.177	.352	.177	.352	9—32	3	
10—30	21.50	No. 24	No. 11	.152	.192	.152	.305	.191	.305	.191	.375	.191	.375	10—30	3	
12—28	22.00	No. 17	$\frac{3}{32}$	.173	.218	.173	.348	.218	.348	.218	.424	.218	.424	12—28	4
14—24	22.00	No. 10	C	.193	.244	.193	.390	.242	.390	.242	.476	.242	.476	14—24	4	
16—22	22.00	No. 3	I	.213	.270	.213	.433	.272	.433	.272	.528	.272	.528	16—22	4	
18—20	22.00	A	M	.234	.296	.234	.476	.295	.476	.295	.580	.295	.580	18—20	5	
20—20	22.75	G	P	.261	.322	.261	.518	.323	.518	.323	.632	.323	.632	20—20	5	
22—18	23.35	K	S	.281	.348	.281	.561	.348	.561	.348	.684	.348	.684	22—18	5	
24—16	23.55	$\frac{19}{64}$	$\frac{3}{8}$	.297	.374	.297	.604	.375	.604	.375	.736	.375	.736	24—16	6

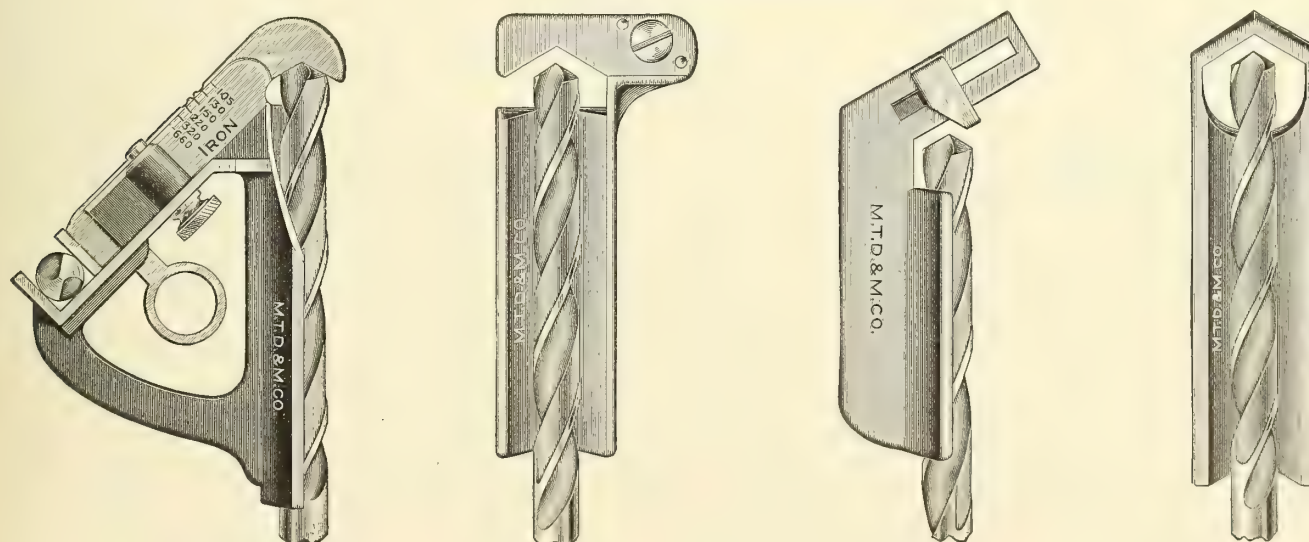
Grinding Twist Drills



Few operations on tools in the shop are more frequently disappointing than the grinding or sharpening of drills. That the cutting edges have a proper and uniform angle with the longitudinal axis of the drill (see Fig. 6) having them of exactly equal length, and the lips of the drill well and sufficiently backed off or cleared, are points generally understood as requisite to the satisfactory performance of a drill, though not always attained. Practical suggestions for the grinding of drills have been published from time to time. We append in part from these, hoping they will be found useful. If the clearance of a drill is insufficient or imperfect it will not cut. When force is applied it resists the power of the drilling machine, and is crushed or split. It is well to start a drill, after grinding, by hand, observing the character of the chips, which should characterize a clean cutting tool. In wrought metal the chip will sometimes attain a length of several feet. Prof. Sweet suggests that the rear of the lip of a drill be removed, as shown by the cut No. 1; this makes the cutting edge much like a flat drill. Drills properly made have their cutting edges straight when ground to proper angle, which is 59 degrees, as shown in cut No. 6.

Grinding to less angle leaves the lip hooking, and is likely to produce a crooked and irregular hole. The grinding lines to a drill are placed slightly above the center, to allow for the proper angle of point, which is an important factor. This angle is an index to the clearance. If the angle is too much, the drill cuts rank; if not enough, the drill may not cut. Fig. 2 shows a proper angle. In Fig. 3 the angle is too sharp. In Fig. 4 the angle runs backward, and shows the want of clearance. An effective method of determining the clearance is to set the point of the drill on a plane surface, holding a scale as shown in cut No. 5; by revolving the drill its clearance is shown, as well as the height of the cutting lips, which should be equal; also the cutting edges should be of exactly equal length—any inequality of lengths doubles itself in work. To strengthen the drill, the center is made thicker toward the shank. As the drill is shortened through use, the center shows thicker, and will work hard in drilling. To overcome this, the center should be thinned, care being taken to remove an equal amount of stock on each side, and so keep the point central. In grinding a drill preserve the original form, which usually will insure rapid and satisfactory work.

Gauges for Grinding Drills



Style No. 1

Style No. 2

Style No. 3

Style No. 4

For Drills $\frac{3}{4}$ inch and smaller

This style made in two sizes
for $\frac{1}{4}$ in. and smaller, for $\frac{3}{4}$ in. and smaller

Style	Capacity	Each
No. 1	0 to $\frac{3}{4}$ inch	\$10.50
No. 2	0 to $\frac{3}{4}$ inch	5.00
No. 3	0 to $\frac{3}{4}$ inch	6.25

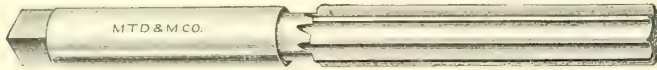
Style	Capacity	Each
No. 4A	0 to $\frac{1}{4}$ inch	\$3.50
No. 4B	$\frac{1}{4}$ to $\frac{3}{4}$ inch	5.00

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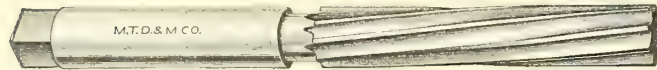
HAMMACHER SCHLEMMER & CO. NEW YORK

Jobbers Reamers

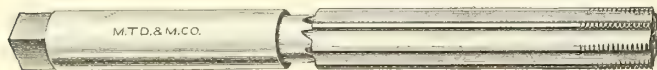
Carbon Steel



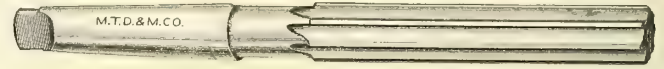
Morse No. 115, with Straight Shanks and Flutes



Morse No. 115B, with Straight Shanks and Spiral Flutes



Morse No. 115C, with Straight Shanks and Flutes
Threaded Ends



Morse No. 115A, with Taper Shanks and Straight Flutes



Morse No. 115D, with Taper Shanks and Spiral Flutes

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/8	\$1.00	3	1 1/2	1 11/32	\$5.40	12 1/2	6 1/4	1/4	\$1.50	5 3/16	2	No. 1	1 3/8	\$5.70	12 13/16	6 5/16	No. 4
5/32	1.10	3 1/4	1 5/8	1 13/8	5.60	12 5/8	6 5/16	1/4	1.55	5 5/16	2 1/8		1 13/32	5.90	12 13/16	6 1/16	
3/16	1.20	3 1/2	1 3/4	1 13/32	5.80	12 5/8	6 5/16	1/4	1.60	5 1/2	2 1/4		1 1/16	6.10	13	6 1/16	
1/2	1.30	3 3/4	1 7/8	1 1/16	6.00	12 7/8	6 1/16	1/4	1.65	5 5/8	2 3/8		1 1/32	6.30	13	6 1/16	
1/4	1.40	4	2	1 1/32	6.20	12 7/8	6 1/16	1/4	1.70	5 13/16	2 1/2		1 1/2	6.50	13 1/8	6 1/2	
9/32	1.45	4 1/4	2 1/8	1 1/2	6.40	13	6 1/2	1/4	1.80	5 1/16	2 5/8		1 17/32	6.70	13 1/8	6 1/2	
5/16	1.50	4 1/2	2 1/4	1 1/2	6.60	13	6 1/2	1/4	1.85	6 1/8	2 3/4		1 9/16	6.90	13 1/8	6 1/2	
11/32	1.55	4 3/4	2 3/8	1 1/16	6.80	13	6 1/2	1/4	1.95	6 1/4	2 7/8		1 13/32	7.10	13 1/8	6 1/2	
3/8	1.60	5	2 1/2	1 1/32	7.00	13	6 1/2	1/4	2.00	6 7/16	3		1 5/8	7.30	13 1/8	6 1/2	
13/32	1.70	5 1/4	2 5/8	1 5/8	7.20	13	6 1/2	1/4	2.10	6 9/16	3 1/8		1 21/32	7.50	13 1/8	6 1/2	
7/16	1.75	5 1/2	2 3/4	1 3/2	7.40	13	6 1/2	1/4	2.15	6 3/4	3 1/4	No. 2	1 1/16	7.70	13 7/16	6 3/4	No. 5
15/32	1.85	5 3/4	2 7/8	1 1/16	7.60	13 1/2	6 3/4	1/4	2.25	6 7/8	3 3/8		1 23/32	7.85	13 7/16	6 3/4	
1/2	1.90	6	3	1 23/32	7.80	13 1/2	6 3/4	1/4	2.30	7 1/16	3 1/2		1 3/4	8.00	14 11/16	6 3/4	
5/8	1.95	6 1/4	3 1/8	1 3/4	8.00	13 1/2	6 3/4	1/4	2.40	7 3/4	3 11/16		1 25/32	8.20	14 11/16	6 3/4	
3/4	2.00	6 1/2	3 3/4	1 3/2	8.20	13 1/2	6 3/4	1/4	2.50	8	3 3/8		1 11/16	8.40	14 11/16	6 3/4	
7/8	2.10	6 3/4	3 5/8	1 11/16	8.40	13 1/2	6 3/4	1/4	2.60	8 1/8	4 1/16		1 27/32	8.60	14 11/16	6 3/4	
1 1/8	2.20	7	3 1/2	1 27/32	8.60	13 1/2	6 3/4	1/4	2.70	8 3/8	4 3/16		1 7/8	8.80	15	7	
1 1/4	2.30	7 3/8	3 11/8	1 7/8	8.80	14	7	1/4	2.80	8 5/8	4 3/8		2	9.00	15	7	
1 1/2	2.40	7 3/4	3 7/8	1 29/32	9.00	14	7	1/4	2.90	8 13/16	4 9/16		2 1/16	10.00	15 1/2	7 1/4	
1 3/4	2.50	8 1/8	4 1/16	1 15/16	9.20	14	7	1/4	3.05	8 15/16	4 11/16	No. 3	2 1/8	10.40	15 1/2	7 1/4	
1 5/8	2.60	8 3/8	4 1/8	1 31/32	9.40	14	7	1/4	3.20	9 1/16	4 7/8		2 3/16	10.80	15 1/2	7 1/4	
1 7/8	2.70	8 3/4	4 3/8	2	9.60	14	7	1/4	3.35	9 1/8	5		2 1/2	11.30	15 1/2	7 1/4	
2	2.80	9 1/8	4 9/16	2 1/16	10.00	14 1/2	7 1/4	1/4	3.50	10 3/16	5 1/8		2 5/8	11.80	16	7 1/2	
2 1/8	2.95	9 3/8	4 11/16	2 1/8	10.40	14 1/2	7 1/4	1/4	3.65	10 3/8	5 5/16		2 3/4	12.30	16	7 1/2	
2 1/4	3.10	9 3/4	4 7/8	2 3/16	10.80	14 1/2	7 1/4	1/4	3.80	10 11/16	5 9/16		2 7/8	12.80	16	7 1/2	
2 3/8	3.25	10	5	2 1/4	11.30	14 1/2	7 1/4	1/4	3.95	10 13/16	5 11/16		2 1/2	13.40	16	7 1/2	
2 1/2	3.40	10 1/4	5 1/8	2 5/16	11.80	15	7 1/2	1/4	4.25	10 15/16	5 3/4		2 9/16	14.00	16 1/2	7 3/4	
2 3/4	3.55	10 5/8	5 1/16	2 7/8	12.30	15	7 1/2	1/4	4.40	11 1/16	5 13/16		2 5/16	14.60	16 1/2	7 3/4	
2 5/8	3.70	10 7/8	5 1/8	2 1/2	12.80	15	7 1/2	1/4	4.55	11 3/16	5 15/16	No. 4	2 11/16	15.40	16 1/2	7 3/4	
2 7/8	3.85	11 1/8	5 9/16	2 1/2	13.40	15	7 1/2	1/4	4.70	11 5/16	6		2 3/4	16.20	16 1/2	7 3/4	
3	4.00	11 1/4	5 3/8	2 9/16	14.00	15 1/2	7 3/4	1/4	4.85	11 3/8	6 1/16		2 13/16	17.00	17	8	
3 1/8	4.15	11 1/2	5 3/4	2 5/8	14.60	15 1/2	7 3/4	1/4	5.00	12 1/2	6 1/8		2 7/8	17.80	17	8	
3 1/4	4.30	11 3/8	5 13/16	2 11/16	15.40	15 1/2	7 3/4	1/4	5.15	12 9/16	6 1/16		2 15/16	18.60	17	8	
3 1/2	4.45	11 7/8	5 15/16	2 3/4	16.20	15 1/2	7 3/4	1/4	5.30	12 11/16	6 1/4		3	19.40	17	8	
3 3/4	4.60	12	6	2 13/16	17.00	16	8	1/4	5.50	12 13/16	6 1/4						
3 5/8	4.75	12 1/8	6 1/16	2 7/8	17.80	16	8	1/4									
3 7/8	4.90	12 1/4	6 1/8	2 15/16	18.60	16	8	1/4									
4	5.05	12 3/8	6 1/16	3	19.40	16	8	1/4									

32nd sizes not listed furnished at intermediate prices and 64th sizes at price of next larger 32nd size.

32nd sizes not listed furnished at intermediate prices and 64th sizes at price of next larger 32nd size. Flutes are slightly tapered on end.

In Sets

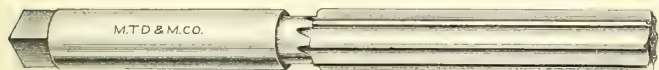
Morse Nos. 115, 115 B and 115 C

Set, 1/4 to 1 inch in diameter, by 16ths	\$30.00	Set, 1/4 to 1 inch in diameter, by 32nds	\$57.50
Set, 1/4 to 1 1/4 inches in diameter, by 16ths	48.00	Set, 1/4 to 1 1/4 inches in diameter, by 32nds	92.00
Set, 1/4 to 1 1/2 inches in diameter, by 16ths	70.00	Set, 1/4 to 1 1/2 inches in diameter, by 32nds	137.00
Set, 1/4 to 2 inches in diameter, by 16ths	135.00	Set, 1/4 to 2 inches in diameter, by 32nds	265.00

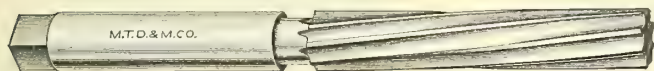
For these Reamers in High Speed Steel see next page. Reamers of any style, size or length made to order at special prices

Jobbers Reamers

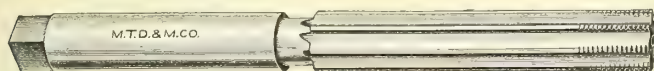
High Speed Steel



Morse No. 115, with Straight Shanks and Flutes



Morse No. 115 B, with Straight Shanks and Spiral Flutes



Morse No. 115 C, with Straight Shanks and Flutes
Threaded Ends

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/8	\$3.00	3	1 1/2	1 5/8	\$25.75	13	6 1/2
3/16	3.25	3 1/2	1 3/4	1 11/16	27.50	13 1/2	6 3/4
1/4	3.50	4	2	1 3/4	29.50	13 1/2	6 3/4
5/16	3.75	4 1/2	2 1/4	1 13/16	31.50	13 1/2	6 3/4
3/8	4.25	5	2 1/2	1 7/8	33.50	14	7
7/16	4.75	5 1/2	2 3/4	1 15/16	35.75	14	7
1/2	5.25	6	3	2	38.00	14	7
9/16	5.75	6 1/2	3 1/4	2 1/16	40.75	14 1/2	7 1/4
5/8	6.25	7	3 1/2	2 1/8	43.50	14 1/2	7 1/4
11/16	6.75	7 3/4	3 3/8	2 1/4	46.25	14 1/2	7 1/4
3/4	7.25	8 3/8	4 1/16	2 1/2	49.00	14 1/2	7 1/4
13/16	7.75	9 1/8	4 3/16	2 5/16	51.75	15	7 1/2
7/8	8.50	9 3/4	4 7/8	2 3/8	55.00	15	7 1/2
15/16	9.50	10 1/4	5 1/8	2 1/2	58.25	15	7 1/2
1	10.50	10 7/8	5 1/4	2 1/2	61.50	15	7 1/2
1 1/16	11.50	11 1/4	5 5/8	2 5/8	64.75	15 1/2	7 3/4
1 1/8	12.75	11 5/8	5 3/4	2 3/4	68.00	15 1/2	7 3/4
1 1/4	14.25	12	6	2 11/16	71.25	15 1/2	7 3/4
1 1/2	15.75	12 1/4	6 1/8	2 3/4	74.50	15 1/2	7 3/4
1 3/4	17.25	12 1/2	6 1/4	2 13/16	77.75	16	8
1 5/8	18.75	12 5/8	6 5/16	2 7/8	81.00	16	8
1 7/8	20.50	12 3/4	6 3/8	2 15/16	84.25	16	8
1 9/8	22.25	13	6 1/2	3	87.50	16	8
1 11/8	24.00	13	6 1/2				

64th and 32nd sizes take price of next larger listed size



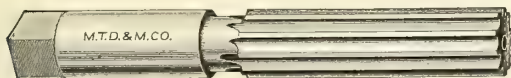
Morse No. 115A, with Taper Shanks and Straight Flutes

Diam. Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank	Diam. Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/4	\$4.00	5 1/16	2	No. 1	1 5/8	\$26.75	13 1/8	6 1/2	No. 4
5/16	4.25	5 1/2	2 1/4		1 11/16	28.50	13 1/16	6 3/4	
3/8	4.75	5 13/16	2 1/2		1 3/4	30.50	14 1/16	6 3/4	
7/16	5.25	6 1/8	2 3/4		1 13/16	32.50	14 1/16	6 3/4	
1/2	5.75	6 7/16	3		1 7/8	34.50	15	7	
9/16	6.25	6 3/4	3 1/4	No. 2	1 15/16	36.75	15	7	No. 5
5/8	6.75	7 9/16	3 1/2		2	39.00	15	7	
11/16	7.25	8	3 3/8		2 1/16	41.75	15 1/2	7 1/4	
3/4	7.75	8 3/8	4 3/16		2 1/8	44.50	15 1/2	7 1/4	
13/16	8.50	8 13/16	4 9/16		2 1/4	47.25	15 1/2	7 1/4	
7/8	9.50	9 1/16	4 7/8	No. 3	2 1/2	50.00	15 1/2	7 1/4	No. 6
15/16	10.50	10 3/16	5 1/8		2 5/16	53.25	16	7 1/2	
1	11.50	10 9/16	5 1/4		2 3/8	56.50	16	7 1/2	
1 1/16	12.50	10 13/16	5 5/8		2 1/2	59.75	16	7 1/2	
1 1/8	13.75	11 1/16	5 3/4		2 3/4	63.00	16	7 1/2	
1 1/4	15.25	11 5/16	6	No. 4	2 5/8	66.25	16 1/2	7 3/4	No. 7
1 3/8	16.75	12 1/2	6 1/8		2 3/4	69.50	16 1/2	7 3/4	
1 5/8	18.25	12 11/16	6 1/4		2 11/16	72.75	16 1/2	7 3/4	
1 7/8	19.75	12 13/16	6 5/16		2 3/4	76.00	16 1/2	7 3/4	
1 9/8	21.50	13	6 7/16		2 13/16	79.25	17	8	
1 11/8	23.25	13 1/8	6 1/2		2 7/8	82.50	17	8	
1 13/8	25.00	13 1/4	6 1/2		2 15/16	86.25	17	8	
					3	90.00	17	8	

64th and 32nd sizes take price of next larger listed size

Solid Reamers

Carbon Steel



Morse No. 116, with Straight Shanks and Flutes
Short Set

Diameter Inch	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/4	\$1.30	3 9/16	2	3/4	\$2.20	5 3/4	3
3/8	1.35	3 11/16	2 1/8	7/8	2.30	5 7/8	3 1/16
1/2	1.40	4	2 1/4	1 1/8	2.35	6	3 1/8
5/8	1.45	4 1/8	2 1/2	1 1/4	2.40	6 1/8	3 1/16
3/4	1.50	4 1/4	2 3/8	1 3/8	2.50	6 3/8	3 1/4
7/8	1.55	4 3/8	2 3/8	1 1/2	2.60	6 5/8	3 5/16
1	1.60	4 1/2	2 1/2	1 5/8	2.70	6 3/4	3 1/2
1 1/8	1.65	4 5/8	2 5/8	1 3/4	2.80	6 7/8	3 1/2
1 1/4	1.70	4 3/4	2 5/8	1 7/8	2.90	7 1/8	3 5/8
1 1/2	1.75	4 7/8	2 5/8	1 15/16	3.00	7 1/16	3 1/2
1 3/4	1.80	5	2 5/8	1 1/2	3.10	7 1/2	3 3/4
1 5/8	1.85	5 1/8	2 11/16	1 3/2	3.20	7 11/16	3 15/16
1 7/8	1.90	5 1/4	2 3/4	1 5/8	3.30	7 1/8	4
1 9/8	1.95	5 3/8	2 13/16	1 3/4	3.40	7 1/16	4 1/8
1 11/8	2.05	5 1/2	2 7/8	1 15/16	3.50	8 1/4	4 1/4
1 13/8	2.15	5 5/8	2 15/16	1 3/2	3.60	8 1/16	4 3/8

Morse No. 116A, with Straight Shanks and Flutes
Threaded Ends, Short Set

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1 1/4	\$3.70	8 5/8	4 1/2	2 1/16	\$8.70	12 1/8	6 1/2
1 3/4	3.80	8 13/16	4 5/8	2 1/8	9.10	12 1/4	6 5/8
1 5/8	3.90	9	4 3/4	2 3/16	9.50	12 3/8	6 5/8
1 7/8	4.00	9 1/16	4 7/8	2 1/4	9.90	12 1/2	6 3/4
1 9/8	4.10	9 3/8	5	2 5/16	10.30	12 5/8	6 3/4
1 11/8	4.20	9 9/16	5 1/8	2 3/8	10.80	12 3/4	6 7/8
1 13/8	4.35	9 3/4	5 1/4	2 1/2	11.40	12 7/8	7
1 15/8	4.50	10	5 1/2	2 1/2	12.00	13	7
1 17/8	5.20	10 1/4	5 5/8	2 5/8	12.60	13 1/8	7 1/8
1 19/8	5.70	10 1/2	5 3/4	2 3/4	13.20	13 1/4	7 1/8
1 21/8	6.20	10 3/4	5 7/8	2 11/16	13.85	13 3/8	7 1/4
1 23/8	6.70	11	6	2 3/4	14.50	13 1/2	7 1/4
1 25/8	7.10	11 1/4	6 1/8	2 13/16	15.20	13 5/8	7 3/8
1 27/8	7.50	11 1/2	6 1/4	2 7/8	15.95	13 3/4	7 3/8
1 29/8	7.90	11 3/4	6 3/8	2 15/16	16.70	13 7/8	7 1/2
1 31/8	8.30	12	6 1/2	3	17.50	14	7 1/2

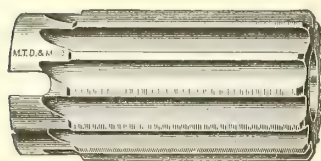
32nd sizes not listed furnished at intermediate prices and 64th sizes at prices of next larger 32nd size.

SINCE
1848

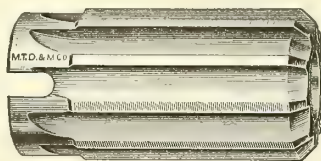
HAMMACHER SCHLEMMER & CO. NEW YORK

Shell Reamers

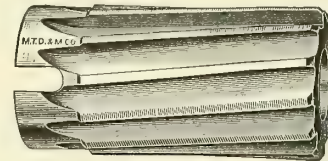
Carbon Steel



Morse No. 117
with Straight Flutes



Morse No. 117A, Rose
with Straight Flutes



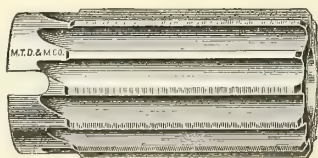
Morse No. 117 1/2
with Spiral Flutes

These Shell Reamers have Taper Holes, the diameter given being at the large end

Diameter Inches	Each	Whole Length Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Size Hole Inches
1/2	\$1.40	2	1/4	2 3/16	\$5.80	3 3/4	1 1/4	3 7/8	\$16.00	5	2	5 9/16	\$35.25	6 1/2	2 3/4
5/8	1.50	2	1/4	2 1/4	6.00	3 3/4	1 1/4	3 15/16	17.00	5	2	5 5/8	36.50	6 1/2	2 3/4
7/8	1.60	2 1/4	3/8	2 5/16	6.20	3 3/4	1 1/4	4	18.00	5	2	5 11/16	37.75	6 1/2	2 3/4
1	1.60	2 1/4	3/8	2 3/8	6.40	3 3/4	1 1/4	4 1/16	18.30	5 1/2	2 1/4	5 3/4	39.00	6 1/2	2 3/4
1 1/8	1.60	2 1/2	1/2	2 7/16	6.60	3 3/4	1 1/4	4 1/8	18.60	5 1/2	2 1/4	5 13/16	40.50	6 1/2	2 3/4
1 1/4	1.60	2 1/2	1/2	2 1/2	6.80	3 3/4	1 1/4	4 3/16	19.00	5 1/2	2 1/4	5 7/8	42.00	6 1/2	2 3/4
7/8	1.70	2 1/2	1/2	2 9/16	7.00	4	1 1/2	4 1/4	19.40	5 1/2	2 1/4	5 15/16	43.50	6 1/2	2 3/4
1 1/8	1.70	2 1/2	1/2	2 5/8	7.30	4	1 1/2	4 1/8	19.80	5 1/2	2 1/4	6	45.00	6 1/2	2 3/4
1	1.80	2 3/4	5/8	2 11/16	7.60	4	1 1/2	4 3/8	20.20	5 1/2	2 1/4	6 1/16	46.75	6 1/2	2 3/4
1 1/16	1.80	2 3/4	5/8	2 3/4	8.00	4	1 1/2	4 1/2	20.60	5 1/2	2 1/4	6 1/8	48.50	6 1/2	2 3/4
1 1/8	1.90	2 3/4	5/8	2 13/16	8.40	4	1 1/2	4 1/2	21.00	5 1/2	2 1/4	6 1/4	50.25	6 1/2	2 3/4
1 1/4	2.00	2 3/4	5/8	2 7/8	8.80	4	1 1/2	4 9/16	21.60	6	2 1/2	6 1/2	52.00	6 1/2	2 3/4
1 1/4	2.20	3	5/8	2 5/8	9.20	4	1 1/2	4 5/8	22.20	6	2 1/2	6 3/8	54.00	6 1/2	2 3/4
1 3/8	2.40	3	3/4	3	9.60	4	1 1/2	4 11/16	22.80	6	2 1/2	6 3/8	56.00	6 1/2	2 3/4
1 3/8	2.60	3	3/4	3 1/16	9.90	4 1/2	1 3/4	4 3/4	23.40	6	2 1/2	6 1/2	58.00	6 1/2	2 3/4
1 7/8	2.80	3	3/4	3 1/8	10.20	4 1/2	1 3/4	4 11/16	24.00	6	2 1/2	6 1/2	60.00	6 1/2	2 3/4
1 1/2	3.00	3	3/4	3 3/16	10.60	4 1/2	1 3/4	4 7/8	24.60	6	2 1/2	6 3/8	62.50	7	3
1 9/16	3.20	3	3/4	3 1/4	11.00	4 1/2	1 3/4	4 15/16	25.20	6	2 1/2	6 5/8	65.00	7	3
1 5/8	3.50	3	3/4	3 5/16	11.50	4 1/2	1 3/4	5	26.00	6	2 1/2	6 11/16	67.50	7	3
1 11/16	3.80	3 1/2	1	3 3/8	12.00	4 1/2	1 3/4	5 1/16	27.00	6	2 1/2	6 3/4	70.00	7	3
1 3/4	4.10	3 1/2	1	3 7/16	12.50	4 1/2	1 3/4	5 1/8	28.00	6	2 1/2	6 11/16	72.50	7	3
1 13/16	4.40	3 1/2	1	3 1/2	13.00	4 1/2	1 3/4	5 3/16	29.00	6	2 1/2	6 7/8	75.00	7	3
1 7/8	4.70	3 1/2	1	3 9/16	13.50	5	2	5 1/4	30.00	6	2 1/2	6 15/16	77.50	7	3
1 15/16	5.00	3 1/2	1	3 5/8	14.00	5	2	5 5/16	31.00	6	2 1/2	7	80.00	7	3
2	5.20	3 1/2	1	3 11/16	14.50	5	2	5 3/8	32.00	6	2 1/2				
2 1/16	5.40	3 3/4	1 1/4	3 3/4	15.00	5	2	5 7/16	33.00	6	2 1/2				
2 1/8	5.60	3 3/4	1 1/4	3 13/16	15.50	5	2	5 1/2	34.00	6	2 1/2				

For Arbors fitting these Reamers see Index.

Reamers Style 117 A have no radial clearance but are ground with a longitudinal clearance. Keep cutting points sharp.



Morse No. 117C, with Straight Holes and Flutes

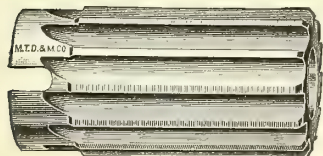
Diameter Inches	Each	Whole Length Inches	Length of Flute Inches	Diam. of Hole Inch	Diameter Inches	Each	Whole Length Inches	Length of Flute Inches	Diam. of Hole Inch	Diameter Inches	Each	Whole Length Inches	Length of Flute Inches	Diam. of Hole Inches
1 1/16	\$1.80	2 5/8	2 1/4	1/2	1 11/16	\$3.80	2 3/4	2 3/8	5/8	3 11/16	\$14.50	3 1/4	2 3/4	1 1/4
1 1/8	1.90	2 5/8	2 1/4	1/2	1 3/4	4.10	2 3/4	2 3/8	5/8	3 3/4	15.00	3 5/8	3 1/8	1 1/2
1 3/16	2.00	2 5/8	2 1/4	1/2	1 13/16	4.40	2 3/4	2 3/8	5/8	3 13/16	15.50	3 5/8	3 1/8	1 1/2
1 1/4	2.20	2 5/8	2 1/4	1/2	1 7/8	4.70	2 3/4	2 3/8	3/4	3 7/8	16.00	3 5/8	3 1/8	1 1/2
1 5/16	2.40	2 5/8	2 1/4	1/2	1 15/16	5.00	2 3/4	2 3/8	3/4	3 15/16	17.00	3 5/8	3 1/8	1 1/2
1 3/8	2.60	2 3/4	2 3/8	5/8	2	5.20	2 3/4	2 3/8	3/4	4	18.00	3 5/8	3 1/8	1 1/2
1 7/16	2.80	2 3/4	2 3/8	5/8	2 1/16	5.40	2 3/4	2 3/8	3/4	4 1/16	18.30	3 5/8	3 1/8	1 1/2
1 1/2	3.00	2 3/4	2 3/8	5/8	2 1/8	5.60	2 3/4	2 3/8	3/4	4 1/8	18.60	3 5/8	3 1/8	1 1/2
1 9/16	3.20	2 3/4	2 3/8	5/8	2 3/16	5.80	2 3/4	2 3/8	3/4	4 3/16	19.00	3 5/8	3 1/8	1 1/2
1 5/8	3.50	2 3/4	2 3/8	5/8	2 1/4	6.00	2 3/4	2 3/8	3/4	4 1/4	19.40	4	3 3/8	2
										4 3/8	19.80	4	3 3/8	2
										4 5/8	20.20	4	3 3/8	2
										4 7/16	20.60	4	3 3/8	2
										4 1/2	21.00	4	3 3/8	2
										4 3/4	21.60	4	3 3/8	2
										4 5/8	22.20	4	3 3/8	2
										4 11/16	22.80	4	3 3/8	2
										4 3/4	23.40	4	3 3/8	2
										4 7/8	24.00	4	3 3/8	2
										4 7/8	24.60	4	3 3/8	2
										4 15/16	25.20	4	3 3/8	2
										5	26.00	4	3 3/8	2

These Reamers are made .003 under size and are used as Roughing Reamers to follow Shell Drills No. 102 1/2 H on page 47, and to precede Expansion Shell Reamer No. 120 M-A on page 80.

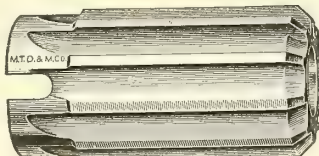
For Arbors fitting these Reamers see Index.

Shell Reamers

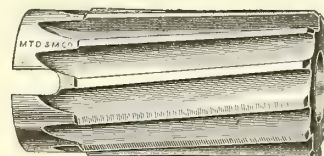
High Speed Steel



Morse No. 117
with Straight Flutes



Morse No. 117A Rose
with Straight Flutes



Morse No. 117 1/2
with Spiral Flutes

These Shell Reamers have Taper Holes, the diameter given being at the large end

Diameter Inches	Each	Whole Length Inches	Size Hole Inch	Diameter Inches	Each	Whole Length Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Size Hole Inches
1/2	\$3.25	2	1/4	1 13/16	\$11.25	3 1/2	1	3 1/16	\$31.50	4 1/2	1 3/4	4 5/16	\$88.75	5 1/2	2 1/4
5/16	3.40	2	1/4	1 7/8	12.00	3 1/2	1	3 1/8	33.25	4 1/2	1 3/4	4 3/8	92.00	5 1/2	2 1/4
3/8	3.55	2 1/4	3/8	1 15/16	12.75	3 1/2	1	3 3/16	35.25	4 1/2	1 3/4	4 7/16	95.25	5 1/2	2 1/4
11/16	3.70	2 1/4	3/8	2	13.50	3 1/2	1	3 1/4	37.50	4 1/2	1 3/4	4 1/2	98.50	5 1/2	2 1/4
3/4	3.85	2 1/2	1/2	2 1/16	14.25	3 3/4	1 1/4	3 5/16	40.00	4 1/2	1 3/4	4 9/16	101.75	6	2 1/2
13/16	4.00	2 1/2	1/2	2 1/8	15.00	3 3/4	1 1/4	3 3/8	42.50	4 1/2	1 3/4	4 5/8	105.00	6	2 1/2
7/8	4.25	2 1/2	1/2	2 3/16	15.75	3 3/4	1 1/4	3 7/16	45.25	4 1/2	1 3/4	4 11/16	108.25	6	2 1/2
15/16	4.50	2 1/2	1/2	2 1/4	16.50	3 3/4	1 1/4	3 1/2	48.00	4 1/2	1 3/4	4 3/4	111.50	6	2 1/2
1	4.75	2 3/4	5/8	2 5/16	17.25	3 3/4	1 1/4	3 9/16	50.75	5	2	4 13/16	114.75	6	2 1/2
1 1/16	5.00	2 3/4	5/8	2 3/8	18.00	3 3/4	1 1/4	3 5/8	53.50	5	2	4 7/8	118.00	6	2 1/2
1 1/8	5.25	2 3/4	5/8	2 7/16	18.75	3 3/4	1 1/4	3 11/16	56.50	5	2	4 15/16	121.25	6	2 1/2
1 3/16	5.50	2 3/4	5/8	2 1/2	19.50	3 3/4	1 1/4	3 3/4	59.50	5	2	5	125.00	6	2 1/2
1 1/4	5.75	2 3/4	5/8	2 9/16	20.50	4	1 1/2	3 13/16	62.75	5	2	5 1/8	132.50	6	2 1/2
1 5/16	6.00	3	3/4	2 5/8	21.75	4	1 1/2	3 7/8	66.00	5	2	5 1/4	140.00	6	2 1/2
1 3/8	6.50	3	3/4	2 11/16	23.00	4	1 1/2	3 15/16	69.25	5	2	5 3/8	147.50	6	2 1/2
1 7/16	7.00	3	3/4	2 3/4	24.25	4	1 1/2	4	72.50	5	2	5 1/2	155.00	6	2 1/2
1 1/2	7.50	3	3/4	2 13/16	25.50	4	1 1/2	4 1/16	75.75	5 1/2	2 1/4	5 5/8	163.75	6 1/2	2 3/4
1 9/16	8.25	3	3/4	2 7/8	27.00	4	1 1/2	4 1/8	79.00	5 1/2	2 1/4	5 3/4	172.50	6 1/2	2 3/4
1 5/8	9.00	3	3/4	2 15/16	28.50	4	1 1/2	4 1/4	82.25	5 1/2	2 1/4	5 7/8	181.25	6 1/2	2 3/4
1 11/16	9.75	3 1/2	1	3	30.00	4	1 1/2	4 1/2	85.50	5 1/2	2 1/4	6	190.00	6 1/2	2 3/4
1 3/4	10.50	3 1/2	1												

For Arbors fitting these Reamers see Index.
Reamers Style 117A have no radial clearance but are ground with longitudinal clearance. Keep cutting points sharp. 32nd and 64th sizes furnished at price of next larger size.

Floating Reamers

Carbon Steel



Morse No. 119D, with Straight Shanks



Morse No. 119E, Expansion, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Bushing Inches	Length of Bushing Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Bushing Inches	Length of Bushing Inches
5/8	\$6.15	8 1/2	2	1 1/2	3 1/4	5/8	\$ 9.15	8 1/2	1 7/8	1 1/2	3 1/4
11/16	6.35	8 1/2	2	1 1/2	3 1/4	11/16	9.40	8 1/2	1 7/8	1 1/2	3 1/4
3/4	6.60	9	2	1 1/2	3 1/4	3/4	9.65	9	1 7/8	1 1/2	3 1/4
13/16	6.80	9	2	1 1/2	3 1/4	13/16	9.90	9	1 7/8	1 1/2	3 1/4
7/8	7.05	9 1/2	2	1 1/2	3 1/4	7/8	10.15	9 1/2	1 7/8	1 1/2	3 1/4
15/16	7.25	10	2	1 1/2	3 1/4	15/16	10.50	10	1 7/8	1 1/2	3 1/4
1	7.50	10 1/2	2	1 1/2	3 1/4	1	10.80	10 1/2	1 7/8	1 1/2	3 1/4
1 1/16	7.70	10 1/2	2	1 1/2	3 1/4	1 1/16	11.15	10 1/2	2 1/8	1 1/2	3 1/4
1 1/8	7.95	11	2	1 1/2	3 1/4	1 1/8	11.50	11	2 1/8	1 1/2	3 1/4
1 3/16	8.15	11	2	1 1/2	3 1/4	1 3/16	11.85	11	2 1/8	1 1/2	3 1/4

These Reamers are made .003 undersize and are designed to be used in connection with Four-Groove Chucking Reamers No. 120 F-H on page 78 and as a Roughing Reamer for Floating Expansion Reamers No. 119E.

These Reamers are designed to be used as finishing reamers in connection with Floating Reamers No. 119D, and Four-Groove Chucking Reamers No. 120 F-H listed on page 78.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Chucking Reamers

Carbon Steel

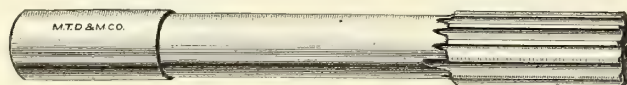


Morse No. 119, Fluted, with Straight Shanks

Morse No. 119A, Fluted, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/4	\$.90	6	1 1/2	1 1/2	\$2.85	11	2 7/8	1/4	\$1.20	6	1 1/2	No. 1	1 1/8	\$3.30	11	2 7/8	No. 3
1/2	.95	6	1 1/2	1 1/4	2.90	11 1/2	3	1 1/2	1.20	6	1 1/2	No. 1	1 3/8	3.40	11	2 7/8	No. 3
3/4	1.00	6	1 1/2	1 5/8	3.05	11 1/2	3	1 1/2	1.30	6	1 1/2	No. 1	1 1/4	3.50	11 1/2	3	No. 4
1 1/16	1.05	6	1 1/2	1 3/8	3.20	12	3 1/4	1 1/2	1.30	6	1 1/2	No. 1	1 5/16	3.70	11 1/2	3	No. 4
1 1/8	1.10	7	1 3/4	1 1/2	3.35	12	3 1/4	1 1/2	1.45	7	1 3/4	No. 1	1 3/8	3.95	12	3 1/4	No. 4
1 1/4	1.15	7	1 3/4	1 1/2	3.50	12 1/2	3 1/2	1 1/2	1.50	7	1 3/4	No. 1	1 7/16	4.15	12	3 1/4	No. 4
1 1/2	1.20	7	1 3/4	1 1/2	3.65	12 1/2	3 1/2	1 1/2	1.55	7	1 3/4	No. 1	1 1/2	4.40	12 1/2	3 1/2	No. 4
1 3/4	1.25	7	1 3/4	1 5/8	3.80	13	3 3/4	1 1/2	1.60	7	1 3/4	No. 1	1 9/16	4.60	12 1/2	3 1/2	No. 4
2	1.30	8	2	1 11/16	4.00	13	3 3/4	1 1/2	1.65	8	2	No. 1	1 5/8	4.85	13	3 3/4	No. 4
2 1/16	1.35	8	2	1 3/4	4.20	13 1/2	4	1 1/2	1.70	8	2	No. 1	1 11/16	5.10	13	3 3/4	No. 4
2 1/8	1.40	8	2	1 13/16	4.40	13 1/2	4	1 1/2	1.75	8	2	No. 1	1 3/4	5.30	13 1/2	4	No. 5
2 1/4	1.45	8	2	1 7/8	4.60	14	4 1/4	1 1/2	1.80	8	2	No. 1	1 13/16	5.50	13 1/2	4	No. 5
2 3/8	1.50	9	2 1/4	1 15/16	4.80	14	4 1/4	1 1/2	1.90	9	2 1/4	No. 2	1 1/8	5.70	14	4 1/4	No. 5
2 1/2	1.55	9	2 1/4	2	5.00	14	4 1/4	1 1/2	1.95	9	2 1/4	No. 2	1 1/2	5.95	14	4 1/4	No. 5
2 5/8	1.60	9	2 1/4	2 1/16	5.30	14 1/2	4 1/2	1 1/2	2.00	9	2 1/4	No. 2	1 3/8	6.20	14	4 1/4	No. 5
2 3/4	1.65	9	2 1/4	2 1/8	5.60	14 1/2	4 1/2	1 1/2	2.10	9	2 1/4	No. 2	2 1/16	6.50	14 1/2	4 1/2	No. 5
3	1.70	9 1/2	2 1/2	2 3/16	5.90	14 1/2	4 1/2	1 1/2	2.20	9 1/2	2 1/2	No. 2	2 1/8	6.80	14 1/2	4 1/2	No. 5
3 1/16	1.80	9 1/2	2 1/2	2 1/4	6.20	14 1/2	4 1/2	1 1/2	2.30	9 1/2	2 1/2	No. 2	2 3/8	7.10	14 1/2	4 1/2	No. 5
3 1/8	1.85	9 1/2	2 1/2	2 5/16	6.50	15	4 3/4	1 1/2	2.40	9 1/2	2 1/2	No. 2	2 1/4	7.40	14 1/2	4 1/2	No. 5
3 1/4	1.90	9 1/2	2 1/2	2 3/8	6.80	15	4 3/4	1 1/2	2.50	9 1/2	2 1/2	No. 2	2 5/8	7.70	15	4 3/4	No. 5
3 1/2	2.00	10	2 3/8	2 7/8	7.10	15	4 3/4	1 1/2	2.55	10	2 3/8	No. 2	2 3/4	8.00	15	4 3/4	No. 5
3 3/4	2.10	10	2 3/8	2 1/2	7.40	15	4 3/4	1 1/2	2.60	10	2 3/8	No. 2	2 1/2	8.40	15	4 3/4	No. 5
4	2.15	10	2 3/8	2 1/16	7.70	15 1/2	5	1 1/2	2.65	10	2 3/8	No. 2	2 9/16	8.80	15	4 3/4	No. 5
4 1/16	2.25	10	2 3/8	2 5/8	8.00	15 1/2	5	1 1/2	2.70	10	2 3/8	No. 2	2 1/2	9.20	15 1/2	5	No. 5
4 1/8	2.30	10 1/2	2 3/4	2 11/16	8.35	15 1/2	5	1 1/2	2.75	10 1/2	2 3/4	No. 3	2 5/8	9.60	15 1/2	5	No. 5
4 1/4	2.40	10 1/2	2 3/4	2 3/4	8.70	15 1/2	5	1 1/2	2.80	10 1/2	2 3/4	No. 3	2 11/16	10.00	15 1/2	5	No. 5
4 1/2	2.45	10 1/2	2 3/4	2 13/16	9.00	16	5 1/4	1 1/2	2.85	10 1/2	2 3/4	No. 3	2 3/4	10.40	15 1/2	5	No. 5
4 3/4	2.55	10 1/2	2 3/4	2 7/8	9.35	16	5 1/4	1 1/2	2.95	10 1/2	2 3/4	No. 3	2 13/16	10.80	16	5 1/4	No. 5
5	2.60	11	2 7/8	2 15/16	9.70	16	5 1/4	1 1/2	3.10	11	2 7/8	No. 3	2 7/8	11.20	16	5 1/4	No. 5
5 1/16	2.70	11	2 7/8	3	10.00	16	5 1/4	1 1/2	3.20	11	2 7/8	No. 3	2 15/16	11.60	16	5 1/4	No. 5
5 1/8	2.75	11	2 7/8					1 1/2				No. 3	3	12.00	16	5 1/4	No. 5

For High Speed Steel Reamers of above styles, see page 70



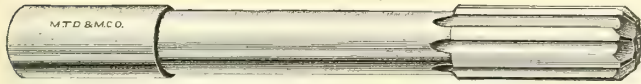
Morse No. 119B, Fluted, with Straight Shanks
For Screw and Chucking Machines

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Shank Inch	Length of Shank Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Shank Inches	Length of Shank Inches
1/4	\$1.20	6	1 1/2	1/4	1 1/2	1 7/32	3.40	11	2 7/8	1	2 3/4
1/2	1.20	6	1 1/2	1/2	1 1/2	1 1/4	3.50	11 1/2	3	1 1/4	3
3/4	1.30	6	1 1/2	3/4	1 1/2	1 5/16	3.70	11 1/2	3	1 1/4	3
1 1/16	1.30	6	1 1/2	1 1/8	1 1/2	1 3/8	3.95	12	3 1/4	1 1/4	3
1 1/8	1.45	7	1 3/4	1 3/8	1 3/4	1 7/16	4.15	12	3 1/4	1 1/4	3
1 1/4	1.50	7	1 3/4	1 1/2	1 3/4	1 1/2	4.40	12 1/2	3 1/2	1 1/4	3
1 1/2	1.55	7	1 3/4	1 5/8	1 3/4	1 9/16	4.60	12 1/2	3 1/2	1 1/4	3
1 3/4	1.60	7	1 3/4	1 3/4	1 3/4	1 5/8	4.85	13	3 3/4	1 1/4	3
2	1.65	8	2	1 1/2	2	1 11/16	5.10	13	3 3/4	1 1/4	3
2 1/16	1.70	8	2	1 1/2	2	1 3/4	5.30	13 1/2	4	1 1/4	3
2 1/8	1.75	8	2	1 1/2	2	1 13/16	5.50	13 1/2	4	1 1/4	3
2 1/4	1.80	8	2	1 1/2	2	1 7/8	5.70	14	4 1/4	1 1/4	3
2 3/8	1.90	9	2 1/4	5/8	2 1/4	1 15/16	5.95	14	4 1/4	1 1/4	3
2 1/2	1.95	9	2 1/4	5/8	2 1/4	2	6.20	14	4 1/4	1 1/4	3
2 5/8	2.00	9	2 1/4	5/8	2 1/4	2 1/16	6.50	14 1/2	4 1/2	1 1/2	3 1/2
2 3/4	2.10	9	2 1/4	5/8	2 1/4	2 1/8	6.80	14 1/2	4 1/2	1 1/2	3 1/2
3	2.20	9 1/2	2 1/2	3/4	2 1/4	2 3/16	7.10	14 1/2	4 1/2	1 1/2	3 1/2
3 1/16	2.30	9 1/2	2 1/2	3/4	2 1/4	2 1/4	7.40	14 1/2	4 1/2	1 1/2	3 1/2
3 1/8	2.40	9 1/2	2 1/2	3/4	2 1/4	2 5/16	7.70	15	4 3/4	1 1/2	3 1/2
3 1/4	2.50	9 1/2	2 1/2	3/4	2 1/4	2 3/8	8.00	15	4 3/4	1 1/2	3 1/2
3 1/2	2.55	10	2 3/8	7/8	2 1/2	2 7/16	8.40	15	4 3/4	1 1/2	3 1/2
3 3/4	2.60	10	2 3/8	7/8	2 1/2	2 1/2	8.80	15	4 3/4	1 1/2	3 1/2
4	2.65	10	2 3/8	7/8	2 1/2	2 5/8	9.20	15 1/2	5	1 1/2	3 1/2
4 1/16	2.70	10	2 3/8	7/8	2 1/2	2 1/2	9.60	15 1/2	5	1 1/2	3 1/2
4 1/8	2.75	10 1/2	2 3/4	1	2 3/4	2 11/16	10.00	15 1/2	5	1 1/2	3 1/2
4 1/4	2.80	10 1/2	2 3/4	1	2 3/4	2 3/4	10.40	15 1/2	5	1 1/2	3 1/2
4 1/2	2.85	10 1/2	2 3/4	1	2 3/4	2 13/16	10.80	16	5 1/4	1 1/2	3 1/2
4 3/4	2.95	10 1/2	2 3/4	1	2 3/4	2 7/8	11.20	16	5 1/4	1 1/2	3 1/2
5	3.10	11	2 7/8	1	2 3/4	2 15/16	11.60	16	5 1/4	1 1/2	3 1/2
5 1/16	3.20	11	2 7/8	1	2 3/4	3	12.00	16	5 1/4	1 3/4	4
5 1/8	3.30	11	2 7/8	1	2 3/4						

These Reamers will be furnished to order .001 to .010 inch undersize at regular prices

Rose Chucking Reamers

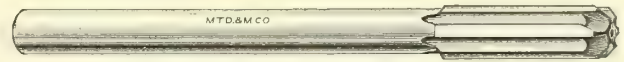
Carbon Steel



Morse 119 C, with Straight Shanks
For Screw or Chucking Machines

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Shank Inches	Length of Shank Inches
1/4	\$1.20	6	1 1/2	1/4	1 1/2
5/16	1.20	6	1 1/2	1/4	1 1/2
3/8	1.30	6	1 1/2	1/4	1 1/2
7/16	1.30	6	1 1/2	1/4	1 1/2
1/2	1.45	7	1 3/4	3/8	1 3/4
9/16	1.50	7	1 3/4	3/8	1 3/4
5/8	1.55	7	1 3/4	3/8	1 3/4
3/4	1.60	7	1 3/4	3/8	1 3/4
7/8	1.65	8	2	1/2	2
1	1.70	8	2	1/2	2
1 1/8	1.75	8	2	1/2	2
1 1/4	1.80	8	2	1/2	2
1 1/2	1.90	9	2 1/4	5/8	2 1/4
1 3/4	1.95	9	2 1/4	5/8	2 1/4
1 7/8	2.00	9	2 1/4	5/8	2 1/4
2	2.10	9	2 1/4	5/8	2 1/4
2 1/8	2.20	9 1/2	2 1/2	3/4	2 1/4
2 1/4	2.30	9 1/2	2 1/2	3/4	2 1/4
2 3/8	2.40	9 1/2	2 1/2	3/4	2 1/4
2 1/2	2.50	10	2 1/2	7/8	2 1/2
2 7/8	2.55	10	2 1/2	7/8	2 1/2
3	2.60	10	2 1/2	7/8	2 1/2
3 1/8	2.65	10	2 1/2	7/8	2 1/2
3 1/4	2.70	10	2 1/2	7/8	2 1/2
3 1/2	2.75	10 1/2	2 3/4	1	2 3/4
3 3/4	2.80	10 1/2	2 3/4	1	2 3/4
3 7/8	2.85	10 1/2	2 3/4	1	2 3/4
4	2.95	10 1/2	2 3/4	1	2 3/4
4 1/8	3.10	11	2 7/8	1	2 3/4
4 1/4	3.20	11	2 7/8	1	2 3/4
4 1/2	3.30	11	2 7/8	1	2 3/4
4 3/4	3.40	11	2 7/8	1	2 3/4
4 7/8	3.50	11 1/2	3	1 1/4	3
5	3.70	11 1/2	3	1 1/4	3
5 1/8	3.95	12	3 1/4	1 1/4	3
5 1/4	4.15	12	3 1/4	1 1/4	3
5 1/2	4.40	12 1/2	3 1/2	1 1/4	3
5 3/4	4.60	12 1/2	3 1/2	1 1/4	3
5 7/8	4.85	13	3 3/4	1 1/4	3
6	5.10	13	3 3/4	1 1/4	3
6 1/8	5.30	13 1/2	4	1 1/4	3
6 1/4	5.50	13 1/2	4	1 1/4	3
6 1/2	5.70	14	4 1/4	1 1/4	3
6 3/4	5.95	14	4 1/4	1 1/4	3
6 7/8	6.20	14	4 1/4	1 1/4	3
7	6.50	14 1/2	4 1/2	1 1/2	3 1/2
7 1/8	6.80	14 1/2	4 1/2	1 1/2	3 1/2
7 1/4	7.10	14 1/2	4 1/2	1 1/2	3 1/2
7 1/2	7.40	14 1/2	4 1/2	1 1/2	3 1/2
7 3/4	7.70	15	4 3/4	1 1/2	3 1/2
7 7/8	8.00	15	4 3/4	1 1/2	3 1/2
8	8.40	15	4 3/4	1 1/2	3 1/2
8 1/8	8.80	15	4 3/4	1 1/2	3 1/2
8 1/4	9.20	15 1/2	5	1 1/2	3 1/2
8 1/2	9.60	15 1/2	5	1 1/2	3 1/2
8 3/4	10.00	15 1/2	5	1 1/2	3 1/2
8 7/8	10.40	16	5 1/4	1 1/2	3 1/2
9	10.80	16	5 1/4	1 1/2	3 1/2
9 1/8	11.20	16	5 1/4	1 1/2	3 1/2
9 1/4	11.60	16	5 1/4	1 1/2	3 1/2
9 1/2	12.00	16	5 1/4	1 3/4	4

These Reamers have no radial clearance but are ground with a longitudinal clearance. Keep cutting points sharp.



Morse 120, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/4	\$.80	6	1 1/2	1 7/8	\$2.65	11	2 7/8
5/16	.85	6	1 1/2	1 3/4	2.70	11 1/2	3
3/8	.90	6	1 1/2	1 5/8	2.85	11 1/2	3
7/16	.95	6	1 1/2	1 1/2	3.00	12	3 1/4
1/2	1.00	7	1 3/4	1 1/4	3.15	12	3 1/4
9/16	1.05	7	1 3/4	1 3/8	3.30	12 1/2	3 1/2
5/8	1.10	7	1 3/4	1 1/2	3.45	12 1/2	3 1/2
3/4	1.15	7	1 3/4	1 5/8	3.60	13	3 3/4
7/8	1.20	8	2	1 3/4	3.75	13	3 3/4
1	1.25	8	2	1 1/2	3.90	13 1/2	4
1 1/8	1.30	8	2	1 1/4	4.05	13 1/2	4
1 1/4	1.35	8	2	1 3/8	4.20	14	4 1/4
1 1/2	1.40	9	2 1/4	1 1/2	4.40	14	4 1/4
1 3/4	1.45	9	2 1/4	1 5/8	4.60	14	4 1/4
1 7/8	1.50	9	2 1/4	1 3/4	4.90	14 1/2	4 1/2
2	1.55	9	2 1/4	1 7/8	5.20	14 1/2	4 1/2
2 1/8	1.60	9 1/2	2 1/2	2	5.50	14 1/2	4 1/2
2 1/4	1.65	9 1/2	2 1/2	2 1/8	5.80	14 1/2	4 1/2
2 3/8	1.70	9 1/2	2 1/2	2 1/4	6.10	15	4 3/4
2 1/2	1.75	9 1/2	2 1/2	2 3/8	6.40	15	4 3/4
2 7/8	1.80	10	2 5/8	2 1/2	6.80	15	4 3/4
3	1.90	10	2 5/8	2 3/4	7.20	15	4 3/4
3 1/8	1.95	10	2 5/8	2 1/2	7.50	15 1/2	5
3 1/4	2.05	10	2 5/8	2 3/8	7.80	15 1/2	5
3 1/2	2.10	10 1/2	2 3/4	2 1/4	8.10	15 1/2	5
3 3/4	2.20	10 1/2	2 3/4	2 3/8	8.40	15 1/2	5
3 7/8	2.25	10 1/2	2 3/4	2 1/2	8.80	16	5 1/4
4	2.35	10 1/2	2 3/4	2 3/4	9.20	16	5 1/4
4 1/8	2.40	11	2 7/8	2 1/2	9.60	16	5 1/4
4 1/4	2.50	11	2 7/8	3	10.00	16	5 1/4
4 1/2	2.55	11	2 7/8				



Morse 120 1/2, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/4	\$1.20	6	1 1/2	No. 1	1 3/8	\$3.30	11	2 7/8	No. 3
5/16	1.20	6	1 1/2		1 3/4	3.40	11	2 7/8	
3/8	1.30	6	1 1/2		1 1/2	3.50	11 1/2	3	
7/16	1.30	6	1 1/2		1 1/4	3.70	11 1/2	3	
1/2	1.45	7	1 3/4		1 3/8	3.95	12	3 1/4	
9/16	1.50	7	1 3/4		1 1/2	4.15	12	3 1/4	
5/8	1.55	7	1 3/4		1 1/4	4.40	12 1/2	3 1/2	
3/4	1.60	7	1 3/4		1 3/4	4.60	12 1/2	3 1/2	
7/8	1.65	8	2		1 1/2	4.85	13	3 3/4	
1	1.70	8	2		1 1/4	5.10	13	3 3/4	
1 1/8	1.75	8	2	No. 2	1 3/8	5.30	13 1/2	4	No. 4
1 1/4	1.80	8	2		1 1/2	5.50	13 1/2	4	
1 1/2	1.90	9	2 1/4		1 3/4	5.70	14	4 1/4	
1 3/4	1.95	9	2 1/4		1 1/4	5.95	14	4 1/4	
1 7/8	2.00	9	2 1/4		1 1/2	6.20	14	4 1/4	
2	2.10	9	2 1/4		1 3/8	6.50	14 1/2	4 1/2	
2 1/8	2.20	9 1/2	2 1/2		1 1/4	6.80	14 1/2	4 1/2	
2 1/4	2.30	9 1/2	2 1/2		1 3/4	7.10	14 1/2	4 1/2	
2 3/8	2.40	9 1/2	2 1/2		1 1/2	7.40	14 1/2	4 1/2	
2 1/2	2.50	9 1/2	2 1/2		1 3/8	7.70	15	4 3/4	
2 7/8	2.55	10	2 5/8	No. 3	1 1/2	8.00	15	4 3/4	No. 5
3	2.60	10	2 5/8		1 3/4	8.40	15	4 3/4	
3 1/8	2.65	10	2 5/8		1 1/4	8.80	15	4 3/4	
3 1/4	2.70	10	2 5/8		1 3/8	9.20	15 1/2	5	
3 1/2	2.75	10 1/2	2 3/4		1 1/2	9.60	15 1/2	5	
3 3/4	2.80	10 1/2	2 3/4		1 3/4	10.00	15 1/2	5	
3 7/8	2.85	10 1/2	2 3/4		1 1/4	10.40	15 1/2	5	
4	2.95	10 1/2	2 3/4		1 3/8	10.80	16	5 1/4	
4 1/8	3.10	11	2 7/8		1 1/2	11.20	16	5 1/4	
4 1/4	3.20	11	2 7/8		1 3/4	11.60	16	5 1/4	

For High Speed Steel Reamers of this style see following page

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

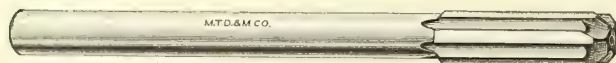
Reamers

Fluted Chucking. High Speed Steel

Locomotive Taper. Carbon Steel



Morse No. 119, with Straight Shanks



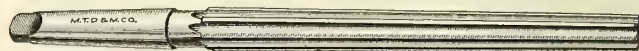
Morse No. 120, Rose, with Straight Shanks



Morse No. 120A, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
$\frac{1}{4}$	\$3.00	6	$1\frac{1}{2}$	$\frac{11}{16}$	\$27.50	13	$3\frac{3}{4}$
$\frac{5}{16}$	3.25	6	$1\frac{1}{2}$	$\frac{13}{16}$	29.50	$13\frac{1}{2}$	4
$\frac{3}{8}$	3.75	7	$1\frac{3}{4}$	$\frac{13}{16}$	31.50	$13\frac{1}{2}$	4
$\frac{7}{16}$	4.25	7	$1\frac{3}{4}$	$\frac{17}{8}$	33.50	14	$4\frac{1}{4}$
$\frac{1}{2}$	4.75	8	2	$\frac{15}{16}$	35.75	14	$4\frac{1}{4}$
$\frac{9}{16}$	5.25	8	2	2	38.00	14	$4\frac{1}{4}$
$\frac{5}{8}$	5.75	9	$2\frac{1}{4}$	$2\frac{1}{16}$	40.75	$14\frac{1}{2}$	$4\frac{1}{2}$
$\frac{11}{16}$	6.25	9	$2\frac{1}{4}$	$2\frac{1}{8}$	43.50	$14\frac{1}{2}$	$4\frac{1}{2}$
$\frac{3}{4}$	6.75	$9\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{3}{16}$	46.25	$14\frac{1}{2}$	$4\frac{1}{2}$
$\frac{13}{16}$	7.25	$9\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{4}$	49.00	$14\frac{1}{2}$	$4\frac{1}{2}$
$\frac{7}{8}$	8.00	10	$2\frac{5}{8}$	$2\frac{5}{16}$	51.75	15	$4\frac{3}{4}$
$\frac{15}{16}$	9.00	10	$2\frac{5}{8}$	$2\frac{3}{8}$	55.00	15	$4\frac{3}{4}$
1	10.00	$10\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{7}{16}$	58.25	15	$4\frac{3}{4}$
$1\frac{1}{16}$	11.25	$10\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{1}{2}$	61.50	15	$4\frac{3}{4}$
$1\frac{1}{8}$	12.50	11	$2\frac{7}{8}$	$2\frac{9}{16}$	64.75	$15\frac{1}{2}$	5
$1\frac{1}{16}$	13.75	11	$2\frac{7}{8}$	$2\frac{5}{8}$	68.00	$15\frac{1}{2}$	5
$1\frac{1}{4}$	15.25	$11\frac{1}{2}$	3	$2\frac{11}{16}$	71.25	$15\frac{1}{2}$	5
$1\frac{5}{16}$	17.00	$11\frac{1}{2}$	3	$2\frac{3}{4}$	74.50	$15\frac{1}{2}$	5
$1\frac{3}{8}$	18.75	12	$3\frac{1}{4}$	$2\frac{13}{16}$	77.75	16	$5\frac{1}{4}$
$1\frac{7}{16}$	20.50	12	$3\frac{1}{4}$	$2\frac{7}{8}$	81.00	16	$5\frac{1}{4}$
$1\frac{1}{2}$	22.25	$12\frac{1}{2}$	$3\frac{1}{2}$	$2\frac{15}{16}$	84.25	16	$5\frac{1}{4}$
$1\frac{9}{16}$	24.00	$12\frac{1}{2}$	$3\frac{1}{2}$	3	87.50	16	$5\frac{1}{4}$
$1\frac{5}{8}$	25.75	13	$3\frac{3}{4}$				

Diameter $\frac{1}{2}$ Inch from Small End Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter $\frac{1}{2}$ Inch from Small End Inches	Each	Whole Length Inches	Length of Flutes Inches
$\frac{1}{4}$	\$2.20	$5\frac{5}{16}$	4	$1\frac{1}{16}$	\$5.70	$11\frac{1}{4}$	9
$\frac{9}{32}$	2.20	$5\frac{5}{16}$	4	$1\frac{1}{8}$	6.20	$12\frac{1}{4}$	10
$\frac{5}{16}$	2.25	$5\frac{5}{16}$	4	$1\frac{3}{8}$	6.60	$12\frac{1}{4}$	10
$\frac{11}{32}$	2.25	$5\frac{5}{16}$	4	$1\frac{1}{4}$	7.00	$12\frac{1}{4}$	10
$\frac{3}{8}$	2.30	$6\frac{5}{16}$	5	$1\frac{5}{8}$	7.60	$14\frac{1}{2}$	12
$\frac{13}{32}$	2.40	$6\frac{5}{16}$	5	$1\frac{3}{4}$	8.00	$14\frac{1}{2}$	12
$\frac{7}{16}$	2.55	$7\frac{5}{16}$	6	$1\frac{7}{8}$	8.50	$14\frac{1}{2}$	12
$\frac{15}{32}$	2.70	$7\frac{5}{16}$	6	$1\frac{1}{2}$	9.00	$14\frac{1}{2}$	12
$\frac{1}{2}$	3.00	$8\frac{5}{8}$	7	$1\frac{9}{8}$	9.60	$16\frac{1}{2}$	14
$\frac{9}{16}$	3.20	$9\frac{7}{8}$	8	$1\frac{5}{8}$	10.20	$16\frac{1}{2}$	14
$\frac{5}{8}$	3.50	$9\frac{7}{8}$	8	$1\frac{11}{16}$	10.85	$16\frac{1}{2}$	14
$\frac{11}{16}$	3.80	$9\frac{7}{8}$	8	$1\frac{3}{4}$	11.60	$16\frac{1}{2}$	14
$\frac{3}{4}$	4.10	$9\frac{7}{8}$	8	$1\frac{13}{16}$	12.40	$18\frac{1}{2}$	16
$\frac{13}{16}$	4.50	$11\frac{1}{4}$	9	$1\frac{7}{8}$	14.00	$18\frac{1}{2}$	16
$\frac{7}{8}$	4.80	$11\frac{1}{4}$	9	$1\frac{15}{16}$	15.00	$18\frac{1}{2}$	16
$\frac{15}{16}$	5.10	$11\frac{1}{4}$	9	2	16.00	$18\frac{1}{2}$	16
1	5.40	$11\frac{1}{4}$	9				



Morse No. 120 1/2 A, with Taper Shanks



Morse No. 119A, with Taper Shanks



Morse No. 120 1/2, Rose, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
$\frac{1}{4}$	\$3.50	6	$1\frac{1}{2}$	No. 1	$\frac{1}{16}$	\$25.00	$12\frac{1}{2}$	$3\frac{1}{2}$	No. 4
$\frac{5}{16}$	3.75	6	$1\frac{1}{2}$		$\frac{1}{8}$	26.75	13	$3\frac{3}{4}$	
$\frac{3}{8}$	4.25	7	$1\frac{3}{4}$		$\frac{1}{16}$	28.50	13	$3\frac{3}{4}$	
$\frac{7}{16}$	4.75	7	$1\frac{3}{4}$		$\frac{1}{4}$	30.50	$13\frac{1}{2}$	4	
$\frac{1}{2}$	5.25	8	2		$\frac{13}{16}$	32.50	$13\frac{1}{2}$	4	
$\frac{9}{16}$	5.75	8	2	No. 2	$\frac{1}{8}$	34.50	14	$4\frac{1}{4}$	No. 5
$\frac{5}{8}$	6.25	9	$2\frac{1}{4}$		$\frac{15}{16}$	36.75	14	$4\frac{1}{4}$	
$\frac{11}{16}$	6.75	9	$2\frac{1}{4}$		2	39.00	14	$4\frac{1}{4}$	
$\frac{3}{4}$	7.25	$9\frac{1}{2}$	$2\frac{1}{2}$		$2\frac{1}{16}$	41.75	$14\frac{1}{2}$	$4\frac{1}{2}$	
$\frac{13}{16}$	8.00	$9\frac{1}{2}$	$2\frac{1}{2}$		$2\frac{1}{8}$	44.50	$14\frac{1}{2}$	$4\frac{1}{2}$	
$\frac{7}{8}$	9.00	10	$2\frac{5}{8}$	No. 3	$2\frac{3}{16}$	47.25	$14\frac{1}{2}$	$4\frac{1}{2}$	
$\frac{15}{16}$	10.00	10	$2\frac{5}{8}$		$2\frac{1}{4}$	50.00	$14\frac{1}{2}$	$4\frac{1}{2}$	
1	11.00	$10\frac{1}{2}$	$2\frac{3}{4}$		$2\frac{5}{16}$	53.25	15	$4\frac{3}{4}$	
$1\frac{1}{16}$	12.25	$10\frac{1}{2}$	$2\frac{3}{4}$		$2\frac{3}{8}$	56.50	15	$4\frac{3}{4}$	
$1\frac{1}{8}$	13.50	11	$2\frac{7}{8}$		$2\frac{1}{2}$	59.75	15	$4\frac{3}{4}$	
$1\frac{3}{16}$	14.75	11	$2\frac{7}{8}$	No. 4	$2\frac{9}{16}$	63.00	15	$4\frac{3}{4}$	
$1\frac{1}{4}$	16.25	$11\frac{1}{2}$	3		$2\frac{5}{8}$	66.25	$15\frac{1}{2}$	5	
$1\frac{5}{16}$	18.00	$11\frac{1}{2}$	3		$2\frac{3}{4}$	69.50	$15\frac{1}{2}$	5	
$1\frac{3}{8}$	19.75	12	$3\frac{1}{4}$		$2\frac{11}{16}$	72.75	$15\frac{1}{2}$	5	
$1\frac{7}{16}$	21.50	12	$3\frac{1}{4}$		$2\frac{3}{4}$	76.00	$15\frac{1}{2}$	5	
$1\frac{1}{2}$	23.25	$12\frac{1}{2}$	$3\frac{1}{2}$		$2\frac{13}{16}$	79.25	16	$5\frac{1}{4}$	
					$2\frac{7}{8}$	82.50	16	$5\frac{1}{4}$	
					$2\frac{15}{16}$	86.25	16	$5\frac{1}{4}$	
					3	90.00	16	$5\frac{1}{4}$	

Diameter $\frac{1}{2}$ Inch from Small End Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
$\frac{1}{4}$	\$3.10	$7\frac{5}{16}$	4	No. 1
$\frac{9}{32}$	3.10	$7\frac{5}{16}$	4	
$\frac{5}{16}$	3.15	$7\frac{5}{16}$	4	
$\frac{11}{32}$	3.15	$7\frac{5}{16}$	4	
$\frac{3}{8}$	3.20	$8\frac{5}{16}$	5	
$\frac{13}{32}$	3.25	$8\frac{5}{16}$	5	No. 2
$\frac{7}{16}$	3.30	$9\frac{5}{16}$	6	
$\frac{15}{32}$	3.45	$9\frac{5}{16}$	6	
$\frac{1}{2}$	3.50	$10\frac{5}{16}$	7	
$\frac{9}{16}$	3.50	$11\frac{5}{16}$	8	
$\frac{5}{8}$	4.00	$11\frac{13}{16}$	8	No. 3
$\frac{11}{16}$	4.50	$11\frac{13}{16}$	8	
$\frac{3}{4}$	4.90	$11\frac{13}{16}$	8	
$\frac{13}{16}$	5.30	$12\frac{13}{16}$	9	
$\frac{7}{8}$	5.70	$12\frac{13}{16}$	9	
$\frac{15}{16}$	6.05	$13\frac{1}{2}$	9	No. 4
1	6.40	$13\frac{1}{2}$	9	
$1\frac{1}{16}$	6.60	$13\frac{1}{2}$	9	
$1\frac{1}{8}$	6.80	$14\frac{1}{2}$	10	
$1\frac{3}{16}$	7.25	$14\frac{1}{2}$	10	
$1\frac{1}{4}$	7.70	$15\frac{1}{2}$	10	No. 5
$1\frac{5}{16}$	8.35	$17\frac{1}{2}$	12	
$1\frac{3}{8}$	8.80	$17\frac{1}{2}$	12	
$1\frac{7}{16}$	9.35	$17\frac{1}{2}$	12	
$1\frac{1}{2}$	9.90	$17\frac{1}{2}$	12	
$1\frac{9}{16}$	10.55	$19\frac{1}{2}$	14	No. 6
$1\frac{5}{8}$	11.20	$19\frac{1}{2}$	14	
$1\frac{11}{16}$	11.95	$19\frac{1}{2}$	14	
$1\frac{3}{4}$	12.75	$20\frac{3}{4}$	14	
$1\frac{13}{16}$	13.65	$22\frac{3}{4}$	16	
$1\frac{7}{8}$	14.60	$22\frac{3}{4}$	16	No. 7
$1\frac{15}{16}$	15.70	$22\frac{3}{4}$	16	
2	16.80	$22\frac{3}{4}$	16	

64th and 32nd sizes take list price of next larger listed size.
Style No. 119A furnished to order .001 to .010 inch undersize at regular prices.

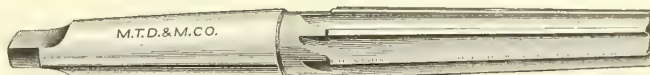
Taper either $\frac{1}{16}$ inch or $\frac{3}{32}$ inch per foot.
Unless otherwise specified on orders $\frac{1}{16}$ inch taper will be furnished.

Taper Reamers

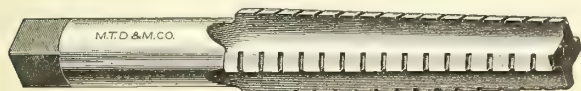
Carbon Steel



Morse No. 118, Finishing, with Straight Shanks



Morse No. 118B, Finishing, with Taper Shanks



Morse No. 118½, Roughing, with Straight Shanks



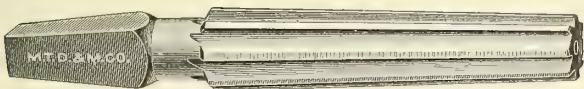
Morse No. 118½B, Roughing, with Taper Shanks

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches	Size of Finishing Reamer	
				Large End	Small End
0	\$1.60	3¾	2¼	.367	.250
1	2.00	5½	3	.517	.367
2	2.60	7	3½	.745	.569
3	3.40	8	4¼	.988	.775
4	4.20	9	5¼	1.289	1.017
5	6.60	10	6¼	1.799	1.471
6	12.00	12	8½	2.555	2.112
7	35.00	16	12	3.371	2.746

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches	Size of Finishing Reamer		Morse Taper Shank
				Large End	Small End	
0	\$2.65	5½	2¼	.367	.250	0
1	2.95	6⅝	3	.517	.367	1
2	3.25	7⅞	3½	.745	.569	2
3	4.45	8⅞	4¼	.988	.775	3
4	6.00	10⅞	5¼	1.289	1.017	4
5	10.10	13⅞	6¼	1.799	1.471	5
6	21.35	17⅞	8½	2.555	2.112	6
7	37.50	21⅝	12	3.371	2.746	6

Set of No. 118 Reamers Nos. 1, 2, 3, 4 and 5, \$18.50 per Set

Morse Taper Reamers, larger than No. 1, can be made with oil holes as illustrated in Three-Groove Chucking Reamers, pages 76 and 77. Reamers for Short Shanks made to order. Prices quoted on application.



Morse No. 118C, with Taper Square Shanks Fitting Ratchets

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Flutes Large End	Small End	Size of Shank Inches
3	\$3.40	6¾	4¼	.988	.775	½ x ¾ x 1¾

Used by Street Railways in Bonding work

Special Dimensions



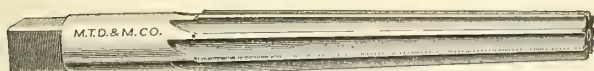
Morse No. 118A, Finishing, with Straight Shanks



Morse No. 118½A, Roughing, with Straight Shanks

When ordering above give diameter at large and small ends, whole length, length of flutes and taper per foot required
Prices quoted on application.

Brown & Sharpe Standard



Morse No. 118D, Finishing, with Straight Shanks

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches
1	\$1.75	4¾	2⅞
2	2.00	5⅞	3⅞
3	2.25	5½	3⅞
4	2.50	5⅞	3⅞
5	3.00	6⅞	4
6	3.25	6⅞	4⅞
7	3.50	7½	4⅞
8	3.75	8⅞	5½
9	4.00	8⅞	6⅞

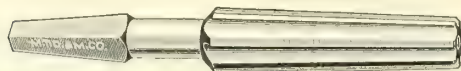


Morse No. 118½D, Roughing, with Straight Shanks

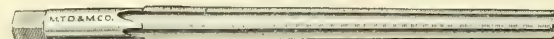
Number of Taper	Each	Whole Length Inches	Length of Flutes Inches
10	\$ 5.00	9¾	6⅞
11	6.00	10⅞	7⅞
12	8.00	11⅞	8¼
13	10.00	12	8¾
14	12.00	12½	9¼
15	14.00	13⅞	9¾
16	16.00	13½	10¼
17	19.00	13¾	10¾
18	22.00	14¼	11¼

Taper Reamers

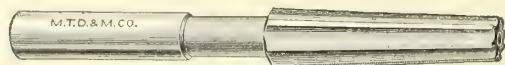
Carbon Steel



Morse No. 120 B, Bit Stock, with Square Taper Shanks



Morse No. 120 D, Taper Pin, with Straight Shanks
Taper $\frac{1}{4}$ inch per foot



Morse No. 120 $\frac{1}{2}$ B, with Straight Shanks
Straight Shanks $\frac{1}{2}$ inch diameter by 2 inches long



Morse No. 120 D-E, Half Round Taper Pin
with Straight Shanks
Taper $\frac{1}{4}$ inch per foot

Nominal Size Inches	Each	120 B Whole Length Inches	120 $\frac{1}{2}$ B Whole Length Inches	Length of Flutes Inches	Diameter Small End Inches	Diameter Large End Inches
$\frac{1}{8}$	\$.35	$3\frac{3}{4}$	4	$1\frac{5}{8}$	.052	$\frac{3}{16}$
$\frac{3}{16}$	.35	$3\frac{7}{8}$	$4\frac{1}{4}$	$1\frac{3}{4}$	.104	$\frac{1}{4}$
$\frac{1}{4}$	.45	4	$4\frac{3}{4}$	$1\frac{7}{8}$	.156	$\frac{5}{16}$
$\frac{5}{16}$	.50	$4\frac{1}{8}$	$4\frac{7}{8}$	2	.208	$\frac{3}{8}$
$\frac{3}{8}$	.55	$4\frac{1}{4}$	5	$2\frac{1}{8}$	.260	$\frac{7}{16}$
$\frac{7}{16}$	.60	$4\frac{3}{8}$	$5\frac{1}{8}$	$2\frac{1}{4}$	.313	$\frac{1}{2}$
$\frac{1}{2}$	.70	$4\frac{1}{2}$	$5\frac{1}{4}$	$2\frac{3}{8}$	.365	$\frac{9}{16}$
$\frac{9}{16}$	.80	$4\frac{5}{8}$	$5\frac{3}{8}$	$2\frac{1}{2}$	.417	$\frac{5}{8}$
$\frac{5}{8}$	.90	$4\frac{3}{4}$	$5\frac{1}{2}$	$2\frac{5}{8}$	.469	$\frac{11}{16}$
$\frac{11}{16}$	1.05	$4\frac{7}{8}$	$5\frac{5}{8}$	$2\frac{3}{4}$	.521	$\frac{3}{4}$
$\frac{3}{4}$	1.20	5	$5\frac{3}{4}$	$2\frac{7}{8}$	.573	$\frac{13}{16}$
$\frac{13}{16}$	1.40	$5\frac{1}{8}$	$5\frac{7}{8}$	3	.626	$\frac{7}{8}$
$\frac{7}{8}$	1.60	$5\frac{1}{4}$	6	$3\frac{1}{8}$	.677	$\frac{15}{16}$
$\frac{15}{16}$	1.80	$5\frac{3}{8}$	$6\frac{1}{8}$	$3\frac{1}{4}$	.730	1
1	2.00	$5\frac{1}{2}$	$6\frac{1}{4}$	$3\frac{3}{8}$	.782	$1\frac{1}{16}$
$1\frac{1}{16}$	2.20	$5\frac{5}{8}$	$6\frac{3}{8}$	$3\frac{1}{2}$	.833	$1\frac{1}{8}$
$1\frac{1}{8}$	2.40	$5\frac{3}{4}$	$6\frac{1}{2}$	$3\frac{5}{8}$	.886	$1\frac{3}{8}$
$1\frac{3}{16}$	2.60	$5\frac{7}{8}$	$6\frac{5}{8}$	$3\frac{3}{4}$	.938	$1\frac{1}{4}$
$1\frac{1}{4}$	2.80	6	$6\frac{3}{4}$	$3\frac{7}{8}$	.990	$1\frac{5}{16}$
$1\frac{5}{16}$	3.00	$6\frac{1}{8}$	$6\frac{7}{8}$	4	1.042	$1\frac{3}{8}$
$1\frac{3}{8}$	3.20	$6\frac{1}{4}$	7	$4\frac{1}{8}$	1.094	$1\frac{7}{16}$
$1\frac{7}{16}$	3.40	$6\frac{3}{8}$	$7\frac{1}{8}$	$4\frac{1}{4}$	1.146	$1\frac{1}{2}$
$1\frac{1}{2}$	3.60	$6\frac{1}{2}$	$7\frac{1}{4}$	$4\frac{3}{8}$	1.198	$1\frac{9}{16}$

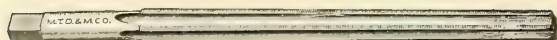
Taper 1 inch to the foot. Diameter at large end of flutes is $\frac{1}{16}$ inch larger than nominal size.

In Sets



Morse No. 120 B, Bit Stock, with Square Taper Shank

Set of No. 120 B Reamers consisting of 1 each $\frac{1}{4}$ to $\frac{3}{4}$ by 16ths..... \$6.50



Morse No. 120 D, Taper Pin, with Straight Shanks

Set of No. 120 D Reamers consisting of 1 each Nos. 0 to 10 inclusive..... \$23.50

Size Number	Each	Diameter at Small Ends Inches	Whole Length Inches	Length of Body Inches
0	\$1.00	.135	$2\frac{1}{4}$	$1\frac{1}{2}$
1	1.00	.146	$2\frac{1}{2}$	$1\frac{3}{4}$
2	1.25	.162	3	2
3	1.50	.183	$3\frac{1}{2}$	$2\frac{1}{4}$
4	1.75	.208	4	$2\frac{1}{2}$
5	2.00	.240	$4\frac{1}{2}$	3
6	2.25	.279	5	$3\frac{5}{8}$
7	2.50	.331	6	$4\frac{1}{2}$
8	3.00	.398	$6\frac{3}{4}$	$5\frac{1}{4}$
9	3.50	.482	8	$6\frac{1}{8}$
10	4.00	.581	9	7
11	4.75	.706	$11\frac{1}{4}$	$8\frac{1}{4}$
12	5.50	.842	$13\frac{3}{8}$	10
13	6.50	1.009	16	12
14	7.75	1.250	$18\frac{1}{4}$	14



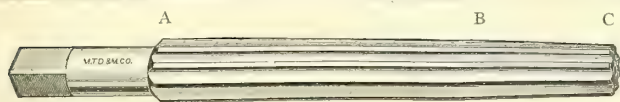
Morse No. 120 D-A, Taper Pin, with Taper Shanks
Taper $\frac{1}{4}$ inch per foot

Size Number	Each	Diameter at Small End Inches	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
0	\$2.15	.135	$4\frac{3}{8}$	$1\frac{1}{2}$	1
1	2.25	.146	$4\frac{5}{8}$	$1\frac{3}{4}$	1
2	2.40	.162	$4\frac{7}{8}$	2	1
3	2.50	.183	$5\frac{1}{8}$	$2\frac{1}{4}$	1
4	2.65	.208	$5\frac{1}{2}$	$2\frac{1}{2}$	1
5	2.85	.240	6	3	1
6	3.30	.279	$6\frac{3}{4}$	$3\frac{5}{8}$	1
7	3.60	.331	$7\frac{5}{8}$	$4\frac{1}{2}$	1
8	3.95	.398	$8\frac{3}{8}$	$5\frac{1}{4}$	1
9	4.20	.482	$9\frac{1}{4}$	$6\frac{1}{8}$	1
10	4.75	.581	$10\frac{7}{8}$	7	2
11	5.70	.706	$12\frac{1}{8}$	$8\frac{1}{4}$	2
12	7.60	.842	$14\frac{5}{8}$	10	3
13	9.65	1.009	$17\frac{5}{8}$	12	4
14	13.10	1.250	$19\frac{5}{8}$	14	4

These Reamers have the same taper, and each will overlay in convenient measure the next size smaller. Special sizes made to order at special prices.

Taper Bridge Reamers

Carbon Steel



Morse No. 120C, with Straight Shanks



Morse No. 120 1/2 C, with Taper Shanks

Special sizes made to order at special prices.
For Taper Reamers especially designed for use in Structural Iron and Steel, Boiler Plate, etc., where precision is not required, see Nos. 120 R and 120 S below.

To Sharpen Reamers

Hand Reamers, when dull through wear, should be stoned first on the face of the flutes, then on top of the flutes. The stone should be always held perfectly flat with the face and clearance, that the original shape of the flutes may be preserved.

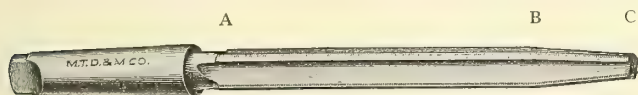
The stones giving quickest results and particularly adapted for this work are India Stones Nos. 56 and 56 1/2, see Index.

End Cutting Reamers should be first ground on centers with a wheel, and then recleared to insure reaming a hole the same size of Reamer.

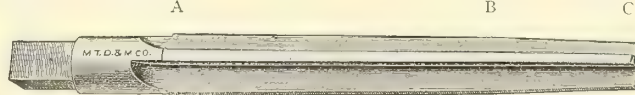
Diameter, Inches, at			Carbon Each	120C Whole Length Inches	120 1/2 C Whole Length Inches	Length of Flutes Inches	Length from B to C Inches	120 1/2 C Morse Taper Shank
A	B	C						
5/16	1/4	3/16	\$2.75	5 3/4	7 9/16	4 1/4	1 1/8	No. 1
3/8	5/16	1/4	2.75	5 3/4	7 9/16	4 1/4	1 1/8	
7/16	3/8	5/16	2.75	5 3/4	7 9/16	4 1/4	1 1/8	
1/2	7/16	3/8	2.75	5 3/4	7 9/16	4 1/4	1 1/8	
9/16	15/32	5/16	2.80	9 1/2	10 5/16	7	2	
5/8	17/32	3/8	2.90	9 1/2	10 7/8	7	2	No. 2
11/16	19/32	7/16	3.00	9 1/2	10 7/8	7	2	
3/4	21/32	1/2	3.10	9 1/2	10 7/8	7	2	
13/16	23/32	9/16	3.30	9 1/2	10 7/8	7	2	
7/8	25/32	5/8	3.50	9 1/2	10 7/8	7	2	
15/16	27/32	11/16	3.70	9 1/2	11 5/8	7	2	No. 3
1	29/32	3/4	3.90	9 1/2	11 5/8	7	2	
1 1/16	31/32	13/16	4.00	9 1/2	11 5/8	7	2	
1 1/8	1 1/32	7/8	4.30	9 1/2	11 5/8	7	2	
1 3/16	1 3/32	15/16	4.60	9 1/2	11 5/8	7	2	
1 1/4	1 5/32	1	4.90	9 1/2	12 5/8	7	2	No. 4
1 5/16	1 7/32	1 1/16	5.20	9 1/2	12 5/8	7	2	
1 3/8	1 9/32	1 1/8	5.60	9 1/2	12 5/8	7	2	
1 7/16	1 11/32	1 3/16	6.00	9 1/2	12 5/8	7	2	
1 1/2	1 13/32	1 1/4	6.40	9 1/2	12 5/8	7	2	

Straight Reamers with Taper Ends

Carbon and High Speed Steel



Morse No. 120R, with Taper Shanks



Morse No. 120S, with Straight Shanks

For Boiler Makers, Bridge and Ship Builders

Diameter, Inches, at			Carbon Each	High Speed Each	Whole Length Inches	Length of Flutes Inches	Length Taper B to C Inches	Morse Taper Shank
A	B	C						
1/4	1/4	3/16	\$1.75	\$3.00	6 3/8	3 3/8	1	No. 1
5/16	5/16	1/4	1.75	3.25	6 3/4	3 3/4	1	
3/8	3/8	5/16	1.85	3.50	7 1/4	4	1	
7/16	7/16	3/8	2.75	3.75	8 1/4	4 3/8	1	No. 2
1/2	1/2	1/4	2.75	4.00	9	5 1/8	2	
9/16	9/16	5/16	2.80	4.25	9	5 1/8	2	
5/8	5/8	11/32	2.90	4.50	10	6 1/8	2	No. 3
11/16	11/16	3/8	3.00	4.75	11 3/4	7 1/8	3	
3/4	3/4	7/16	3.10	5.00	12	7 3/8	3	
13/16	13/16	1/2	3.30	5.30	12	7 3/8	3	No. 4
7/8	7/8	9/16	3.50	5.70	12	7 3/8	3	
15/16	15/16	5/8	3.70	6.00	12	7 3/8	3	
1	1	11/16	3.90	6.50	12	7 3/8	3	No. 5
1 1/16	1 1/16	3/4	4.00	7.00	12	7 3/8	3	
1 1/8	1 1/8	13/16	4.30	7.50	12	7 3/8	3	
1 3/16	1 3/16	7/8	4.60	8.00	12	7 3/8	3	No. 6
1 1/4	1 1/4	15/16	4.90	8.75	13	7 3/8	3	
1 5/16	1 5/16	1	5.20	9.50	13	7 3/8	3	
1 3/8	1 3/8	1 1/16	5.60	10.50	13	7 3/8	3	No. 7
1 7/16	1 7/16	1 1/8	6.00	12.00	13	7 3/8	3	
1 1/2	1 1/2	1 3/16	6.40	14.00	13	7 3/8	3	
1/4	1/4	3/16	\$1.75	\$2.50	4 1/4	3 3/8	1	No. 1
5/16	5/16	1/4	1.75	2.70	4 3/4	3 3/4	1	
3/8	3/8	5/16	1.85	2.90	5 1/2	4	1	
7/16	7/16	3/8	2.75	3.10	6 1/2	4 3/8	1	
1/2	1/2	1/4	2.75	3.30	8 1/8	5 3/8	2	
9/16	9/16	5/16	2.80	3.50	8 1/8	5 3/8	2	No. 2
5/8	5/8	11/32	2.90	3.70	9 1/8	6 1/8	2	
11/16	11/16	3/8	3.00	3.90	10 1/8	7 1/8	3	
3/4	3/4	7/16	3.10	4.10	10 1/2	7 3/8	3	
13/16	13/16	1/2	3.30	4.40	10 1/2	7 3/8	3	
7/8	7/8	9/16	3.50	4.70	10 5/8	7 3/8	3	No. 3
15/16	15/16	5/8	3.70	5.00	10 5/8	7 3/8	3	
1	1	11/16	3.90	5.30	10 5/8	7 3/8	3	
1 1/16	1 1/16	3/4	4.00	5.85	10 5/8	7 3/8	3	
1 1/8	1 1/8	13/16	4.30	6.40	10 5/8	7 3/8	3	
1 3/16	1 3/16	7/8	4.60	6.95	10 5/8	7 3/8	3	No. 4
1 1/4	1 1/4	15/16	4.90	7.50	10 5/8	7 3/8	3	
1 5/16	1 5/16	1	5.20	8.25	10 5/8	7 3/8	3	
1 3/8	1 3/8	1 1/16	5.60	9.00	10 5/8	7 3/8	3	
1 7/16	1 7/16	1 1/8	6.00	10.00	10 5/8	7 3/8	3	
1 1/2	1 1/2	1 3/16	6.40	11.00	10 5/8	7 3/8	3	No. 5
1 5/8	1 5/8	1 1/4	6.80	12.00	10 5/8	7 3/8	3	
1 3/4	1 3/4	1 1/2	7.20	13.00	10 5/8	7 3/8	3	
1 7/8	1 7/8	1 3/4	7.60	14.00	10 5/8	7 3/8	3	
2	2	1 7/8	8.00	15.00	10 5/8	7 3/8	3	

These Reamers are designed for hard and rough work and are not ground closely to size. 1/4 inch to 5/8 inch inclusive have 4 flutes; from 11/16 inch to 1 1/4 inches inclusive have 5 flutes; from 1 3/8 inches to 1 1/2 inches inclusive have 6 flutes.

For Reamers designed for use in cases where a smooth, accurate hole is required see 120C and 120 1/2 C.

Three-Groove Chucking Reamers

Carbon Steel



Morse No. 120 F, with Taper Shanks

These Reamers are specially adapted for enlarging cored holes, and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
$\frac{1}{4}$	\$1.70	$6\frac{1}{8}$	$2\frac{13}{16}$	No. 1	$1\frac{17}{64}$	\$5.00	$14\frac{1}{8}$	$8\frac{1}{2}$	No. 4
$\frac{1}{2}$	1.70	$6\frac{1}{4}$	$2\frac{15}{16}$		$1\frac{3}{2}$	5.00	$14\frac{1}{8}$	$8\frac{1}{2}$	
$\frac{3}{4}$	1.70	$6\frac{1}{4}$	$2\frac{15}{16}$		$1\frac{19}{64}$	5.20	$14\frac{1}{8}$	$8\frac{5}{8}$	
$\frac{1}{2}$	1.70	$6\frac{3}{8}$	$3\frac{1}{16}$		$1\frac{5}{16}$	5.20	$14\frac{1}{4}$	$8\frac{5}{8}$	
$\frac{1}{2}$	1.70	$6\frac{3}{8}$	$3\frac{1}{16}$		$1\frac{21}{64}$	5.35	$14\frac{3}{8}$	$8\frac{3}{4}$	
$\frac{1}{2}$	1.70	$6\frac{1}{2}$	$3\frac{3}{16}$		$1\frac{11}{32}$	5.35	$14\frac{3}{8}$	$8\frac{3}{4}$	
$\frac{1}{2}$	1.70	$6\frac{1}{2}$	$3\frac{3}{16}$		$1\frac{33}{64}$	5.60	$14\frac{1}{2}$	$8\frac{7}{8}$	
$\frac{1}{2}$	1.70	$6\frac{3}{4}$	$3\frac{7}{16}$		$1\frac{35}{64}$	5.60	$14\frac{1}{2}$	$8\frac{7}{8}$	
$\frac{1}{2}$	1.70	$6\frac{3}{4}$	$3\frac{7}{16}$		$1\frac{25}{32}$	5.80	$14\frac{5}{8}$	9	
$\frac{1}{2}$	1.75	7	$3\frac{11}{16}$		$1\frac{27}{32}$	5.80	$14\frac{5}{8}$	9	
$\frac{1}{2}$	1.75	7	$3\frac{11}{16}$		$1\frac{27}{32}$	6.00	$14\frac{3}{4}$	$9\frac{1}{8}$	
$\frac{1}{2}$	1.80	$7\frac{1}{4}$	$3\frac{15}{16}$		$1\frac{27}{32}$	6.00	$14\frac{3}{4}$	$9\frac{1}{8}$	
$\frac{1}{2}$	1.80	$7\frac{1}{4}$	$3\frac{15}{16}$		$1\frac{29}{32}$	6.20	$14\frac{7}{8}$	$9\frac{1}{4}$	
$\frac{1}{2}$	1.85	$7\frac{1}{2}$	$4\frac{3}{16}$		$1\frac{31}{32}$	6.20	$14\frac{7}{8}$	$9\frac{1}{4}$	
$\frac{1}{2}$	1.85	$7\frac{1}{2}$	$4\frac{3}{16}$		$1\frac{31}{32}$	6.40	15	$9\frac{3}{8}$	
$\frac{1}{2}$	1.90	$7\frac{3}{4}$	$4\frac{7}{16}$		$1\frac{1}{2}$	6.40	15	$9\frac{3}{8}$	
$\frac{1}{2}$	1.90	$7\frac{3}{4}$	$4\frac{7}{16}$		$1\frac{17}{32}$	6.65	15	$9\frac{3}{8}$	
$\frac{1}{2}$	1.95	8	$4\frac{11}{16}$	No. 2	$1\frac{19}{32}$	6.90	$15\frac{1}{4}$	$9\frac{5}{8}$	
$\frac{1}{2}$	1.95	8	$4\frac{11}{16}$		$1\frac{19}{32}$	7.15	$15\frac{1}{4}$	$9\frac{5}{8}$	
$\frac{1}{2}$	2.00	$8\frac{1}{4}$	$4\frac{15}{16}$		$1\frac{33}{64}$	7.40	$15\frac{1}{2}$	$9\frac{7}{8}$	
$\frac{1}{2}$	2.00	$8\frac{1}{4}$	$4\frac{15}{16}$		$1\frac{33}{64}$	7.65	$15\frac{1}{2}$	$9\frac{7}{8}$	
$\frac{1}{2}$	2.30	$8\frac{1}{2}$	$4\frac{5}{8}$		$1\frac{11}{16}$	7.90	$15\frac{3}{4}$	$10\frac{1}{8}$	
$\frac{1}{2}$	2.30	$8\frac{1}{2}$	$4\frac{5}{8}$		$1\frac{16}{32}$	8.15	$15\frac{3}{4}$	$9\frac{11}{16}$	
$\frac{1}{2}$	2.60	$8\frac{3}{4}$	$4\frac{7}{8}$		$1\frac{33}{64}$	8.40	16	$9\frac{15}{16}$	
$\frac{1}{2}$	2.60	$8\frac{3}{4}$	$4\frac{7}{8}$		$1\frac{33}{64}$	8.60	16	$9\frac{15}{16}$	
$\frac{1}{2}$	2.70	9	$5\frac{1}{8}$		$1\frac{13}{32}$	8.80	$16\frac{1}{4}$	$10\frac{1}{8}$	
$\frac{1}{2}$	2.70	9	$5\frac{1}{8}$		$1\frac{13}{32}$	9.00	$16\frac{1}{4}$	$10\frac{1}{8}$	
$\frac{1}{2}$	2.75	$9\frac{1}{4}$	$5\frac{3}{8}$		$1\frac{17}{32}$	9.20	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{1}{2}$	2.75	$9\frac{1}{4}$	$5\frac{3}{8}$		$1\frac{29}{32}$	9.35	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{1}{2}$	2.85	$9\frac{1}{2}$	$5\frac{5}{8}$		$1\frac{29}{32}$	9.50	$16\frac{1}{2}$	$10\frac{3}{8}$	
$\frac{1}{2}$	2.85	$9\frac{1}{2}$	$5\frac{5}{8}$		$1\frac{15}{16}$	9.65	$16\frac{1}{2}$	$10\frac{3}{4}$	
$\frac{1}{2}$	2.90	$9\frac{3}{4}$	$5\frac{7}{8}$		$1\frac{31}{32}$	9.65	$16\frac{1}{2}$	$10\frac{3}{4}$	
$\frac{1}{2}$	2.90	$9\frac{3}{4}$	$5\frac{7}{8}$		2	9.80	$16\frac{1}{2}$	$10\frac{1}{4}$	
$\frac{1}{2}$	3.00	$9\frac{7}{8}$	6	No. 3	$2\frac{1}{32}$	10.20	$16\frac{1}{2}$	$9\frac{1}{2}$	No. 5
$\frac{1}{2}$	3.00	$9\frac{7}{8}$	6		$2\frac{1}{16}$	10.60	17	10	
$\frac{1}{2}$	3.00	$9\frac{7}{8}$	6		$2\frac{1}{32}$	10.90	17	10	
$\frac{1}{2}$	3.05	10	$6\frac{1}{8}$		$2\frac{1}{8}$	11.20	17	10	
$\frac{1}{2}$	3.05	10	$6\frac{1}{8}$		$2\frac{5}{32}$	11.60	17	10	
$\frac{1}{2}$	3.15	$10\frac{1}{4}$	$6\frac{3}{8}$		$2\frac{9}{32}$	12.00	17	10	
$\frac{1}{2}$	3.15	$10\frac{1}{4}$	$6\frac{3}{8}$		$2\frac{11}{16}$	12.40	$17\frac{1}{2}$	$10\frac{1}{2}$	
$\frac{1}{2}$	3.20	$10\frac{1}{2}$	$6\frac{5}{8}$		$2\frac{13}{32}$	12.80	$17\frac{1}{2}$	$10\frac{1}{8}$	
$\frac{1}{2}$	3.20	$10\frac{1}{2}$	$6\frac{5}{8}$		$2\frac{14}{32}$	13.20	$17\frac{1}{2}$	$10\frac{1}{8}$	
$\frac{1}{2}$	3.30	$10\frac{5}{8}$	$6\frac{3}{4}$		$2\frac{9}{16}$	13.60	$17\frac{1}{2}$	$10\frac{1}{8}$	
$\frac{1}{2}$	3.30	$10\frac{5}{8}$	$6\frac{3}{4}$		$2\frac{11}{16}$	14.00	18	$10\frac{5}{8}$	
$\frac{1}{2}$	3.40	$10\frac{3}{4}$	$6\frac{1}{8}$		$2\frac{13}{32}$	14.40	18	$10\frac{1}{2}$	
$\frac{1}{2}$	3.40	$10\frac{3}{4}$	$6\frac{1}{8}$		$2\frac{13}{32}$	14.70	$18\frac{1}{2}$	11	
$\frac{1}{2}$	3.50	$10\frac{7}{8}$	$6\frac{1}{4}$		$2\frac{15}{16}$	15.00	$18\frac{1}{2}$	11	
$\frac{1}{2}$	3.50	$10\frac{7}{8}$	$6\frac{1}{4}$		$2\frac{5}{8}$	15.30	19	$11\frac{1}{2}$	
$\frac{1}{2}$	3.60	11	$6\frac{3}{8}$		$2\frac{11}{16}$	15.60	19	$11\frac{3}{8}$	
$\frac{1}{2}$	3.60	11	$6\frac{3}{8}$		$2\frac{17}{32}$	15.90	$19\frac{1}{4}$	$11\frac{5}{8}$	
$\frac{1}{2}$	3.70	$11\frac{1}{8}$	$6\frac{1}{2}$		$2\frac{9}{16}$	16.20	$19\frac{1}{4}$	$11\frac{5}{8}$	
$\frac{1}{2}$	3.70	$11\frac{1}{8}$	$6\frac{1}{2}$		$2\frac{19}{32}$	16.50	$19\frac{1}{2}$	$11\frac{7}{8}$	
$\frac{1}{2}$	3.80	$11\frac{1}{4}$	$6\frac{5}{8}$		$2\frac{21}{32}$	16.80	$19\frac{1}{2}$	$11\frac{3}{4}$	
$\frac{1}{2}$	3.80	$11\frac{1}{4}$	$6\frac{5}{8}$		$2\frac{21}{32}$	17.35	20	$12\frac{1}{4}$	
$\frac{1}{2}$	3.90	$11\frac{1}{2}$	$6\frac{7}{8}$		$2\frac{11}{16}$	17.90	20	$12\frac{1}{4}$	
$\frac{1}{2}$	3.90	$11\frac{1}{2}$	$6\frac{7}{8}$		$2\frac{23}{32}$	18.45	$20\frac{1}{2}$	$12\frac{3}{4}$	
$\frac{1}{2}$	4.00	$11\frac{3}{4}$	$7\frac{1}{8}$		$2\frac{24}{32}$	19.00	$20\frac{1}{2}$	$12\frac{5}{8}$	
$\frac{1}{2}$	4.00	$11\frac{3}{4}$	$7\frac{1}{8}$		$2\frac{25}{32}$	19.50	$20\frac{1}{2}$	$12\frac{5}{8}$	
$\frac{1}{2}$	4.25	$11\frac{7}{8}$	$7\frac{1}{4}$		$2\frac{23}{16}$	20.00	$20\frac{1}{2}$	$12\frac{5}{8}$	
$\frac{1}{2}$	4.25	$11\frac{7}{8}$	$7\frac{1}{4}$		$2\frac{27}{32}$	20.50	21	$13\frac{1}{8}$	
$\frac{1}{2}$	4.50	12	$7\frac{3}{8}$		$2\frac{27}{32}$	21.00	21	13	
$\frac{1}{2}$	4.50	12	$7\frac{3}{8}$		$2\frac{29}{32}$	22.00	21	13	
$\frac{1}{2}$	4.65	$12\frac{1}{8}$	$7\frac{1}{2}$		$2\frac{15}{16}$	23.00	21	13	
$\frac{1}{2}$	4.65	$12\frac{1}{8}$	$7\frac{1}{2}$		$2\frac{16}{32}$	24.00	22	14	
$\frac{1}{2}$	4.80	$12\frac{1}{2}$	$7\frac{7}{8}$		3	25.00	22	$13\frac{7}{8}$	
$\frac{1}{2}$	4.80	$12\frac{1}{2}$	$7\frac{7}{8}$						

For High Speed Steel Reamers of this style see page 78. 64th sizes not listed furnished at price of next larger size

Three-Groove Chucking Reamers

Carbon Steel



Morse No. 120F-B

For Screw or Chucking Machines

These Reamers are specially adapted for enlarging cored holes, and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches
1/4	\$1.70	6 1/8	3 7/8	1/4	1 1/2	1 17/32	5.00	14 1/8	10 3/8	1 1/4	3
1/2	1.70	6 1/4	4	1/4	1 1/2	1 9/32	5.00	14 1/8	10 3/8	1 1/4	3
3/4	1.70	6 3/4	4	1/4	1 1/2	1 19/64	5.20	14 1/4	10 1/2	1 1/4	3
1	1.70	6 3/8	4 1/8	1/4	1 1/2	1 5/16	5.20	14 1/4	10 1/2	1 1/4	3
1 1/8	1.70	6 3/8	4 1/8	1/4	1 1/2	1 21/64	5.35	14 3/8	10 5/8	1 1/4	3
1 1/4	1.70	6 1/2	4 1/4	1/4	1 1/2	1 11/32	5.35	14 3/8	10 5/8	1 1/4	3
1 1/2	1.70	6 1/2	4 1/4	1/4	1 1/2	1 23/64	5.60	14 1/2	10 3/4	1 1/4	3
1 3/4	1.70	6 3/4	4 1/4	3/8	1 3/4	1 1/8	5.60	14 1/2	10 3/4	1 1/4	3
2	1.70	6 3/4	4 1/4	3/8	1 3/4	1 25/64	5.80	14 5/8	10 7/8	1 1/4	3
2 1/8	1.75	7	4 1/2	3/8	1 3/4	1 13/32	5.80	14 5/8	10 7/8	1 1/4	3
2 1/4	1.75	7	4 1/2	3/8	1 3/4	1 32/64	6.00	14 3/4	11	1 1/4	3
2 1/2	1.80	7 1/4	4 3/4	3/8	1 3/4	1 27/64	6.00	14 3/4	11	1 1/4	3
2 3/4	1.80	7 1/4	4 3/4	3/8	1 3/4	1 17/16	6.20	14 7/8	11 1/8	1 1/4	3
3	1.85	7 1/2	5	3/8	1 3/4	1 45/64	6.20	14 7/8	11 1/8	1 1/4	3
3 1/8	1.85	7 1/2	5	3/8	1 3/4	1 31/64	6.40	15	11 1/4	1 1/4	3
3 1/4	1.90	7 3/4	5	1/2	2	1 1/2	6.40	15	11 1/4	1 1/4	3
3 1/2	1.90	7 3/4	5	1/2	2	1 17/32	6.65	15	11 1/4	1 1/4	3
3 3/4	1.95	8	5 1/4	1/2	2	1 9/16	6.90	15 1/4	11 1/2	1 1/4	3
4	1.95	8	5 1/4	1/2	2	1 19/32	7.15	15 1/4	11 1/2	1 1/4	3
4 1/8	2.00	8 1/4	5 1/2	1/2	2	1 5/8	7.40	15 1/2	11 3/4	1 1/4	3
4 1/4	2.00	8 1/4	5 1/2	1/2	2	1 21/32	7.65	15 1/2	11 3/4	1 1/4	3
4 1/2	2.30	8 1/2	5 3/4	1/2	2	1 11/16	7.90	15 3/4	12	1 1/4	3
4 3/4	2.30	8 1/2	5 3/4	1/2	2	1 23/32	8.15	15 3/4	12	1 1/4	3
5	2.60	8 3/4	5 3/4	5/8	2 1/4	1 3/4	8.40	16	11 7/8	1 1/4	3
5 1/8	2.60	8 3/4	5 3/4	5/8	2 1/4	1 25/32	8.60	16	11 7/8	1 1/4	3
5 1/4	2.70	9	6	5/8	2 1/4	1 13/16	8.80	16 1/4	12 1/8	1 1/4	3
5 1/2	2.70	9	6	5/8	2 1/4	1 27/32	9.00	16 1/4	12 1/8	1 1/4	3
5 3/4	2.75	9 1/4	6 1/4	5/8	2 1/4	1 32/32	9.20	16 1/2	12 1/4	1 1/4	3
6	2.75	9 1/4	6 1/4	5/8	2 1/4	1 17/8	9.35	16 1/2	12 1/4	1 1/4	3
6 1/8	2.85	9 1/2	6 1/2	5/8	2 1/4	1 29/32	9.50	16 1/2	12 1/4	1 1/4	3
6 1/4	2.85	9 1/2	6 1/2	5/8	2 1/4	1 15/16	9.65	16 1/2	12 1/4	1 1/4	3
6 1/2	2.85	9 1/2	6 1/2	5/8	2 1/4	1 31/32	9.80	16 1/2	12 1/4	1 1/4	3
6 3/4	2.90	9 3/4	6 3/4	3/4	2 1/4	2	10.20	16 1/2	11 3/4	1 1/2	3 1/2
7	2.90	9 3/4	6 3/4	3/4	2 1/4	2 1/32	10.60	17	12 1/4	1 1/2	3 1/2
7 1/8	3.00	9 7/8	6 7/8	3/4	2 1/4	2 1/16	10.90	17	12 1/4	1 1/2	3 1/2
7 1/4	3.00	9 7/8	6 7/8	3/4	2 1/4	2 3/32	11.20	17	12 1/8	1 1/2	3 1/2
7 1/2	3.05	10	7	3/4	2 1/4	2 1/8	11.60	17	12 1/8	1 1/2	3 1/2
7 3/4	3.05	10	7	3/4	2 1/4	2 5/32	12.00	17	12 1/8	1 1/2	3 1/2
8	3.15	10 1/4	7 1/4	3/4	2 1/4	2 3/16	12.40	17 1/2	12 5/8	1 1/2	3 1/2
8 1/8	3.15	10 1/4	7 1/4	3/4	2 1/4	2 7/32	12.80	17 1/2	12 5/8	1 1/2	3 1/2
8 1/4	3.20	10 1/2	7 3/4	7/8	2 1/2	2 1/4	13.20	17 1/2	12 1/2	1 1/2	3 1/2
8 1/2	3.20	10 1/2	7 3/4	7/8	2 1/2	2 3/32	13.60	17 1/2	12 1/2	1 1/2	3 1/2
8 3/4	3.30	10 5/8	7 3/8	7/8	2 1/2	2 5/16	14.00	18	13	1 1/2	3 1/2
9	3.30	10 5/8	7 3/8	7/8	2 1/2	2 11/32	14.40	18	12 7/8	1 1/2	3 1/2
9 1/8	3.40	10 3/4	7 1/2	7/8	2 1/2	2 3/8	14.70	18 1/2	13 3/8	1 1/2	3 1/2
9 1/4	3.40	10 3/4	7 1/2	7/8	2 1/2	2 13/32	15.00	18 1/2	13 3/8	1 1/2	3 1/2
9 1/2	3.50	10 7/8	7 5/8	7/8	2 1/2	2 7/16	15.30	19	13 7/8	1 1/2	3 1/2
9 3/4	3.50	10 7/8	7 5/8	7/8	2 1/2	2 15/32	15.60	19	13 3/4	1 1/2	3 1/2
10	3.60	11	7 1/2	1	2 3/4	2 1/2	15.90	19 1/4	14	1 1/2	3 1/2
10 1/8	3.60	11	7 1/2	1	2 3/4	2 3/32	16.20	19 1/4	14	1 1/2	3 1/2
10 1/4	3.70	11 1/8	7 5/8	1	2 3/4	2 9/64	16.50	19 1/2	14 1/4	1 1/2	3 1/2
10 1/2	3.70	11 1/8	7 5/8	1	2 3/4	2 19/32	16.80	19 1/2	14 1/4	1 1/2	3 1/2
10 3/4	3.80	11 1/4	7 3/4	1	2 3/4	2 5/8	17.35	20	14 5/8	1 1/2	3 1/2
11	3.80	11 1/4	7 3/4	1	2 3/4	2 21/32	17.90	20	14 5/8	1 1/2	3 1/2
11 1/8	3.90	11 1/2	8	1	2 3/4	2 11/16	18.45	20 1/2	15 1/8	1 1/2	3 1/2
11 1/4	3.90	11 1/2	8	1	2 3/4	2 23/32	19.00	20 1/2	15	1 1/2	3 1/2
11 1/2	4.00	11 3/4	8 1/4	1	2 3/4	2 3/4	19.50	20 1/2	14 1/2	1 3/4	4
11 3/4	4.00	11 3/4	8 1/4	1	2 3/4	2 25/32	20.00	20 1/2	14 1/2	1 3/4	4
12	4.25	11 7/8	8 3/8	1	2 3/4	2 13/16	20.50	21	15	1 3/4	4
12 1/8	4.25	11 7/8	8 3/8	1	2 3/4	2 27/32	21.00	21	14 7/8	1 3/4	4
12 1/4	4.50	12	8 1/2	1	2 3/4	2 32/32	22.00	21	14 7/8	1 3/4	4
12 1/2	4.50	12	8 1/2	1	2 3/4	2 7/8	23.00	21	14 7/8	1 3/4	4
12 3/4	4.65	12 1/8	8 5/8	1	2 3/4	2 15/16	24.00	22	15 7/8	1 3/4	4
13	4.65	12 1/8	8 5/8	1	2 3/4	2 31/32	25.00	22	15 3/4	1 3/4	4
13 1/8	4.80	12 1/2	8 3/4	1 1/4	3	3					
13 1/4	4.80	12 1/2	8 3/4	1 1/4	3						

For High Speed Steel Reamers of this style see page 78. 64th sizes not listed furnished at price of next larger size.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Three-Groove Oil Chucking Reamers

Carbon Steel



Morse No. 120 F-C, with Taper Shanks



Morse No. 120 F-F, with Taper Shanks

Can be made to use in the same manner as oil drills listed on pages 50 to 53
Are to be used for passing completely through the work

With holes through solid metal for lubricant

These Reamers are specially adapted for enlarging cored holes and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices.

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
3/8	\$2.75	6 3/4	3 7/16	No. 1	1 5/16	\$7.80	14 1/4	8 5/8	No. 4
2 5/8	2.75	7	3 11/16		1 21/64	8.10	14 3/8	8 3/4	
1 6/4	2.75	7	3 11/16		1 6/4	8.10	14 3/8	8 3/4	
1 3/2	2.75	7 1/4	3 15/16		1 23/32	8.40	14 1/2	8 7/8	
2 7/8	2.85	7 1/4	3 15/16		1 5/8	8.40	14 1/2	8 7/8	
7/16	2.85	7 1/2	4 3/16		1 25/64	8.70	14 5/8	9	
2 9/16	2.85	7 1/2	4 3/16		1 13/32	8.70	14 5/8	9	
3 1/4	2.85	7 3/4	4 7/16		1 27/64	9.00	14 3/4	9 1/8	
1 1/2	2.85	7 3/4	4 7/16		1 7/16	9.00	14 3/4	9 1/8	
3 3/8	2.95	8	4 11/16		1 16/32	9.30	14 7/8	9 1/4	
6 6/4	2.95	8	4 11/16		1 6/4	9.30	14 7/8	9 1/4	
1 7/8	3.00	8 1/4	4 15/16		1 31/64	9.60	15	9 3/8	
3 5/8	3.00	8 1/4	4 15/16	No. 2	1 1/2	9.60	15	9 3/8	No. 5
6 4	3.45	8 1/2	4 5/8		1 17/32	10.00	15	9 3/8	
1 9/16	3.45	8 1/2	4 5/8		1 9/16	10.35	15 1/4	9 5/8	
3 9/8	3.90	8 3/4	4 7/8		1 32/64	10.75	15 1/4	9 5/8	
6 5/8	3.90	8 3/4	4 7/8		1 7/8	11.10	15 1/2	9 7/8	
1 5/8	4.00	9	5 1/8		1 23/32	11.50	15 1/2	9 7/8	
3 2/2	4.00	9	5 1/8		1 11/16	11.85	15 3/4	10 1/8	
4 3/8	4.15	9 1/4	5 3/8		1 23/32	12.25	15 3/4	9 11/16	
6 1/16	4.15	9 1/4	5 3/8		1 3/4	12.60	16	9 15/16	
4 5/8	4.25	9 1/2	5 5/8		1 32/64	12.90	16	9 15/16	
6 2/3	4.25	9 1/2	5 5/8		1 13/16	13.20	16 1/4	10 1/8	
1 10/16	4.35	9 3/4	5 7/8		1 27/32	13.50	16 1/4	10 1/8	
3 4	4.35	9 3/4	5 7/8	No. 3	1 7/8	13.80	16 1/2	10 3/8	No. 6
4 6	4.50	9 7/8	6		1 29/32	14.05	16 1/2	10 3/8	
6 4	4.50	9 7/8	6		1 15/16	14.25	16 1/2	10 1/4	
1 5/1	4.60	10	6 1/8		1 31/32	14.50	16 1/2	10 1/4	
3 2	4.60	10	6 1/8		2	14.70	16 1/2	10 1/4	
5 3	4.70	10 1/4	6 3/8		2 1/32	14.80	16 1/2	9 1/2	
6 4	4.70	10 1/4	6 3/8		2 1/16	14.85	17	10	
1 5/5	4.80	10 1/2	6 5/8		2 3/32	15.30	17	10	
3 8	4.80	10 1/2	6 5/8		2 1/8	15.70	17	10	
5 7	4.95	10 5/8	6 3/4		2 3/32	16.25	17	10	
6 4	4.95	10 5/8	6 3/4		2 1/16	16.80	17	10	
1 3/2	5.10	10 3/4	6 1/8	No. 4	2 3/32	17.40	17 1/2	10 1/2	No. 7
3 16	5.10	10 3/4	6 1/8		2 1/4	17.95	17 1/2	10 1/2	
6 1	5.25	10 7/8	6 1/4		2 9/32	18.50	17 1/2	10 3/8	
3 1	5.25	10 7/8	6 1/4		2 5/16	19.00	17 1/2	10 5/8	
5 3	5.40	11	6 3/8		2 11/32	19.60	18	10 5/8	
6 4	5.40	11	6 3/8		2 3/8	20.15	18	10 1/2	
1 1/6	5.40	11	6 3/8		2 13/32	20.60	18 1/2	11	
3 6	5.55	11 1/8	6 1/2		2 7/16	21.00	18 1/2	11	
6 4	5.55	11 1/8	6 1/2		2 15/32	21.45	19	11 1/2	
1 1/6	5.70	11 1/4	6 5/8		2 1/2	21.85	19	11 3/8	
3 16	5.70	11 1/4	6 5/8		2 3/7	22.30	19 1/4	11 5/8	
5 6	5.85	11 1/2	6 7/8		2 9/16	22.70	19 1/4	11 5/8	
6 4	5.85	11 1/2	6 7/8	No. 5	2 13/32	23.10	19 1/2	11 7/8	No. 8
1 3/2	6.00	11 3/4	7 1/8		2 5/8	23.50	19 1/2	11 3/4	
3 6	6.00	11 3/4	7 1/8		2 21/32	24.25	20	12 1/4	
1 1/8	6.40	11 7/8	7 1/4		2 11/16	25.00	20	12 1/4	
3 16	6.40	11 7/8	7 1/4		2 23/32	25.80	20 1/2	12 3/4	
5 6	6.75	12	7 3/8		2 3/4	26.60	20 1/2	12 5/8	
6 4	6.75	12	7 3/8		2 25/32	27.30	20 1/2	12 5/8	
1 1/6	6.95	12 1/8	7 1/2		2 1/16	28.00	20 1/2	12 5/8	
3 7	6.95	12 1/8	7 1/2		2 27/32	28.70	21	13 1/8	
5 6	7.20	12 1/2	7 7/8		2 7/8	29.40	21	13	
6 4	7.20	12 1/2	7 7/8		2 9/8	30.80	21	13	
1 1/4	7.40	14 1/8	8 1/2	No. 6	2 15/16	32.20	21	13	
3 16	7.40	14 1/8	8 1/2		2 31/32	33.60	22	14	
5 6	7.80	14 1/4	8 5/8		3	35.00	22	13 7/8	

64th sizes not listed furnished at price of next larger size

Three-Groove Oil Chucking Reamers

Carbon Steel



Morse No. 120 F-E



Morse No. 120 F-G

Can be made to use in the same manner as oil drills listed on pages 50 to 53
Are to be used for passing completely through the work

With holes through solid metal for lubricant

These Reamers are specially adapted for enlarging cored holes and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches	Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches
$\frac{3}{8}$	\$2.75	$6\frac{3}{4}$	$4\frac{1}{4}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{21}{64}$	\$8.10	$14\frac{3}{8}$	$10\frac{5}{8}$	$1\frac{1}{4}$	3
$\frac{7}{16}$	2.75	7	$4\frac{1}{2}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{11}{32}$	8.10	$14\frac{3}{8}$	$10\frac{5}{8}$	$1\frac{1}{4}$	3
$\frac{1}{2}$	2.75	7	$4\frac{1}{2}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{23}{64}$	8.40	$14\frac{1}{2}$	$10\frac{3}{4}$	$1\frac{1}{4}$	3
$\frac{9}{16}$	2.75	$7\frac{1}{4}$	$4\frac{3}{4}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{3}{8}$	8.40	$14\frac{1}{2}$	$10\frac{3}{4}$	$1\frac{1}{4}$	3
$\frac{5}{8}$	2.85	$7\frac{1}{4}$	$4\frac{3}{4}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{25}{64}$	8.70	$14\frac{5}{8}$	$10\frac{7}{8}$	$1\frac{1}{4}$	3
$\frac{11}{16}$	2.85	$7\frac{1}{2}$	5	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{13}{32}$	8.70	$14\frac{5}{8}$	$10\frac{7}{8}$	$1\frac{1}{4}$	3
$\frac{3}{4}$	2.85	$7\frac{1}{2}$	5	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{27}{64}$	9.00	$14\frac{3}{4}$	11	$1\frac{1}{4}$	3
$\frac{7}{8}$	2.85	$7\frac{3}{4}$	5	$\frac{1}{2}$	2	$1\frac{7}{16}$	9.00	$14\frac{3}{4}$	11	$1\frac{1}{4}$	3
$\frac{15}{16}$	2.85	$7\frac{3}{4}$	5	$\frac{1}{2}$	2	$1\frac{29}{64}$	9.30	$14\frac{7}{8}$	$11\frac{1}{8}$	$1\frac{1}{4}$	3
1	2.95	8	$5\frac{1}{4}$	$\frac{1}{2}$	2	$1\frac{15}{32}$	9.30	$14\frac{7}{8}$	$11\frac{1}{8}$	$1\frac{1}{4}$	3
$1\frac{1}{16}$	2.95	8	$5\frac{1}{4}$	$\frac{1}{2}$	2	$1\frac{31}{64}$	9.60	15	$11\frac{1}{4}$	$1\frac{1}{4}$	3
$1\frac{1}{8}$	3.00	$8\frac{1}{4}$	$5\frac{1}{2}$	$\frac{1}{2}$	2	$1\frac{1}{2}$	9.60	15	$11\frac{1}{4}$	$1\frac{1}{4}$	3
$1\frac{1}{4}$	3.00	$8\frac{1}{4}$	$5\frac{1}{2}$	$\frac{1}{2}$	2	$1\frac{17}{32}$	10.00	15	$11\frac{1}{4}$	$1\frac{1}{4}$	3
$1\frac{3}{8}$	3.45	$8\frac{1}{2}$	$5\frac{3}{4}$	$\frac{1}{2}$	2	$1\frac{9}{16}$	10.35	$15\frac{1}{4}$	$11\frac{1}{2}$	$1\frac{1}{4}$	3
$1\frac{1}{2}$	3.45	$8\frac{1}{2}$	$5\frac{3}{4}$	$\frac{1}{2}$	2	$1\frac{19}{64}$	10.75	$15\frac{1}{4}$	$11\frac{1}{2}$	$1\frac{1}{4}$	3
$1\frac{5}{8}$	3.90	$8\frac{3}{4}$	$5\frac{3}{4}$	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{25}{32}$	11.10	$15\frac{1}{2}$	$11\frac{3}{4}$	$1\frac{1}{4}$	3
$1\frac{3}{4}$	3.90	$8\frac{3}{4}$	$5\frac{3}{4}$	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{21}{16}$	11.50	$15\frac{1}{2}$	$11\frac{3}{4}$	$1\frac{1}{4}$	3
$1\frac{7}{8}$	4.00	9	6	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{43}{64}$	11.85	$15\frac{3}{4}$	12	$1\frac{1}{4}$	3
2	4.00	9	6	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{1}{2}$	12.25	$15\frac{3}{4}$	12	$1\frac{1}{4}$	3
$2\frac{1}{16}$	4.15	$9\frac{1}{4}$	$6\frac{1}{4}$	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{3}{4}$	12.60	16	$11\frac{7}{8}$	$1\frac{1}{4}$	3
$2\frac{1}{8}$	4.15	$9\frac{1}{4}$	$6\frac{1}{4}$	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{23}{32}$	12.90	16	$11\frac{7}{8}$	$1\frac{1}{4}$	3
$2\frac{1}{4}$	4.25	$9\frac{1}{2}$	$6\frac{1}{2}$	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{11}{16}$	13.20	$16\frac{1}{4}$	$12\frac{1}{8}$	$1\frac{1}{4}$	3
$2\frac{3}{8}$	4.25	$9\frac{1}{2}$	$6\frac{1}{2}$	$\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{27}{32}$	13.50	$16\frac{1}{4}$	$12\frac{1}{8}$	$1\frac{1}{4}$	3
$2\frac{1}{2}$	4.35	$9\frac{3}{4}$	$6\frac{3}{4}$	$\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{7}{8}$	13.80	$16\frac{1}{2}$	$12\frac{1}{4}$	$1\frac{1}{4}$	3
$2\frac{5}{8}$	4.35	$9\frac{3}{4}$	$6\frac{3}{4}$	$\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{29}{64}$	14.05	$16\frac{1}{2}$	$12\frac{1}{4}$	$1\frac{1}{4}$	3
$2\frac{3}{4}$	4.50	$9\frac{7}{8}$	$6\frac{7}{8}$	$\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{15}{16}$	14.25	$16\frac{1}{2}$	$12\frac{1}{4}$	$1\frac{1}{4}$	3
$2\frac{7}{8}$	4.50	$9\frac{7}{8}$	$6\frac{7}{8}$	$\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{31}{32}$	14.50	$16\frac{1}{2}$	$12\frac{1}{4}$	$1\frac{1}{4}$	3
3	4.60	10	7	$\frac{3}{4}$	$2\frac{1}{4}$	2	14.70	$16\frac{1}{2}$	$12\frac{1}{8}$	$1\frac{1}{4}$	3
$3\frac{1}{16}$	4.60	10	7	$\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{1}{32}$	14.80	$16\frac{1}{2}$	$11\frac{3}{4}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{1}{8}$	4.70	$10\frac{1}{4}$	$7\frac{1}{4}$	$\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{1}{16}$	14.85	17	$12\frac{1}{4}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{1}{4}$	4.70	$10\frac{1}{4}$	$7\frac{1}{4}$	$\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{3}{32}$	15.30	17	$12\frac{1}{4}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{3}{8}$	4.80	$10\frac{1}{2}$	$7\frac{1}{4}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{5}{8}$	15.70	17	$12\frac{1}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{1}{2}$	4.80	$10\frac{1}{2}$	$7\frac{1}{4}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{9}{32}$	16.25	17	$12\frac{1}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{5}{8}$	4.95	$10\frac{5}{8}$	$7\frac{3}{8}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{3}{16}$	16.80	17	$12\frac{1}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{3}{4}$	4.95	$10\frac{5}{8}$	$7\frac{3}{8}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{7}{32}$	17.40	$17\frac{1}{2}$	$12\frac{5}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{7}{8}$	5.10	$10\frac{3}{4}$	$7\frac{1}{2}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{1}{4}$	17.95	$17\frac{1}{2}$	$12\frac{1}{2}$	$1\frac{1}{2}$	$3\frac{1}{2}$
4	5.10	$10\frac{3}{4}$	$7\frac{1}{2}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{5}{32}$	18.50	$17\frac{1}{2}$	$12\frac{1}{2}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{1}{16}$	5.25	$10\frac{7}{8}$	$7\frac{5}{8}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{9}{16}$	19.00	$17\frac{1}{2}$	$12\frac{1}{2}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{1}{8}$	5.25	$10\frac{7}{8}$	$7\frac{5}{8}$	$\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{11}{32}$	19.60	18	13	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{1}{4}$	5.40	11	$7\frac{1}{2}$	1	$2\frac{3}{4}$	$2\frac{23}{64}$	20.15	18	$12\frac{7}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{3}{8}$	5.40	11	$7\frac{1}{2}$	1	$2\frac{3}{4}$	$2\frac{27}{32}$	20.60	$18\frac{1}{2}$	$13\frac{3}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{1}{2}$	5.55	$11\frac{1}{8}$	$7\frac{5}{8}$	1	$2\frac{3}{4}$	$2\frac{7}{16}$	21.00	$18\frac{1}{2}$	$13\frac{3}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{3}{4}$	5.55	$11\frac{1}{8}$	$7\frac{5}{8}$	1	$2\frac{3}{4}$	$2\frac{15}{32}$	21.45	19	$13\frac{7}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{5}{8}$	5.70	$11\frac{1}{4}$	$7\frac{3}{4}$	1	$2\frac{3}{4}$	$2\frac{1}{2}$	21.85	19	$13\frac{3}{4}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$4\frac{7}{8}$	5.70	$11\frac{1}{4}$	$7\frac{3}{4}$	1	$2\frac{3}{4}$	$2\frac{17}{32}$	22.30	$19\frac{1}{4}$	14	$1\frac{1}{2}$	$3\frac{1}{2}$
5	5.85	$11\frac{1}{2}$	8	1	$2\frac{3}{4}$	$2\frac{9}{16}$	22.70	$19\frac{1}{4}$	14	$1\frac{1}{2}$	$3\frac{1}{2}$
$5\frac{1}{16}$	5.85	$11\frac{1}{2}$	8	1	$2\frac{3}{4}$	$2\frac{19}{32}$	23.10	$19\frac{1}{2}$	$14\frac{1}{4}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$5\frac{1}{8}$	6.00	$11\frac{3}{4}$	$8\frac{1}{4}$	1	$2\frac{3}{4}$	$2\frac{5}{8}$	23.50	$19\frac{1}{2}$	$14\frac{1}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$5\frac{1}{4}$	6.00	$11\frac{3}{4}$	$8\frac{1}{4}$	1	$2\frac{3}{4}$	$2\frac{21}{32}$	24.25	20	$14\frac{5}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$5\frac{3}{8}$	6.40	$11\frac{7}{8}$	$8\frac{3}{8}$	1	$2\frac{3}{4}$	$2\frac{11}{16}$	25.00	20	$14\frac{5}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$5\frac{1}{2}$	6.40	$11\frac{7}{8}$	$8\frac{3}{8}$	1	$2\frac{3}{4}$	$2\frac{23}{32}$	25.80	$20\frac{1}{2}$	$15\frac{1}{8}$	$1\frac{1}{2}$	$3\frac{1}{2}$
$5\frac{5}{8}$	6.75	12	$8\frac{1}{2}$	1	$2\frac{3}{4}$	$2\frac{25}{16}$	26.60	$20\frac{1}{2}$	15	$1\frac{1}{2}$	$3\frac{1}{2}$
$5\frac{3}{4}$	6.75	12	$8\frac{1}{2}$	1	$2\frac{3}{4}$	$2\frac{27}{32}$	27.30	$20\frac{1}{2}$	$14\frac{1}{2}$	$1\frac{3}{4}$	4
$5\frac{7}{8}$	6.95	$12\frac{1}{8}$	$8\frac{5}{8}$	1	$2\frac{3}{4}$	$2\frac{13}{8}$	28.00	$20\frac{1}{2}$	$14\frac{1}{2}$	$1\frac{3}{4}$	4
6	6.95	$12\frac{1}{8}$	$8\frac{5}{8}$	1	$2\frac{3}{4}$	$2\frac{27}{32}$	28.70	21	15	$1\frac{3}{4}$	4
$6\frac{1}{16}$	7.20	$12\frac{1}{2}$	$8\frac{3}{4}$	$1\frac{1}{4}$	3	$2\frac{7}{6}$	29.40	21	$14\frac{7}{8}$	$1\frac{3}{4}$	4
$6\frac{1}{8}$	7.20	$12\frac{1}{2}$	$8\frac{3}{4}$	$1\frac{1}{4}$	3	$2\frac{29}{32}$	30.80	21	$14\frac{7}{8}$	$1\frac{3}{4}$	4
$6\frac{1}{4}$	7.40	$14\frac{1}{8}$	$10\frac{3}{8}$	$1\frac{1}{4}$	3	$2\frac{15}{16}$	32.20	21	$14\frac{7}{8}$	$1\frac{3}{4}$	4
$6\frac{3}{8}$	7.40	$14\frac{1}{8}$	$10\frac{3}{8}$	$1\frac{1}{4}$	3	$2\frac{31}{32}$	33.60	22	$15\frac{7}{8}$	$1\frac{3}{4}$	4
$6\frac{1}{2}$	7.80	$14\frac{1}{4}$	$10\frac{1}{2}$	$1\frac{1}{4}$	3	3	35.00	22	$15\frac{3}{4}$	$1\frac{3}{4}$	4
$6\frac{3}{4}$	7.80	$14\frac{1}{4}$	$10\frac{1}{2}$	$1\frac{1}{4}$	3						

64th sizes not listed furnished at price of next larger size

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Reamers

Carbon and High Speed Steel

Three-Groove Chucking



Morse No. 120F, with Taper Shanks



Morse No. 120F-B, with Straight Shanks

Four-Groove Chucking



Morse No. 120F-H, with Taper Shanks

Diameter Inches	High Speed Each	Whole Length Inches	Morse Taper Shank	Diameter Inches	High Speed Each	Whole Length Inches	Morse Taper Shank
$\frac{1}{4}$	\$4.00	$6\frac{1}{8}$	No. 1	$1\frac{5}{8}$	\$26.75	$15\frac{1}{2}$	No. 4
$\frac{5}{16}$	4.25	$6\frac{3}{8}$		$1\frac{11}{16}$	28.50	$15\frac{3}{4}$	
$\frac{3}{8}$	4.75	$6\frac{3}{4}$		$1\frac{3}{4}$	30.50	16	
$\frac{7}{16}$	5.25	$7\frac{1}{4}$		$1\frac{13}{16}$	32.50	$16\frac{1}{4}$	
$\frac{1}{2}$	5.75	$7\frac{3}{4}$		$1\frac{7}{8}$	34.50	$16\frac{1}{2}$	
$\frac{9}{16}$	6.25	$8\frac{1}{4}$	No. 2	$1\frac{15}{16}$	36.75	$16\frac{1}{2}$	No. 5
$\frac{5}{8}$	6.75	$8\frac{3}{4}$		2	39.00	$16\frac{1}{2}$	
$\frac{11}{16}$	7.25	$9\frac{1}{4}$		$2\frac{1}{16}$	41.75	17	
$\frac{3}{4}$	7.75	$9\frac{3}{4}$		$2\frac{1}{8}$	44.50	17	
$\frac{13}{16}$	8.50	10		$2\frac{3}{16}$	47.25	17	
$\frac{7}{8}$	9.50	$10\frac{1}{2}$	No. 3	$2\frac{1}{4}$	50.00	$17\frac{1}{2}$	
$1\frac{1}{16}$	10.50	$10\frac{3}{4}$		$2\frac{5}{16}$	53.25	$17\frac{1}{2}$	
1	11.50	11		$2\frac{3}{8}$	56.50	18	
$1\frac{1}{8}$	12.50	$11\frac{1}{4}$		$2\frac{7}{16}$	59.75	$18\frac{1}{2}$	
$1\frac{1}{4}$	13.75	$11\frac{3}{4}$		$2\frac{1}{2}$	63.00	19	
$1\frac{3}{8}$	15.25	12	No. 4	$2\frac{9}{16}$	66.25	$19\frac{1}{4}$	No. 5
$1\frac{1}{2}$	16.75	$12\frac{1}{2}$		$2\frac{5}{8}$	69.50	$19\frac{1}{2}$	
$1\frac{5}{8}$	18.25	$14\frac{1}{4}$		$2\frac{11}{16}$	72.75	20	
$1\frac{3}{4}$	19.75	$14\frac{1}{2}$		$2\frac{3}{4}$	76.00	$20\frac{1}{2}$	
$1\frac{7}{8}$	21.50	$14\frac{3}{4}$		$2\frac{13}{16}$	79.25	$20\frac{1}{2}$	
$1\frac{1}{2}$	23.25	15	No. 5	$2\frac{7}{8}$	82.50	21	No. 6
$1\frac{5}{8}$	25.00	$15\frac{1}{4}$		$2\frac{15}{16}$	86.25	21	
$1\frac{3}{4}$				3	90.00	22	
$1\frac{7}{8}$							
$1\frac{1}{2}$							

64th and 32nd sizes take price of next larger listed size

Adjustable



Morse No. 120 1/2 E, with Taper Shanks

For illustration and sizes of Wrench furnished with each Reamer see page 80

Diameter Inches	Carbon Each	Whole Length Inches	Morse Taper Shank	Diameter Inches	Carbon Each	Whole Length Inches	Morse Taper Shank
1	\$7.00	$10\frac{1}{4}$	No. 3	$1\frac{1}{2}$	\$10.00	$12\frac{1}{8}$	No. 4
$1\frac{1}{16}$	7.40	$10\frac{1}{4}$		$1\frac{9}{16}$	10.30	$12\frac{1}{8}$	
$1\frac{1}{8}$	7.80	$10\frac{5}{8}$		$1\frac{5}{8}$	10.60	$12\frac{5}{8}$	
$1\frac{1}{4}$	8.20	$10\frac{5}{8}$		$1\frac{11}{16}$	10.90	$12\frac{5}{8}$	
$1\frac{1}{2}$	8.60	$11\frac{1}{8}$	No. 4	$1\frac{3}{4}$	11.20	$13\frac{1}{2}$	No. 5
$1\frac{5}{8}$	9.00	$11\frac{1}{4}$		$1\frac{13}{16}$	11.60	$13\frac{5}{8}$	
$1\frac{3}{4}$	9.40	$11\frac{5}{8}$		$1\frac{7}{8}$	12.00	$14\frac{1}{8}$	
$1\frac{7}{8}$	9.70	$11\frac{5}{8}$		$1\frac{15}{16}$	12.40	$14\frac{1}{8}$	
				2	12.80	$14\frac{1}{8}$	

For a general description of these Reamers, see No. 120E

Diameter Inches	Carbon Each	Whole Length Inches	Length of Flutes Inches	Length of Body Inches	Morse Taper Shank Number
$\frac{5}{8}$	\$1.90	9	2	$3\frac{15}{16}$	2
$\frac{11}{16}$	2.00	9	2	$3\frac{15}{16}$	2
$\frac{3}{4}$	2.20	$9\frac{1}{2}$	2	$4\frac{1}{16}$	2
$\frac{25}{32}$	2.30	$9\frac{1}{2}$	2	$4\frac{1}{16}$	2
$\frac{13}{16}$	2.40	$9\frac{1}{2}$	2	$4\frac{1}{16}$	2
$\frac{27}{32}$	2.50	$9\frac{1}{2}$	2	$4\frac{1}{16}$	2
$\frac{7}{8}$	2.55	10	2	$4\frac{15}{16}$	2
$\frac{29}{32}$	2.60	10	2	$4\frac{15}{16}$	2
$\frac{15}{16}$	2.65	10	$2\frac{1}{4}$	4	3
$\frac{31}{32}$	2.70	10	$2\frac{1}{4}$	4	3
1	2.75	$10\frac{1}{2}$	$2\frac{1}{4}$	$4\frac{1}{2}$	3
$1\frac{1}{32}$	2.80	$10\frac{1}{2}$	$2\frac{1}{4}$	$4\frac{1}{2}$	3
$1\frac{1}{16}$	2.85	$10\frac{1}{2}$	$2\frac{1}{4}$	$4\frac{1}{2}$	3
$1\frac{3}{32}$	2.95	$10\frac{1}{2}$	$2\frac{1}{4}$	$4\frac{1}{2}$	3
$1\frac{1}{8}$	3.10	11	$2\frac{1}{2}$	$4\frac{3}{4}$	3
$1\frac{5}{32}$	3.20	11	$2\frac{1}{2}$	$4\frac{3}{4}$	3
$1\frac{3}{16}$	3.30	11	$2\frac{1}{2}$	$4\frac{3}{4}$	3

These Reamers are made .010 inch under size and are intended to be used as roughing reamers for Floating Reamers No. 119D and Floating Expansion Reamers No. 119 E listed on page 67.

For Sockets designed for use with these Reamers see Nos. 100S, page 57, and 100T on page 55.

Adjustable



Morse No. 120E, with Straight Shanks

For illustration and sizes of Wrench furnished with each Reamer see page 80

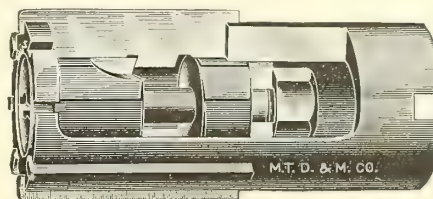
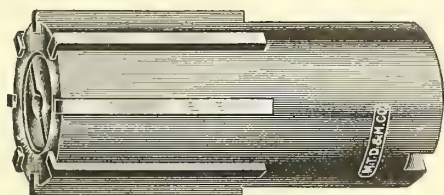
Diameter Inches	Carbon Each	Whole Length Inches	Diameter Inches	Carbon Each	Whole Length Inches
1	\$5.90	9	$2\frac{5}{16}$	\$19.50	14
$1\frac{1}{16}$	6.20	10	$2\frac{3}{8}$	21.00	14
$1\frac{1}{8}$	6.50	10	$2\frac{7}{16}$	22.50	14
$1\frac{3}{16}$	6.80	10	$2\frac{1}{2}$	24.00	14
$1\frac{1}{4}$	7.10	10	$2\frac{9}{16}$	25.00	$14\frac{1}{2}$
$1\frac{5}{16}$	7.40	11	$2\frac{5}{8}$	26.00	$14\frac{1}{2}$
$1\frac{3}{8}$	7.80	11	$2\frac{11}{16}$	27.00	$14\frac{1}{2}$
$1\frac{1}{2}$	8.20	11	$2\frac{3}{4}$	28.00	$14\frac{1}{2}$
$1\frac{1}{2}$	8.60	11	$2\frac{13}{16}$	28.75	15
$1\frac{9}{16}$	9.00	12	$2\frac{7}{8}$	29.50	15
$1\frac{5}{8}$	9.30	12	$2\frac{15}{16}$	30.75	15
$1\frac{11}{16}$	9.60	12	3	32.00	15
$1\frac{3}{4}$	9.90	12	$3\frac{1}{8}$	36.00	$15\frac{1}{2}$
$1\frac{13}{16}$	10.20	13	$3\frac{1}{4}$	40.00	$15\frac{1}{2}$
$1\frac{7}{8}$	10.40	13	$3\frac{3}{8}$	44.00	16
$1\frac{15}{16}$	10.60	13	$3\frac{1}{2}$	48.50	16
2	10.80	13	$3\frac{5}{8}$	53.50	$16\frac{1}{2}$
$2\frac{1}{16}$	11.80	$13\frac{1}{2}$	$3\frac{3}{4}$	58.50	$16\frac{1}{2}$
$2\frac{1}{8}$	12.80	$13\frac{1}{2}$	$3\frac{7}{8}$	63.50	17
$2\frac{3}{8}$	15.60	$13\frac{1}{2}$	4	67.50	17
$2\frac{1}{4}$	18.00	$13\frac{1}{2}$			

A ground, tapered plug, acting upon the chasers, adjusts the Reamer to the size desired.

To operate the plug, the Head Nut should be loosened, and the plug then turned until size desired is obtained. The Head Nut should then be tightened. Reamers 1 inch diameter will adjust .02 inch; $1\frac{1}{8}$ to $1\frac{1}{2}$ inches adjust $\frac{1}{32}$ inch; $1\frac{3}{4}$ to 3 inches adjust $\frac{1}{16}$ inch; $3\frac{1}{8}$ to 4 inches adjust .055 inch.

One-Lock Adjustable Reamers and Arbors

Carbon and High Speed Steel



Morse No. 500, One-Lock Adjustable Reamers

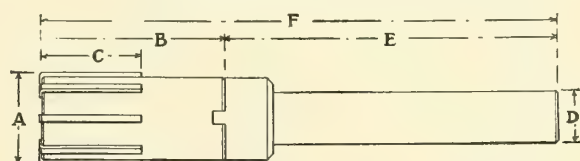
With Carbon Steel Blades
Blades furnished only in sets

With High Speed Steel Blades
Blades furnished only in sets

Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set
3/4	\$6.00	\$2.80	1 9/16	\$7.50	\$3.05	2 3/8	\$11.40	\$4.20	3/4	\$7.00	\$4.00	1 9/16	\$9.35	\$4.90	2 3/8	\$13.95	\$6.50
13/16	6.00	2.80	1 5/8	7.80	3.10	2 7/16	11.70	4.30	13/16	7.00	4.00	1 5/8	9.65	5.00	2 7/16	14.30	6.65
7/8	6.00	2.80	1 11/16	8.10	3.15	2 1/2	12.00	4.40	7/8	7.00	4.00	1 11/16	10.00	5.10	2 1/2	14.65	6.80
1 1/8	6.00	2.80	1 3/4	8.40	3.20	2 9/16	12.30	4.50	1 1/8	7.00	4.00	1 3/4	10.35	5.20	2 9/16	15.00	6.95
1	6.00	2.80	1 13/16	8.70	3.30	2 5/8	12.60	4.60	1	7.00	4.00	1 13/16	10.70	5.30	2 5/8	15.30	7.10
1 1/16	6.00	2.80	1 7/8	9.00	3.40	2 11/16	12.90	4.70	1 1/16	7.00	4.10	1 7/8	11.05	5.40	2 11/16	15.65	7.25
1 1/8	6.00	2.80	1 15/16	9.30	3.50	2 3/4	13.20	4.80	1 1/8	7.25	4.20	1 15/16	11.40	5.50	2 3/4	16.00	7.40
1 3/16	6.00	2.80	2	9.60	3.60	2 13/16	13.70	4.90	1 3/16	7.50	4.30	2	11.75	5.60	2 13/16	16.55	7.55
1 1/4	6.00	2.80	2 1/16	9.90	3.70	2 7/8	14.20	5.00	1 1/4	7.60	4.40	2 1/16	12.05	5.75	2 7/8	17.10	7.70
1 1/8	6.30	2.85	2 1/8	10.20	3.80	2 15/16	14.70	5.10	1 1/8	7.95	4.50	2 1/8	12.40	5.90	2 15/16	17.65	7.85
1 3/8	6.60	2.90	2 3/16	10.50	3.90	3	15.20	5.20	1 3/8	8.30	4.60	2 3/16	12.75	6.05	3	18.20	8.00
1 7/16	6.90	2.95	2 1/4	10.80	4.00				1 7/16	8.65	4.70	2 1/4	13.25	6.20			
1 1/2	7.20	3.00	2 5/16	11.10	4.10				1 1/2	9.00	4.80	2 5/16	13.60	6.35			

An adjustment Socket Wrench and a Key are furnished with each Reamer.
Turning the Cam Bolt in the Shell by slotted head moves all blades at once and all exactly alike, outward from the center. When the desired diameter is reached be sure all blades are firmly seated on Cam Bolt before the Lock Nut is tightened.
Nothing to get out of order. Only three parts besides blades. One movement operates all blades at once. One nut locks them.
Exact adjustment is quickly made to any size within range without regrinding blades.

Arbors for One-Lock Reamers



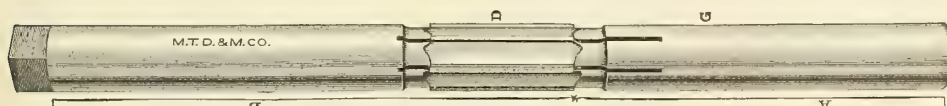
Morse No. 125P

Dimensions of One-Lock Reamer Parts

Number	Straight Shank Each	Number	Morse Taper Shank Each	Fitting Sizes Inches	Diameter of Straight Shank Inches	Morse Taper Shank Number	A Diameter of Reamer Inches	B Length of Reamer Inches	C Length of Blade Inches	D Diameter of Arbor Inches	E Length of Straight or Morse Taper Arbor, Inches	F Whole Length of Reamer and Arbor, Inches
1	\$1.00	21	\$2.50	3/4 to 1 1/16	5/8	2	3/4 to 1 1/16	2 13/16	1 15/32	5/8	6 5/8	9 7/16
2	1.25	22	3.00	1 to 1 3/16	3/4	3	1 to 1 3/16	3 1/16	1 17/32	3/4	7 1/2	10 9/16
3	1.50	23	3.50	1 1/4 to 1 11/16	7/8	3	1 1/4 to 1 11/16	3 11/16	1 15/16	7/8	7 7/8	11 9/16
4	2.00	24	4.50	1 3/4 to 2 3/16	1 1/8	4	1 3/4 to 2 3/16	4 5/16	2 3/16	1 7/8	8 1/4	12 9/16
5	3.00	25	5.00	2 1/4 to 2 11/16	1 3/8	4	2 1/4 to 2 11/16	4 13/16	2 5/8	1 3/8	8 3/4	13 9/16
6	4.00	26	7.00	2 3/4 to 3	1 3/4	5	2 3/4 to 3	5 3/16	3	1 3/4	9 1/4	14 7/16

One-Lock Reamers 3/4 to 1 1/8 inch diameter will adjust 1/4 inch; 1 to 1 1/16 inches adjust .025 inch; 1 1/4 to 1 1/16 inches adjust 1/32 inch; 1 1/2 to 1 11/16 inches adjust 1/16 inch; 2 to 2 11/16 inches adjust 1/8 inch; 2 3/4 to 3 inches adjust 1/4 inch.
The One-Lock Reamer can be adjusted larger or smaller with equal facility. The blades have no endwise movement in the shell, and can always ream to the bottom of a blind hole.
In ordering blades, state size of Reamer and also length of shell.

Expanding Reamers



Morse No. 120J

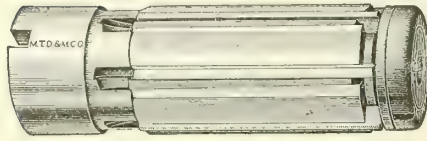
These Reamers are made to order only, and are not furnished smaller than 3/4 inch diameter.

In ordering state diameter at letters D and G, and the lengths as by letters A and B, also size and length of square. Wedge-shaped pins are adjusted to the blades of the Reamer and driving the pins increases its diameter.

Reamers

Carbon Steel

Adjustable Shell



Morse No. 120N

The cut shows the construction of our Patent Adjustable Shell Reamer. The wedge-shaped blades are held rigidly in slots by means of taper keys.

The bottom of the slots is inclined to the axis of the reamer, and the size may be adjusted by first driving back the keys, and turning the nut in the required direction. The keys should then be driven home to lock the blades.

This style of Adjustable Shell Reamer is not made smaller than 1 3/8 inches, but can be made solid as small as 3/4 inch.

A Wrench furnished with each Reamer.

Diameter Inches	Each	Whole Length Inches	Morse Taper Hole	Diameter Inches	Each	Whole Length Inches	Morse Taper Hole
1 3/8	\$10.60	4 7/8	No. 2	2 11/16	\$20.40	6	No. 4
1 7/8	11.05	4 7/8		2 3/4	20.70	6	
1 1/2	11.50	4 7/8		2 13/16	20.95	6	
1 1/8	12.05	4 7/8		2 7/8	21.25	6	
1 5/8	12.65	4 7/8		2 5/8	21.55	6	
1 11/16	13.20	5 1/4	No. 3	3	21.85	6	No. 5
1 3/4	13.80	5 1/4		3 1/16	22.40	6	
1 13/16	14.65	5 1/4		3 1/8	23.00	6	
1 7/8	15.50	5 1/4		3 3/16	23.55	6	
1 5/8	16.40	5 1/4		3 1/4	24.15	6	
2	17.25	5 1/2	No. 4	3 5/16	24.70	6	No. 5
2 1/16	17.55	5 1/2		3 3/8	25.30	6 1/2	
2 1/8	17.85	5 1/2		3 7/16	25.85	6 1/2	
2 3/16	18.15	5 1/2		3 1/2	26.45	6 1/2	
2 1/4	18.40	5 1/2		3 9/16	27.00	6 1/2	
2 5/16	18.70	5 3/4	No. 5	3 11/16	27.60	6 1/2	No. 5
2 3/8	19.00	5 3/4		3 1/4	28.15	6 1/2	
2 7/16	19.25	5 3/4		3 5/8	28.75	6 1/2	
2 1/2	19.55	5 3/4		3 13/16	29.60	6 1/2	
2 9/16	19.85	5 3/4		3 7/8	30.45	6 1/2	
2 5/8	20.10	6		3 15/16	31.30	6 1/2	
				4	32.20	6 1/2	

These Reamers sizes 1 3/8 inches to 2 5/8 inches have an expansion of .009 inch, sizes 2 3/4 inches to 4 inches, an expansion of .012 inch.

For Arbors fitting these Reamers see page 86.

Expansion Shell



Morse No. 120M-A, with Straight Holes

Diameter Inches	Each	Whole Length Inches	Size Hole Inch	Diameter Inches	Each	Whole Length Inches	Size Hole Inches
1 1/16	\$6.00	2 5/8	1 1/2	3 1/16	\$15.70	3	1
1 1/8	6.00	2 5/8	1 1/2	3 1/8	16.20	3	1
1 3/16	6.00	2 5/8	1 1/2	3 3/16	16.70	3	1
1 1/4	6.00	2 5/8	1 1/2	3 1/4	17.20	3 1/4	1 1/4
1 5/16	6.30	2 5/8	1 1/2	3 5/16	17.70	3 1/4	1 1/4
1 3/8	6.60	2 3/4	5/8	3 3/8	18.20	3 1/4	1 1/4
1 7/16	6.90	2 3/4	5/8	3 7/16	18.70	3 1/4	1 1/4
1 1/2	7.20	2 3/4	5/8	3 1/2	19.20	3 1/4	1 1/4
1 9/16	7.50	2 3/4	5/8	3 9/16	19.95	3 1/4	1 1/4
1 5/8	7.80	2 3/4	5/8	3 5/8	20.70	3 1/4	1 1/4
1 11/16	8.10	2 3/4	5/8	3 11/16	21.45	3 1/4	1 1/4
1 3/4	8.40	2 3/4	5/8	3 3/4	22.20	3 5/8	1 1/2
1 13/16	8.70	2 3/4	5/8	3 13/16	22.95	3 5/8	1 1/2
1 7/8	9.00	2 3/4	3/4	3 7/8	23.70	3 5/8	1 1/2
1 15/16	9.30	2 3/4	3/4	3 15/16	24.45	3 5/8	1 1/2
2	9.60	2 3/4	3/4	4	25.20	3 5/8	1 1/2
2 1/16	9.90	2 3/4	3/4	4 1/16	25.95	3 5/8	1 1/2
2 1/8	10.20	2 3/4	3/4	4 1/8	26.70	3 5/8	1 1/2
2 3/16	10.50	2 3/4	3/4	4 3/16	27.45	3 5/8	1 1/2
2 1/4	10.80	2 3/4	3/4	4 1/4	28.20	4	2
2 5/16	11.10	2 3/4	3/4	4 5/16	28.95	4	2
2 3/8	11.40	2 3/4	3/4	4 3/8	29.70	4	2
2 7/16	11.70	2 3/4	3/4	4 7/16	30.45	4	2
2 1/2	12.00	3	1	4 1/2	31.20	4	2
2 9/16	12.30	3	1	4 9/16	31.95	4	2
2 5/8	12.60	3	1	4 5/8	32.70	4	2
2 11/16	12.90	3	1	4 11/16	33.45	4	2
2 3/4	13.20	3	1	4 3/4	34.20	4	2
2 13/16	13.70	3	1	4 13/16	34.95	4	2
2 7/8	14.20	3	1	4 7/8	35.70	4	2
2 15/16	14.70	3	1	4 15/16	36.45	4	2
3	15.20	3	1	5	37.20	4	2

For Arbors fitting these Reamers see page 85.

For other Tools to be used in connection with these Reamers see pages 47 and 66.

Wrenches for Adjustable Reamers



Nos. 120E, 120E-B, 120 1/2, and 120N

A Wrench furnished with Reamers

Fitting Reamers Wrench Inches	No. of Wrench	Fitting Reamers Wrench Inches	No. of Wrench	Fitting Reamers Wrench Inches	No. of Wrench	Fitting Reamers Wrench Inches	No. of Wrench
3 1		9 1 1/16 & 1 3/4		15 2 1/2 & 2 9/16		21 3 1/4 & 3 5/16	
4 1 1/16 & 1 1/8		10 1 1/8 & 1 7/8		16 2 5/8 & 2 11/16		22 3 3/8 & 3 7/16	
5 1 3/16 & 1 1/4		11 1 5/16 & 2 1/16		17 2 3/4 & 2 13/16		23 3 1/2 & 3 9/16	
6 1 1/8 & 1 3/8		12 2 1/8 & 2 3/16		18 2 7/8 & 2 15/16		24 3 5/8 & 3 11/16	
7 1 1/16 & 1 1/2		13 2 1/4 & 2 5/16		19 3 & 3 1/16		25 3 3/4 & 3 13/16	
8 1 9/16 & 1 5/8		14 2 3/8 & 2 7/16		20 3 1/8 & 3 3/16		26 3 7/8 & 3 15/16	
						27 4	

Prices quoted on application for additional wrenches

Suggestions for Ordering Reamers

Regular Reamers—Always order by catalogue number.

Special Reamers—Refer to the catalogue number for general style of tool required, giving also the following information:

Special Solid Reamers—Give total length and length of flutes.

Special Taper Reamers—Give whole length, length of flutes, size at large and small ends of flutes; or size at one end and taper per foot. State whether straight or taper shank is required. If taper, give length of shank and diameter at each end and if Morse Taper is required state number.

Special Shell Reamers—Give whole length and length of flutes. When these reamers are longer than catalogue lengths they are made with Straight Hole and diameter of hole should be given.

Expansion and Expanding Reamers

Expansion

Carbon Steel

Expanding



Morse No. 120G, with Straight Shanks



Morse No. 120K, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/4	\$3.00	4	1 1/2	1 3/2	\$9.20	11	5
9/32	3.05	4	1 1/2	1 5/16	9.50	11	5
5/16	3.10	4	1 1/2	1 3/2	10.00	11	5
11/32	3.15	4	1 1/2	1 3/8	10.50	11 1/2	5 1/4
3/8	3.20	5	2	1 13/32	11.00	11 1/2	5 1/4
13/32	3.25	5	2	1 1/16	11.50	11 1/2	5 1/4
7/16	3.30	5	2	1 15/32	12.00	11 1/2	5 1/4
15/32	3.35	5	2	1 1/2	12.50	12	5 1/2
1/2	3.40	6	2 1/2	1 9/16	13.00	12	5 1/2
5/8	3.50	6	2 1/2	1 5/8	13.50	12 1/2	5 3/4
9/8	3.65	6	2 1/2	1 11/16	14.00	12 1/2	5 3/4
1 1/8	3.80	6	2 1/2	1 3/4	14.50	13	6
5/8	4.00	7	3	1 13/16	15.00	13	6
3/4	4.20	7	3	1 7/8	15.50	13 1/2	6 1/4
1 1/16	4.40	7	3	1 15/16	16.00	13 1/2	6 1/4
1 1/8	4.60	7	3	2	16.50	14	6 1/2
1 1/4	4.80	8	3 1/2	2 1/16	17.00	14	6 1/2
1 3/8	5.00	8	3 1/2	2 1/8	17.50	14 1/2	6 3/4
1 1/2	5.25	8	3 1/2	2 3/16	18.00	14 1/2	6 3/4
1 5/8	5.50	8	3 1/2	2 1/4	18.50	15	7
1 3/4	5.75	9	4	2 5/16	19.00	15	7
2	6.00	9	4	2 3/8	19.50	15 1/2	7 1/4
2 1/8	6.25	9	4	2 1/2	20.00	15 1/2	7 1/4
2 1/4	6.50	9	4	2 1/2	20.50	16	7 1/2
2 3/8	6.75	10	4 1/2	2 9/16	22.00	16	7 1/2
2 1/2	7.00	10	4 1/2	2 5/8	23.50	16 1/2	7 3/4
2 7/8	7.25	10	4 1/2	2 11/16	25.00	16 1/2	7 3/4
3	7.50	10	4 1/2	2 3/4	26.50	17	8
3 1/8	7.75	10 1/2	4 3/4	2 13/16	28.00	17	8
3 1/4	8.00	10 1/2	4 3/4	2 7/8	30.00	17 1/2	8 1/4
3 3/8	8.30	10 1/2	4 3/4	2 15/16	32.00	17 1/2	8 1/4
3 1/2	8.60	10 1/2	4 3/4	3	34.00	17 1/2	8 1/4
3 3/4	8.90	11	5				

Limits of expansion recommended for these Reamers are as follows: Sizes 1/4 to 3/8 .005 inch; 1/2 to 3/4 .008 inch; 1 to 1 1/2 .010 inch; 1 3/4 to 2 1/2 .012; 2 3/4 to 3 inches .015 inch.
The guides to these Reamers are ground .005 inch under size.

Diameter Inches	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches
3/4	\$4.00	7 13/16	1 7/16	\$7.40	12 3/16
13/16	4.40	8 3/16	1 1/2	7.80	12 9/16
7/8	4.70	8 9/16	1 9/16	8.20	12 15/16
15/16	5.00	8 15/16	1 5/8	8.50	13 1/16
1	5.30	9 1/16	1 11/16	8.80	13 11/16
1 1/16	5.60	9 13/16	1 3/4	9.10	14 3/16
1 1/8	5.90	10 3/16	1 13/16	9.40	14 9/16
1 1/4	6.20	10 7/16	1 7/8	9.60	14 15/16
1 1/2	6.50	10 15/16	1 15/16	9.80	15 1/16
1 5/8	6.80	11 1/16	2	10.00	15 11/16
1 3/4	7.10	11 13/16			

These Reamers have an expansion of .009 inch

Expanding

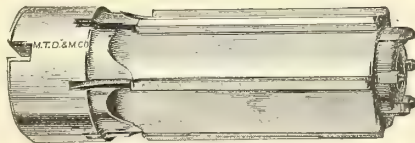


Morse No. 120 1/2 K, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Morse Taper Shank Number	Diameter Inches	Each	Whole Length Inches	Morse Taper Shank Number
3/4	\$4.00	9 1/2	2	1 7/16	\$7.40	12	4
13/16	4.40	9 1/2	2	1 1/2	7.80	12 1/2	4
7/8	4.70	10	2	1 9/16	8.20	12 1/2	4
15/16	5.00	10	3	1 5/8	8.50	13	4
1	5.30	10 1/2	3	1 11/16	8.80	13	4
1 1/16	5.60	10 1/2	3	1 3/4	9.10	13 1/2	5
1 1/8	5.90	11	3	1 13/16	9.40	13 1/2	5
1 1/4	6.20	11	3	1 7/8	9.60	14	5
1 1/2	6.50	11 1/2	4	1 15/16	9.80	14	5
1 5/8	6.80	11 1/2	4	2	10.00	14	5
1 3/4	7.10	12	4				

Wedge-shaped pins are adjusted to the blades and driving the pins increases the diameter of the Reamers. When new blades or pins are required, the Reamer should accompany the order. Expanding Reamers are not furnished smaller than 3/4 inch diameter. These Reamers have an expansion of .009 inch.

Expanding Shell



Morse No. 120M

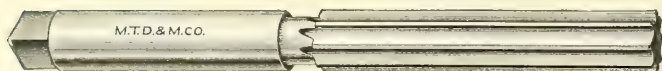
The cut shows the construction of the Expanding Shell Reamer. Wedge-shaped pins are adjusted to the blades and driving the pins increases the diameter of the Reamer. When new blades or pins are required, the Reamer should accompany the order. The Reamers can be increased but not reduced in size. Special sizes of larger diameter than 4 inches furnished to order at special prices.

Diameter Inches	Each	Whole Length Inches	Morse Taper Hole	Diameter Inches	Each	Whole Length Inches	Morse Taper Hole	Diameter Inches	Each	Whole Length Inches	Morse Taper Hole
1 3/8	\$9.20	4 11/16	No. 2	2 5/16	\$16.25	5 7/16	No. 4	3 1/4	\$21.00	5 7/16	No. 4
1 1/16	9.60	4 11/16		2 3/8	16.50	5 7/16		3 5/16	21.50	5 7/16	
1 1/2	10.00	4 11/16		2 7/16	16.75	5 7/16		3 3/8	22.00	6	
1 9/16	10.50	4 11/16		2 1/2	17.00	5 7/16		3 15/16	22.50	6	
1 5/8	11.00	4 11/16		2 9/16	17.25	5 7/16		3 1/2	23.00	6	
			No. 3	2 5/8	17.50	5 7/16	No. 4	3 9/16	23.50	6	No. 5
1 11/16	11.50	5 3/16		2 11/16	17.75	5 7/16		3 5/8	24.00	6	
1 3/4	12.00	5 3/16		2 3/4	18.00	5 7/16		3 11/16	24.50	6	
1 13/16	12.75	5 3/16		2 13/16	18.25	5 7/16		3 3/4	25.00	6	
1 7/8	13.50	5 3/16		2 7/8	18.50	5 7/16		3 13/16	25.75	6	
1 15/16	14.25	5 3/16		2 15/16	18.75	5 7/16		4	26.50	6	
2	15.00	5 3/16		3	19.00	5 7/16		3 7/8	27.25	6	
2 1/16	15.25	5 3/16		3 1/16	19.50	5 7/16		3 15/16	28.00	6	
2 1/8	15.50	5 3/16		3 1/8	20.00	5 7/16					
2 3/16	15.75	5 3/16		3 1/4	20.50	5 7/16					
2 1/4	16.00	5 3/16									

These Reamers have an expansion of .009 inch. For Arbors fitting these Reamers see page 86. For Expanding Shell Reamers with straight holes see No. 120M-A

Jobbers Reamers

Carbon Steel—Metric Sizes



Morse No. 115 E, with Straight Shanks and Flutes



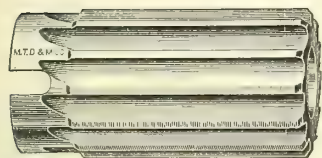
Morse No. 115 F, with Straight Shanks and Flutes
Threaded Ends

Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.	Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.	Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.	Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.
3	\$1.00	76	38	29	\$4.45	302	151	5	\$1.25	95	48	31	\$4.75	308	154
3½	1.10	83	41	30	4.60	305	152	5½	1.30	95	48	32	4.90	311	156
4	1.10	83	41	31	4.75	308	154	6	1.40	102	51	33	5.15	317	159
4½	1.20	89	44	32	4.90	311	156	6½	1.40	102	51	34	5.40	317	159
5	1.25	95	48	33	5.15	317	159	7	1.45	108	54	35	5.60	321	160
5½	1.30	95	48	34	5.40	317	159	7½	1.50	114	57	36	5.90	327	164
6	1.40	102	51	35	5.60	321	160	8	1.50	114	57	37	6.15	327	164
6½	1.40	102	51	36	5.90	327	164	8½	1.55	121	60	38	6.40	330	165
7	1.45	108	54	37	6.15	327	164	9	1.60	127	63	39	6.60	330	165
7½	1.50	114	57	38	6.40	330	165	9½	1.60	127	63	40	6.90	330	165
8	1.50	114	57	39	6.60	330	165	10	1.70	133	67	41	7.20	330	165
8½	1.55	121	60	40	6.90	330	165	10½	1.70	133	67	42	7.40	330	165
9	1.60	127	63	41	7.20	330	165	11	1.75	140	70	43	7.60	343	171
9½	1.60	127	63	42	7.40	330	165	11½	1.85	146	73	44	7.90	343	171
10	1.70	133	67	43	7.60	343	171	12	1.85	146	73	45	8.10	343	171
10½	1.70	133	67	44	7.90	343	171	12½	1.90	152	76	46	8.40	343	171
11	1.75	140	70	45	8.10	343	171	13	1.95	159	79	47	8.60	356	178
11½	1.85	146	73	46	8.40	343	171	13½	1.95	159	79	48	8.90	356	178
12	1.85	146	73	47	8.60	356	178	14	2.00	165	83	49	9.20	356	178
12½	1.90	152	76	48	8.90	356	178	14½	2.10	171	86	50	9.40	356	178
13	1.95	159	79	49	9.20	356	178	15	2.10	171	86	51	9.70	368	184
13½	1.95	159	79	50	9.40	356	178	15½	2.20	178	89	52	10.00	368	184
14	2.00	165	83	51	9.70	368	184	16	2.20	178	89	53	10.20	368	184
14½	2.10	171	86	52	10.00	368	184	16½	2.30	187	94	54	10.40	368	184
15	2.10	171	86	53	10.20	368	184	17	2.40	197	98	55	10.70	368	184
15½	2.20	178	89	54	10.40	368	184	17½	2.40	197	98	56	11.00	368	184
16	2.20	178	89	55	10.70	368	184	18	2.50	206	103	57	11.30	368	184
16½	2.30	187	94	56	11.00	368	184	18½	2.60	213	106	58	11.60	381	190
17	2.40	197	98	57	11.30	368	184	19	2.60	213	106	59	12.00	381	190
17½	2.40	197	98	58	11.60	381	190	19½	2.70	222	111	60	12.30	381	190
18	2.50	206	103	59	12.00	381	190	20	2.75	222	111	61	12.55	381	190
18½	2.60	213	106	60	12.30	381	190	20½	2.80	232	116	62	12.90	381	190
19	2.60	213	106	61	12.55	381	190	21	2.90	238	119	63	13.30	381	190
19½	2.70	222	111	62	12.90	381	190	21½	3.00	238	119	64	13.70	394	197
20	2.75	222	111	63	13.30	381	190	22	3.10	248	124	65	14.00	394	197
20½	2.80	232	116	64	13.70	394	197	22½	3.20	254	127	66	14.30	394	197
21	2.90	238	119	65	14.00	394	197	23	3.25	254	127	67	14.80	394	197
21½	3.00	238	119	66	14.30	394	197	23½	3.35	260	130	68	15.40	394	197
22	3.10	248	124	67	14.80	394	197	24	3.40	270	135	69	15.80	394	197
22½	3.20	254	127	68	15.40	394	197	24½	3.55	270	135	70	16.40	394	197
23	3.25	254	127	69	15.80	394	197	25	3.60	276	138	71	17.00	406	203
23½	3.35	260	130	70	16.40	394	197	26	3.80	283	141	72	17.40	406	203
24	3.40	270	135	71	17.00	406	203	27	4.00	286	143	73	17.80	406	203
24½	3.55	270	135	72	17.40	406	203	28	4.25	295	148	74	18.40	406	203
25	3.60	276	138	73	17.80	406	203	29	4.45	302	151	75	19.00	406	203
26	3.80	283	141	74	18.40	406	203	30	4.60	305	152	76	19.40	406	203
27	4.00	286	143	75	19.00	406	203								
28	4.25	295	148	76	19.40	406	203								

Reamers

Carbon Steel—Metric Sizes

Shell



Morse No. 117B



Morse No. 117 1/2 B, Rose

With Straight Flutes

These Shell Reamers have taper holes

Adjustable



Morse No. 120 E-B

With Straight Shank

For illustration and sizes of Wrench furnished with each Reamer see page 80

Diameter MM.	Each	Whole Length MM.	Fitting Arbor No.	Diameter MM.	Each	Whole Length MM.	Fitting Arbor No.
13	\$1.45	51	3	71	\$8.35	102	10
14	1.50	51	3	72	8.60	102	10
15	1.55	51	3	73	8.80	102	10
16	1.60	57	4	74	9.10	102	10
17	1.60	57	4	75	9.40	102	10
18	1.60	57	4	76	9.60	102	10
19	1.60	57	4	77	9.75	102	10
20	1.60	63	5	78	10.05	114	11
21	1.65	63	5	79	10.20	114	11
22	1.70	63	5	80	10.40	114	11
23	1.70	63	5	81	10.60	114	11
24	1.70	63	5	82	11.00	114	11
25	1.80	63	5	83	11.25	114	11
26	1.80	70	6	84	11.50	114	11
27	1.80	70	6	85	12.00	114	11
28	1.90	70	6	86	12.25	114	11
29	1.95	70	6	87	12.50	114	11
30	2.00	70	6	88	12.75	114	11
31	2.15	70	6	89	13.25	114	11
32	2.30	70	6	90	13.50	114	11
33	2.40	70	6	91	13.75	127	12
34	2.50	76	7	92	14.00	127	12
35	2.60	76	7	93	14.50	127	12
36	2.75	76	7	94	14.75	127	12
37	2.90	76	7	95	15.00	127	12
38	3.00	76	7	96	15.25	127	12
39	3.10	76	7	97	15.75	127	12
40	3.30	76	7	98	16.00	127	12
41	3.50	76	7	99	16.50	127	12
42	3.65	76	7	100	17.00	127	12
43	3.85	89	8	101	18.00	127	12
44	4.05	89	8	102	18.15	127	12
45	4.25	89	8	103	18.30	127	12
46	4.40	89	8	104	18.60	140	13
47	4.60	89	8	105	18.80	140	13
48	4.80	89	8	106	19.00	140	13
49	5.00	89	8	107	19.20	140	13
50	5.10	89	8	108	19.60	140	13
51	5.25	89	8	109	19.80	140	13
52	5.40	89	8	110	20.00	140	13
53	5.50	95	9	111	20.20	140	13
54	5.65	95	9	112	20.60	140	13
55	5.80	95	9	113	20.80	140	13
56	5.90	95	9	114	21.00	140	13
57	6.00	95	9	115	21.30	140	13
58	6.15	95	9	116	21.90	152	14
59	6.30	95	9	117	22.20	152	14
60	6.40	95	9	118	22.50	152	14
61	6.50	95	9	119	22.80	152	14
62	6.65	95	9	120	23.40	152	14
63	6.80	95	9	121	23.70	152	14
64	6.90	95	9	122	24.00	152	14
65	7.00	95	9	123	24.30	152	14
66	7.20	102	10	124	24.90	152	14
67	7.40	102	10	125	25.20	152	14
68	7.60	102	10	126	25.60	152	14
69	7.80	102	10	127	26.00	152	14
70	8.05	102	10	128	27.00	152	14

For Arbors fitting these Reamers see pages 85 and 86.

Reamers Style 117 1/2 B have no radial clearance but are ground with a longitudinal clearance. Keep cutting points sharp.

Diameter MM.	Each	Whole Length MM.	Diameter MM.	Each	Whole Length MM.
25	\$5.90	229	51	\$11.30	330
26	6.05	229	52	11.80	343
27	6.35	254	53	12.30	343
28	6.50	254	54	14.20	343
29	6.65	254	55	15.60	343
30	6.80	254	56	16.80	343
31	7.10	254	57	18.00	343
32	7.25	254	58	19.50	343
33	7.40	254	59	20.25	356
34	7.60	279	60	21.00	356
35	8.00	279	61	21.75	356
36	8.20	279	62	23.25	356
37	8.40	279	63	24.00	356
38	8.60	279	64	24.50	356
39	9.00	279	65	25.00	368
40	9.15	305	66	26.00	368
41	9.30	305	67	26.50	368
42	9.45	305	68	27.00	368
43	9.60	305	69	27.50	368
44	9.90	305	70	28.40	368
45	10.05	305	71	28.75	381
46	10.20	330	72	29.15	381
47	10.40	330	73	29.50	381
48	10.50	330	74	30.75	381
49	10.60	330	75	31.40	381
50	10.70	330	76	32.00	381

For a general description of these Reamers see No. 120E, page 78

Expansion



Morse No. 120 1/2 G, with Straight Shank

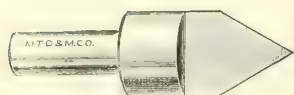
Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.	Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.
6	\$3.00	102	38	29	\$8.00	267	121
7	3.05	102	38	30	8.30	267	121
8	3.15	102	38	31	8.90	267	121
9	3.20	127	51	32	9.20	279	127
10	3.25	127	51	33	9.50	279	127
11	3.30	127	51	34	10.00	279	127
12	3.40	127	51	35	11.00	292	133
13	3.50	152	63	36	11.50	292	133
14	3.65	152	63	37	12.00	292	133
15	3.80	152	63	38	12.50	305	140
16	4.20	178	76	39	13.00	305	140
17	4.40	178	76	40	13.25	305	140
18	4.60	178	76	41	13.50	317	146
19	4.80	203	89	42	13.75	317	146
20	5.2	203	89	43	14.25	317	146
21	5.50	203	89	44	14.50	330	152
22	5.75	229	102	45	14.75	330	152
23	6.00	229	102	46	15.00	330	152
24	6.50	229	102	47	15.50	343	159
25	6.75	254	114	48	15.75	343	159
26	7.00	254	114	49	16.00	343	159
27	7.25	254	114	50	16.25	343	159
28	7.75	267	121				

Limits of expansion recommended for these Reamers are as follows: Sizes 6 to 12 mm. .005 inch; 13 to 25 mm. .008 inch; 26 to 44 mm. .010 inch; 45 to 50 mm. .012 inch.

The Guides to these Reamers are ground .005 inch under size.

Reamers

Center



Style No. 1



Style No. 2

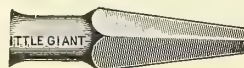
Morse No. 120H, with Included Angle 60 Degrees

These Reamers with included angle of 72 and 82 degrees furnished at regular prices

Size Cut Inch	Style No. 1		Style No. 2		Whole Length Inches	Diameter Shank Inch	Length Shank Inch
	Each	Per Dozen	Each	Per Dozen			
1/4	\$.22	\$2.50	\$.25	\$2.90	1 1/2	3/16	3/4
3/8	.25	2.90	.30	3.25	1 13/16	1/4	7/8
1/2	.30	3.25	.35	3.75	2	3/8	7/8
5/8	.50	6.00	.60	7.00	2 1/8	3/8	7/8
3/4	.70	8.00	.75	8.50	2 3/8	1/2	1

Other angles made to order at special prices

Burring



Style of Shanks
Nos. 1, 2, 4



Style of Shank
No. 3

Order by this No.	Total Length Inches	Length of Flute Inches	Length of Shank Inches	Size at Point Inch	Size at Large End Inches	Style of Shank	Capacity Pipe Inches	Each
1	2 3/4	1	1 3/4	7/32	3/4	Bit Brace	1/8 to 1/2	\$1.00
2	4 1/2	2 1/4	2 1/4	5/16	1 1/2	Bit Brace	1/4 to 1 1/4	1.25
3	4 1/2	2 1/4	2 1/4	5/16	1 1/2	1/2-in. Round	1/4 to 1 1/4	1.52
4	4 5/8	2	2 5/8	1	2 3/16	Bit Brace	1 to 2	3.00
5	4 1/2	2 3/4	1 3/4	15/16	2 5/8	T Handle*	1 to 2	3.50
6	5 3/8	3 1/8	2 1/8	7/16	2 5/8	T Handle*	1/2 to 2	4.00

*20 inches long

Genuine English Broaches



We are direct importers of these Reamers, and aim to carry always a large stock of all sizes

Diameters given are taken at largest end of Reamer

Length, inches	4	4 1/2	5	5 1/2
Diameter, inch	3/16	7/32	5/16	21/64
Per Dozen	\$2.85	3.40	4.20	6.00

*Drill Gauge No.	15	20	25	30	35	40	45	50	55	60	65
Per Dozen	\$2.35	2.10	2.10	1.85	1.55	1.30	1.05	.80	.80	.65	.65

*Stubs' Drill Gauge

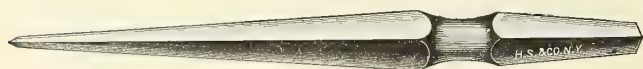
Hall's Patent Pipe



For removing the Burrs from ends of Wrought Pipe

Number	1	2	3
Reams Pipe, inches	1/8 to 1	3/4 to 2	1 1/2 to 3
Each	\$.80	.90	2.50

Cast Steel For Wood or Soft Metal



4 inches long; tapers from 1/2 to 1/8 inch

No. 40. Square, ground concave.....Per dozen \$4.50



4 inches long; tapers from 1/2 to 1/8 inch

No. 50 Octagon, ground concave.....Per dozen \$5.50



4 1/2 inches long; tapers from 1/2 to 1/8 inch

No. 55. Half round, flat side, ground concave.....Per dozen \$5.00



Taper Pipe

For use with Briggs' Standard Pipe Taps

Pipe with Inserted Lands

For illustration of style, see index for Little Giant Pipe Taps with inserted lands. The lands are made of the very best high grade of steel, highly tempered, and they can easily be replaced, when worn, at very little cost

Inches	2 1/2	3	3 1/2	4	4 1/2	5
Each	\$6.00	8.00	10.00	14.00	25.00	35.00
Extra Lands.....Per set	2.00	2.00	2.50	2.50	3.00	3.00
Inches	6	7	8	9	10	
Each	\$50.00	70.00	85.00	100.00	120.00	
Extra Lands.....Per set	5.00	5.00	7.00	7.00	7.00	

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Arbors

For Shell Reamers and Shell Drills

Floating



Morse No. 125 K

Solid



Morse No. 125 N, with Taper Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Diameter Bushing Inches	Length of Shank Inches
1	\$9.00	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	13 ¹ / ₂	1 ¹ / ₂	3 ¹ / ₄
2	9.00	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	13 ¹ / ₂	1 ³ / ₄	3 ¹ / ₄
3	9.00	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	13 ¹ / ₂	2	3 ¹ / ₄
4	9.35	1 ³ / ₈ to 1 ¹³ / ₁₆	13 ¹ / ₂	1 ¹ / ₂	3 ¹ / ₄
5	9.35	1 ³ / ₈ to 1 ¹³ / ₁₆	13 ¹ / ₂	1 ³ / ₄	3 ¹ / ₄
6	9.35	1 ³ / ₈ to 1 ¹³ / ₁₆	13 ¹ / ₂	2	3 ¹ / ₄
7	9.75	1 ⁷ / ₈ to 2 ¹ / ₁₆	13 ¹ / ₂	1 ³ / ₄	3 ¹ / ₄
8	9.75	1 ⁷ / ₈ to 2 ¹ / ₁₆	13 ¹ / ₂	2	3 ¹ / ₄
9	10.10	2 ¹ / ₂ to 3 ³ / ₁₆	13 ¹ / ₂	2	3 ¹ / ₄
10	10.50	3 ¹ / ₄ to 3 ¹¹ / ₁₆	13 ¹ / ₂	2	3 ¹ / ₄
11	10.85	3 ³ / ₄ to 4 ³ / ₁₆	13 ¹ / ₂	2	3 ¹ / ₄
12	11.25	4 ¹ / ₄ to 5	13 ¹ / ₂	2	3 ¹ / ₄

Above Arbors fit Shell Reamers and Shell Drills with straight holes; Shell Reamer No. 117C; Expanding Shell Reamer No. 120M-A; Shell Drill No. 102 ¹/₂ H.

Solid



Morse No. 125 M

Number	Each	Fitting Sizes Inches	Whole Length Inches	Diameter Shank Inches
1	\$7.50	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	11	1 ¹ / ₄
2	7.50	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	11	1 ¹ / ₂
3	7.50	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	13 ¹ / ₂	1 ³ / ₄
4	7.50	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	13 ¹ / ₂	2
5	7.90	1 ³ / ₈ to 1 ¹³ / ₁₆	11	1 ¹ / ₄
6	7.90	1 ³ / ₈ to 1 ¹³ / ₁₆	11	1 ¹ / ₂
7	7.90	1 ³ / ₈ to 1 ¹³ / ₁₆	13 ¹ / ₂	1 ³ / ₄
8	7.90	1 ³ / ₈ to 1 ¹³ / ₁₆	13 ¹ / ₂	2
9	8.25	1 ⁷ / ₈ to 2 ¹ / ₁₆	11	1 ¹ / ₄
10	8.25	1 ⁷ / ₈ to 2 ¹ / ₁₆	11	1 ¹ / ₂
11	8.25	1 ⁷ / ₈ to 2 ¹ / ₁₆	13 ¹ / ₂	1 ³ / ₄
12	8.25	1 ⁷ / ₈ to 2 ¹ / ₁₆	13 ¹ / ₂	2
13	8.65	2 ¹ / ₂ to 3 ³ / ₁₆	11	1 ¹ / ₄
14	8.65	2 ¹ / ₂ to 3 ³ / ₁₆	11	1 ¹ / ₂
15	8.65	2 ¹ / ₂ to 3 ³ / ₁₆	13 ¹ / ₂	1 ³ / ₄
16	8.65	2 ¹ / ₂ to 3 ³ / ₁₆	13 ¹ / ₂	2
17	9.00	3 ¹ / ₄ to 3 ¹¹ / ₁₆	11	1 ¹ / ₄
18	9.00	3 ¹ / ₄ to 3 ¹¹ / ₁₆	11	1 ¹ / ₂
19	9.00	3 ¹ / ₄ to 3 ¹¹ / ₁₆	13 ¹ / ₂	1 ³ / ₄
20	9.00	3 ¹ / ₄ to 3 ¹¹ / ₁₆	13 ¹ / ₂	2
21	9.35	3 ³ / ₄ to 4 ³ / ₁₆	11	1 ¹ / ₂
22	9.35	3 ³ / ₄ to 4 ³ / ₁₆	13 ¹ / ₂	1 ³ / ₄
23	9.35	3 ³ / ₄ to 4 ³ / ₁₆	13 ¹ / ₂	2
24	9.75	4 ¹ / ₄ to 5	11	1 ¹ / ₂
25	9.75	4 ¹ / ₄ to 5	13 ¹ / ₂	1 ³ / ₄
26	9.75	4 ¹ / ₄ to 5	13 ¹ / ₂	2

Shanks on all sizes 3 ¹/₄ inches long.

Above Arbors fit Shell Reamers and Shell Drills with straight holes; Shell Reamer No. 117C; Expanding Shell Reamer No. 120M-A; Shell Drill No. 102 ¹/₂ H.

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper Shank Number
1	\$6.75	1 ¹ / ₁₆ to 1 ⁵ / ₁₆	11 ⁷ / ₈	3
2	7.10	1 ³ / ₈ to 1 ¹³ / ₁₆	11 ⁷ / ₈	3
3	7.50	1 ⁷ / ₈ to 2 ¹ / ₁₆	11 ⁷ / ₈	3
4	7.90	2 ¹ / ₂ to 3 ³ / ₁₆	11 ¹³ / ₁₆	4
5	8.25	3 ¹ / ₄ to 3 ¹¹ / ₁₆	11 ¹³ / ₁₆	4
6	9.00	3 ³ / ₄ to 4 ³ / ₁₆	11 ¹³ / ₁₆	4
7	10.00	4 ¹ / ₄ to 5	13 ¹ / ₂	5

Above Arbors fit Shell Reamers and Shell Drills with straight holes; Shell Reamer No. 117C; Expanding Shell Reamer No. 120M-A; Shell Drill No. 102 ¹/₂ H.

Morse No. 125 A, with Straight Shanks



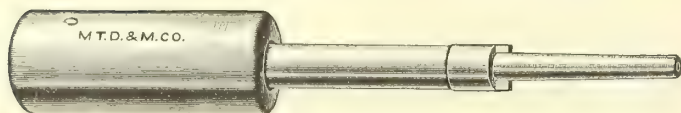
Number	Each	Fitting Sizes Inches	Whole Length Inches	Length of Shank Inches	Diameter of Shank Inches
3	\$1.60	1 ¹ / ₂ to 2 ⁹ / ₁₆	8	5 ¹ / ₂	7 ⁷ / ₁₆
4	1.80	5 ⁵ / ₈ to 1 ¹¹ / ₁₆	9	6 ⁵ / ₃₂	1 ¹ / ₂
5	2.00	3 ¹ / ₄ to 1 ¹⁵ / ₁₆	9 ¹ / ₂	6 ¹¹ / ₃₂	5 ⁵ / ₈
6	2.20	1 to 1 ¹ / ₄	10	6 ¹⁵ / ₃₂	3 ¹ / ₄
7	2.40	1 ⁵ / ₁₆ to 1 ⁵ / ₈	11	7 ⁵ / ₃₂	7 ⁵ / ₈
8	2.70	1 ¹¹ / ₁₆ to 2	12	7 ¹⁷ / ₃₂	11 ⁵ / ₈
9	3.00	2 ¹ / ₁₆ to 2 ¹ / ₂	13	8 ⁷ / ₃₂	1 ³ / ₈
10	3.40	2 ⁹ / ₁₆ to 3	14	8 ²⁷ / ₃₂	1 ⁵ / ₈
11	5.00	3 ¹ / ₁₆ to 3 ¹ / ₂	15	9 ⁵ / ₃₂	2
12	7.00	3 ⁹ / ₁₆ to 4	16	9 ¹⁵ / ₃₂	2 ¹ / ₈
13	9.00	4 ¹ / ₁₆ to 4 ¹ / ₂	17	9 ²³ / ₃₂	2 ³ / ₈
14	12.00	4 ⁹ / ₁₆ to 5 ¹ / ₂	18	10 ¹ / ₁₆	2 ⁵ / ₈
15	14.75	5 ⁹ / ₁₆ to 6 ¹ / ₂	19	10 ⁹ / ₁₆	3
16	17.50	6 ⁹ / ₁₆ to 7	20	11 ¹ / ₁₆	3 ¹ / ₄

Shanks are ground standard to sizes listed.

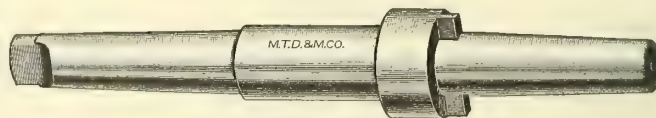
Above Arbors fit Shell Reamers and Shell Drills with taper holes; Shell Reamers Nos. 117, 117 B and 117 ¹/₂; Rose Shell Reamer Nos. 117 A and 117 ¹/₂ B; Shell Drill No. 102 H.

Arbors

For Shell Reamers and Shell Drills



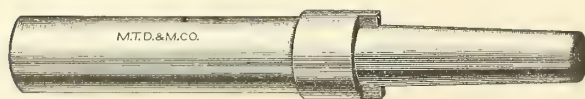
No. 125 L, Floating



Morse No. 125 1/2 A, with Taper Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Diameter Bushing Inches	Length Bushing Inches
3	\$7.50	1/2 to 9/16	7 1/2	1	3 1/4
4	7.50	1/2 to 9/16	7 1/2	1 1/4	3 1/4
5	7.50	1/2 to 9/16	7 1/2	1 1/2	3 1/4
6	7.70	5/8 to 11/16	8 1/2	1	3 1/4
7	7.70	5/8 to 11/16	8 1/2	1 1/4	3 1/4
8	7.70	5/8 to 11/16	8 1/2	1 1/2	3 1/4
9	8.00	3/4 to 1 5/16	9	1 1/4	3 1/4
10	8.00	3/4 to 1 5/16	9	1 1/2	3 1/4
11	9.00	1 to 1 1/4	11	1 1/2	3 1/4
12	9.00	1 to 1 1/4	11	1 3/4	3 1/4
13	9.00	1 to 1 1/4	11	2	3 1/4
14	9.35	1 5/16 to 1 5/8	13 1/2	1 1/2	3 1/4
15	9.35	1 5/16 to 1 5/8	13 1/2	1 3/4	3 1/4
16	9.35	1 5/16 to 1 5/8	13 1/2	2	3 1/4
17	9.75	1 11/16 to 2	13 1/2	1 3/4	3 1/4
18	9.75	1 11/16 to 2	13 1/2	2	3 1/4
19	10.10	2 1/16 to 2 1/2	13 1/2	1 3/4	3 1/4
20	10.10	2 1/16 to 2 1/2	13 1/2	2	3 1/4
21	10.50	2 3/16 to 3	13 1/2	2	3 1/4
22	10.85	3 1/16 to 3 1/2	13 1/2	2	3 1/4
23	10.85	3 3/16 to 4	13 1/2	2	3 1/4

Above Arbors fit Shell Reamers and Shell Drills with taper holes; Shell Reamers Nos. 117, 117 B and 117 1/2; Rose Shell Reamer Nos. 117 A and 117 1/2 B; Shell Drill No. 102H.



Morse No. 125 E, with Straight Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper End Number	Length of Shank Inches	Diameter of Shank Inches
3	\$3.25	1 3/8 to 1 5/8	8 15/16	2	5 1/2	7/8
4	4.00	1 11/16 to 2 1/4	10 1/16	3	5 23/32	1 1/8
5	6.00	2 5/16 to 3 5/16	11 7/8	4	6 21/32	1 3/8
6	12.50	3 3/8 to 4 3/8	14 3/8	5	7 21/32	2
7	17.50	4 1/2 to 6	17 1/2	6	9 13/32	2 5/8

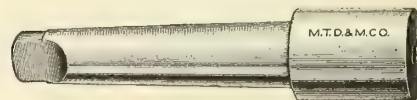
Shanks are ground standard to sizes listed.

Above Arbors fit Expanding and Adjustable Shell Reamers with taper holes; Expanding Shell Reamer No. 120M; Adjustable Shell Reamer No. 120N.

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper Shank Number
3	\$2.60	1/2 to 9/16	8	1
4	2.80	5/8 to 11/16	9	1
5	3.00	3/4 to 1 5/16	9 1/2	2
6	3.20	1 to 1 1/4	10	2
7	3.40	1 5/16 to 1 5/8	11	3
8	3.70	1 11/16 to 2	12	3
9	4.50	2 1/16 to 2 1/2	13	4
10	4.90	2 3/16 to 3	14	4
11	6.75	3 1/16 to 3 1/2	15	5
12	8.75	3 5/16 to 4	16	5
13	10.75	4 1/16 to 4 1/2	17	5
14	14.00	4 9/16 to 5 1/2	18	6
15	16.75	5 5/16 to 6 1/2	19	6
16	19.50	6 3/16 to 7	20	6

Above Arbors fit Shell and Rose Shell Reamers and Shell Drills with taper holes; Shell Reamers Nos. 117, 117B and 117 1/2; Rose Shell Reamer Nos. 117 A and 117 1/2 B; Shell Drill No. 102H.

With Blank Ends



Morse No. 125 C, with Taper Shanks

Morse Taper Shank Number	Each	Whole Length Inches	Length of Blank End Inches	Diameter of Blank End Inches
1	\$1.50	3 11/16	1 7/8	11/16
2	1.50	4 3/8	1 1/4	1
3	1.75	5 3/8	1 1/2	1
4	1.75	6 5/8	1 3/4	1 3/8
5	2.00	8 3/8	2 1/4	1 5/8



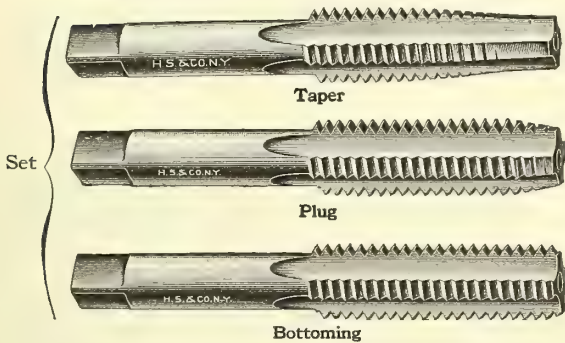
Morse No. 125 F, with Taper Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper End Number	Morse Taper Shank Number
3	\$4.75	1 3/8 to 1 5/8	8 15/16	2	3
4	5.50	1 11/16 to 2 1/4	10 1/16	3	3
5	7.75	2 5/16 to 3 5/16	11 7/8	4	4
6	14.50	3 3/8 to 4 3/8	14 3/8	5	5
7	19.50	4 1/2 to 6	17 1/2	6	6

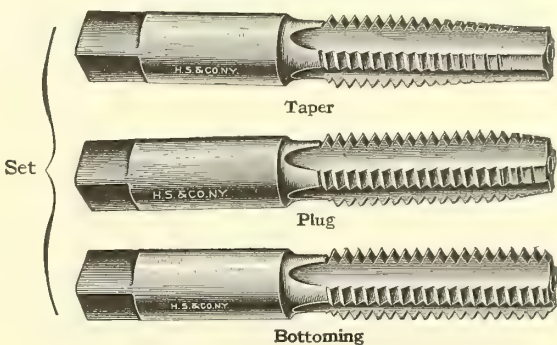
Above Arbors fit Expanding and Adjustable Shell Reamers with taper holes; Expanding Shell Reamer No. 120M; Adjustable Shell Reamer No. 120N.

Machinists Hand Taps

Shanks size of bottom of thread



Shanks full size of thread



Card No. 101, $\frac{1}{16}$ to $\frac{15}{64}$ inch inclusive, Card No. 103, $\frac{1}{4}$ to $4\frac{1}{32}$ inches inclusive. Morse No. 138, $\frac{1}{16}$ to 4 inches inclusive
 A set consists of each taper, plug and bottoming. United States Standard thread always furnished unless otherwise specified except in cases where V Form only is listed regularly

			Number of Threads to Inch						Number of Threads to Inch					
Diameter Inches	Each	Per Set	Total Length Inches	U. S.		Whitworth		Other Threads also Furnished		Total Length Inches	U. S.	V	Whitworth	Standard
				Stand- ard	Form	Stand- ard	Form	U. S. Standard	V Form					
$\frac{1}{16}$	.35	\$1.05	$1\frac{3}{4}$	64	72	60	60, 72		60, 64					
$\frac{5}{64}$	.35	1.05	$1\frac{3}{4}$	..	72	..	56, 60, 64, 72		56, 60, 64					
$\frac{3}{32}$	.35	1.05	$1\frac{3}{4}$	50	56	48	48, 54, 56, 60		48, 50, 54, 60				6	
$\frac{7}{64}$	.35	1.05	$1\frac{3}{4}$	..	56	..	48, 56		48					
$\frac{1}{8}$	.35	1.05	$1\frac{3}{4}$	40	40	40	32, 36, 48, 50		32, 36, 48, 50					
$\frac{9}{64}$	.35	1.05	$1\frac{3}{4}$	..	40	..	32, 36, 40		32, 36					
$\frac{5}{32}$	.35	1.05	$1\frac{3}{4}$	36	32	32	30, 32, 40		30, 36, 40					
$\frac{11}{64}$	.35	1.05	$2\frac{1}{4}$	..	32	..	32, 36		36					
$\frac{3}{16}$	.35	1.05	$2\frac{3}{8}$	24	24	*24	24, 27, 32, 36		27, 30, 32, 36					
$\frac{13}{64}$	.35	1.05	$2\frac{3}{8}$	..	24	..	24, 32		32					
$\frac{7}{32}$	.35	1.05	$2\frac{3}{8}$	28	24	24	24, 32		32					
$\frac{15}{64}$	.35	1.05	$2\frac{1}{2}$	..	24	..	24, 28, 32		32					
$\frac{1}{4}$	.45	1.35	$2\frac{1}{2}$	20	20	20	24, 27, 28, 32		24, 27, 32					
$\frac{17}{64}$	.45	1.35	$2\frac{1}{2}$	20	20	..	32							
$\frac{9}{32}$	.45	1.35	$2\frac{1}{2}$	20	20	..								
$\frac{5}{16}$	.50	1.50	$2\frac{3}{4}$	18	18	18	20, 24, 27, 32		20, 24, 27, 32					
$\frac{21}{64}$	.50	1.50	$2\frac{3}{4}$	18	18	..								
$\frac{3}{8}$	.55	1.65	$2\frac{13}{16}$	16	16	16	18, 20, 24, 27		14, 18, 20, 24, 27					
$\frac{25}{64}$	.55	1.65	$2\frac{13}{16}$	16	16	..								
$\frac{13}{32}$	.55	1.65	$2\frac{13}{16}$	16	16	..								
$\frac{7}{16}$	.60	1.80	$3\frac{3}{4}$	14	14	14	20, 24, 27		12, 16, 20, 24, 27					
$\frac{29}{64}$	.60	1.80	$3\frac{5}{8}$	14	14	..								
$\frac{15}{32}$	.60	1.80	$3\frac{5}{8}$	14	14	..								
$\frac{1}{2}$	.70	2.10	$3\frac{3}{8}$	13	12	12	12, 20, 24, 27		13, 14, 16, 20, 24, 27					
$\frac{33}{64}$	.70	2.10	$3\frac{3}{8}$	13	12	..	12		13					
$\frac{17}{32}$	.70	2.10	$3\frac{3}{8}$	13	12	..	12		13					
$\frac{9}{16}$	.80	2.40	$3\frac{19}{32}$	12	12	12	18, 27		14, 27					
$\frac{27}{64}$	.80	2.40	$3\frac{19}{32}$	12	12	..								
$\frac{19}{32}$	.80	2.40	$3\frac{19}{32}$	12	12	..								
$\frac{5}{8}$	.90	2.70	$3\frac{13}{16}$	11	11	11	12, 18, 27		10, 12, 20, 24, 27					
$\frac{41}{64}$	.90	2.70	$3\frac{13}{16}$	11	11	..								
$\frac{23}{32}$	.90	2.70	$3\frac{13}{16}$	11	11	..								
$\frac{11}{16}$	1.05	3.15	$4\frac{1}{32}$	11	11	11	12, 16		10, 12					
$\frac{25}{32}$	1.05	3.15	$4\frac{1}{32}$	11	11	..								
$\frac{3}{4}$	1.20	3.60	$4\frac{1}{4}$	10	10	10	12, 16, 27		12, 20, 27					
$\frac{25}{32}$	1.20	3.60	$4\frac{1}{4}$	10	10	..								
$\frac{13}{16}$	1.40	4.20	$4\frac{15}{32}$	10	10	10	12		12					
$\frac{35}{64}$	1.40	4.20	$4\frac{15}{32}$	10	10	..								
$\frac{7}{8}$	1.60	4.80	$4\frac{11}{16}$	9	9	9	12, 14, 18, 27		10, 12, 27					
$\frac{29}{32}$	1.60	4.80	$4\frac{11}{16}$	9	9	..								
$\frac{15}{16}$	1.80	5.40	$4\frac{29}{32}$	9	9	9	12		12					
$\frac{31}{32}$	1.80	5.40	$4\frac{29}{32}$	9	9	..								
1	2.00	6.00	$5\frac{1}{8}$	8	8	8	12, 14, 27		12, 27					
$\frac{1}{32}$	2.00	6.00	$5\frac{1}{8}$	8	8	..								
$\frac{1}{16}$	2.15	6.45	$5\frac{1}{8}$	8	8	..			12					
$\frac{1}{8}$	2.25	6.75	$5\frac{7}{16}$	7	7	7	12		8, 12					
$\frac{5}{16}$	2.25	6.75	$5\frac{7}{16}$	7	7	..								
$\frac{3}{8}$	2.45	7.35	$5\frac{7}{16}$	7	7	..								
$\frac{1}{2}$	2.60	7.80	$5\frac{3}{4}$	7	7	7	12		12					

*We also furnish $\frac{1}{16}$ Hand Taps with 32 threads to inch, Whitworth Standard form, at regular list and discount. In ordering state whether taps with shanks the full size of thread, or shanks size of bottom of thread are desired. Unless otherwise specified taps to and including $\frac{3}{8}$ inch will be furnished with shanks full size of thread. Larger than $\frac{3}{8}$ inch with shanks size of bottom of thread. If desired will be furnished with shanks the full size of thread to and including $\frac{1}{2}$ inch at regular list and discount. Sizes larger than $\frac{1}{2}$ inch are special. All sizes, lengths and threads not listed will be considered special and subject to special prices. Left-hand taps are special.

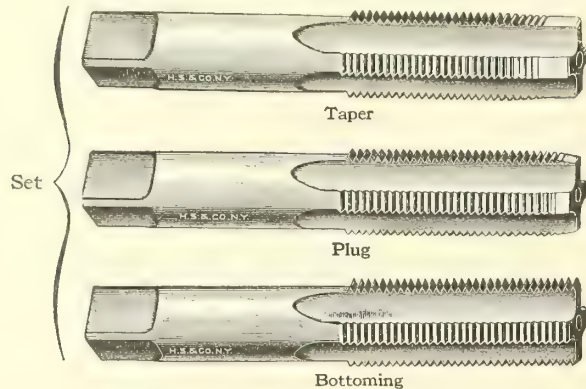
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Hand Taps

Machinists

S. A. E. Standard (Society Automobile Engineers) or A. L. A. M. Standard



Card No. 103A, Morse No. 138½

A set consists of one each taper, plug and bottoming

Diameter of Tap Inches	Each	Per Set	Number of Threads to Inch	Whole Length Inches
1/4	\$.45	\$1.35	28	2 1/2
5/16	.50	1.50	24	2 3/8
3/8	.55	1.65	24	2 1/2
7/16	.60	1.80	20	3 1/8
1/2	.70	2.10	20	3 3/8
9/16	.80	2.40	18	3 1/2
5/8	.90	2.70	18	3 3/4
11/16	1.05	3.15	16	4 1/8
3/4	1.20	3.60	16	4 1/4
7/8	1.60	4.80	14 & 18	4 1/2
1	2.00	6.00	12 & 14	5 1/8
1 1/8	2.25	6.75	12	5 1/4
1 1/4	2.60	7.80	12	5 3/4
1 3/8	3.00	9.00	12	6 1/8
1 1/2	3.50	10.50	12	6 3/8

These Taps are made to conform to the standard adopted by the Society of Automobile Engineers. The form of thread is the same as the U. S. Standard, but the pitch is made finer, to meet the requirements of automobile builders.

Unless otherwise specified Taps to and including 5/8 inch will be furnished with shanks full size of thread. Larger than 5/8 inch with shanks size of bottom of thread. In ordering state which is desired, Taps with shanks the full size of thread, or shanks size of bottom of thread.

If desired will be furnished with shanks the full size of thread to and including 1/2 inch at regular list and discount.

Sizes larger than 1/2 inch are special.

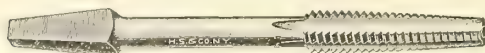
Stove Bolt



Card No. 110, Morse No. 148

Diameter	Threads	Each	Per Dozen	Diameter	Threads	Each	Per Dozen
Inch	Per Inch			Inch	Per Inch		
5/32	28	\$.35	\$4.00	1/4	18	\$.38	\$4.40
3/16	24	.35	4.00	5/16	18	.38	4.40
1/8	22	.35	4.00	3/8	16	.45	5.30

Bit Brace



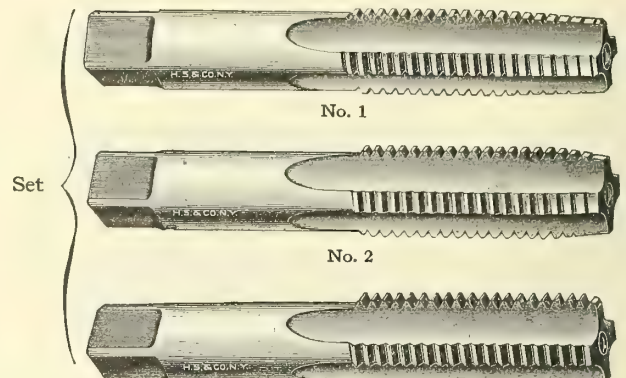
Card No. 111, Morse No. 141B

Diameter	Threads	Each	Per Dozen	Diameter	Threads	Each	Per Dozen
Inch	Per Inch			Inch	Per Inch		
3/16	28	\$.50	\$4.00	1/4	18	\$.38	\$4.40
1/4	24	.50	4.00	5/16	18	.38	4.40
5/16	22	.55	4.00	3/8	16	.45	5.30
3/8	20	.60	4.00	1/2	14	.70	6.00
7/16	18	.70	4.00	3/4	12	.80	6.00
1/2	16	.80	4.00	1 1/4	12	1.00	6.00

United States Standard thread always furnished unless otherwise ordered. All sizes, lengths and threads not listed will be considered special and subject to special prices. Left-hand taps are special.

Machinists

For Hard Service



No. 3

Card No. 103B

Sets of Hand Taps 1/4 to 1 1/4 inches diameter of United States Standard thread as listed below are designed especially to meet the demand of locomotive builders and others who wish to tap holes in locomotive wheels, frames, bed-plates, or any other tough materials.

These Taps are used in sets, with full size shanks consisting of No. 1, No. 2, and No. 3. The No. 1 Tap is first used to rough out the thread, No. 2 Tap being larger in pitch diameter and outside diameter cuts the thread a little fuller, and No. 3 Tap finishes the cut to size. The work is distributed among the three Taps and they work very easily, with less liability of breaking, and produce perfect threads.

Diameter	Each	Per Set	Total Length	Number of
Inches			in Inches	Threads to Inch
1/4	\$.45	\$1.35	2 1/2	20
5/16	.50	1.50	2 3/8	18
3/8	.55	1.65	2 7/8	16
7/16	.60	1.80	3 1/8	14
1/2	.70	2.10	3 3/8	13
9/16	.80	2.40	4 1/4	12
5/8	.90	2.70	5	11
11/16	1.05	3.15	5	11
3/4	1.20	3.60	6	10
7/8	1.40	4.20	6	10
1	1.60	4.80	6 1/2	9
1 1/8	1.80	5.40	6 1/2	9
1 1/4	2.00	6.00	7	8
1 3/8	2.15	6.45	7	8
1 1/2	2.25	6.75	7 1/2	7
1 3/4	2.45	7.35	7 1/2	7
1 7/8	2.60	7.80	8	7
2	2.80	8.40	8	7
2 1/8	3.00	9.00	8 1/2	6
2 1/4	3.25	9.75	8 1/2	6
2 3/8	3.50	10.50	9	6

The United States Standard Thread

We advise and strongly recommend the adoption and use of the United States Standard Thread for bolts and nuts, and for all screw threads where this is possible, using the U. S. form, with a greater number of threads per inch if desired for special work, as in the case of the S. A. E. or A. L. A. M. Standard, thus entirely superseding the use of the sharp "V" and over size makeshifts.

The United States Standard thread is peculiarly adapted for interchangeable work, which is impossible with the sharp "V" and impracticable with any other known. It is simple in every element of its construction, reduces detail in shop practice, and tends to economy in cost of manufacture, as it does in cheapening cost of repairs. It brings order out of confusion, reduces the number of sizes and pitches, and consequently saves time, patience and money.

The United States Government, the railroads and many of the manufacturing interests of the country have adopted this Standard, and its use is rapidly extending to lines which have heretofore used the "V" form.

Why We Urge the Discontinuance of "V" Form

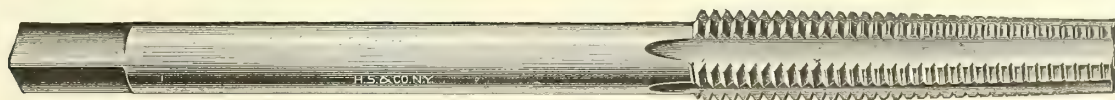
It is not a Standard.

Of the twelve or more manufacturers of "V" Thread Taps in this country no two work to the same size gauges.

Of all the manufacturers of "V" Thread Screws in this country, no two work to the same size gauges.

The continued use of the "V" Thread means extra expense, delays, non-interchangeable parts, confusion, waste.

Machine or Nut Taps



Card No. 104—Morse No. 139

Diameter Inches	Each	Length of Thread Inches	Total Length Inches	Number of Threads to Inch					Other Threads also Furnished
				United States Standard	V Form	Whit- worth Standard	U. S. Standard	V Form	
$\frac{3}{16}$	\$.60	$1\frac{9}{16}$	$4\frac{1}{2}$	24	24	*24	30, 32	32	
$\frac{13}{64}$	.60	$1\frac{9}{16}$	$4\frac{1}{2}$	..	24	..	24, 32	32	
$\frac{7}{32}$	.60	$1\frac{9}{16}$	$4\frac{1}{2}$	28	24	24	24, 32	32	
$\frac{1}{4}$	.60	$1\frac{5}{8}$	5	20	20	20	24, 28	24	
$\frac{17}{64}$	.60	$1\frac{5}{8}$	5	20	20				
$\frac{9}{32}$	.60	$1\frac{5}{8}$	5	20	20				
$\frac{5}{16}$	.70	$1\frac{27}{32}$	$5\frac{1}{2}$	18	18	18	20, 24	16, 20, 24	
$\frac{21}{64}$	.70	$1\frac{27}{32}$	$5\frac{1}{2}$	18	18				
$\frac{11}{32}$	.70	$1\frac{27}{32}$	$5\frac{1}{2}$	18	18				
$\frac{3}{8}$	.80	$2\frac{1}{16}$	6	16	16	16	20, 24	14, 18	
$\frac{25}{64}$	.80	$2\frac{1}{16}$	6	16	16				
$\frac{13}{32}$	.80	$2\frac{1}{16}$	6	16	16				
$\frac{7}{16}$	.90	$2\frac{11}{32}$	$6\frac{1}{2}$	14	14	14	20	12, 16	
$\frac{29}{64}$	.90	$2\frac{11}{32}$	$6\frac{1}{2}$	14	14				
$\frac{15}{32}$	.90	$2\frac{11}{32}$	$6\frac{1}{2}$	14	14				
$\frac{1}{2}$	1.00	$2\frac{23}{32}$	7	13	12	12	12, 20	13	
$\frac{33}{64}$	1.00	$2\frac{23}{32}$	7	13	12	..	12	13	
$\frac{17}{32}$	1.00	$2\frac{23}{32}$	7	13	12	..	12	13	
$\frac{9}{16}$	1.15	$2\frac{23}{32}$	$7\frac{1}{2}$	12	12	12	18	14	
$\frac{37}{64}$	1.15	$2\frac{23}{32}$	$7\frac{1}{2}$	12	12				
$\frac{19}{32}$	1.15	$2\frac{23}{32}$	$7\frac{1}{2}$	12	12				
$\frac{5}{8}$	1.30	$2\frac{31}{32}$	8	11	11	11	18	10, 12	
$\frac{41}{64}$	1.30	$2\frac{31}{32}$	8	11	11				
$\frac{21}{32}$	1.30	$2\frac{31}{32}$	8	11	11				
$\frac{11}{16}$	1.45	$2\frac{31}{32}$	$8\frac{1}{2}$	11	11	11	16	12	
$\frac{33}{64}$	1.45	$2\frac{31}{32}$	$8\frac{1}{2}$	11	11				
$\frac{3}{4}$	1.60	$3\frac{1}{4}$	9	10	10	10	16	12	
$\frac{25}{32}$	1.60	$3\frac{1}{4}$	9	10	10				
$\frac{13}{16}$	1.80	$3\frac{1}{4}$	$9\frac{1}{2}$	10	10	10		12	
$\frac{27}{32}$	1.80	$3\frac{1}{4}$	$9\frac{1}{2}$	10	10				
$\frac{7}{8}$	2.10	$3\frac{21}{32}$	10	9	9	9	14, 18	10, 12	
$\frac{39}{64}$	2.10	$3\frac{21}{32}$	10	9	9				
$\frac{15}{16}$	2.40	$3\frac{21}{32}$	$10\frac{1}{2}$	9	9	9		12	
$\frac{31}{32}$	2.40	$3\frac{21}{32}$	$10\frac{1}{2}$	9	9				
1	3.15	$4\frac{1}{16}$	11	8	8	8	12, 14	12	
$1\frac{1}{32}$	3.15	$4\frac{1}{16}$	11	8	8				
$1\frac{1}{16}$	3.40	$4\frac{1}{16}$	11	8	8				
$1\frac{1}{8}$	3.60	$4\frac{23}{32}$	$11\frac{1}{2}$	7	7	7	12	8	
$1\frac{5}{32}$	3.60	$4\frac{23}{32}$	$11\frac{1}{2}$	7	7				
$1\frac{3}{16}$	3.90	$4\frac{23}{32}$	$11\frac{1}{2}$	7	7				
$1\frac{1}{4}$	4.25	$4\frac{23}{32}$	12	7	7	7	12		
$1\frac{9}{32}$	4.25	$4\frac{23}{32}$	12	7	7				
$1\frac{5}{16}$	4.50	$4\frac{23}{32}$	12	7	7				
$1\frac{3}{8}$	4.80	$5\frac{13}{32}$	$12\frac{1}{2}$	6	6	6	12		
$1\frac{1}{2}$	4.80	$5\frac{13}{32}$	$12\frac{1}{2}$	6	6				
$1\frac{7}{16}$	\$5.00	$5\frac{13}{32}$	$12\frac{1}{2}$	6	6				
$1\frac{1}{2}$	5.65	$5\frac{13}{32}$	13	6, 12	6			6	
$1\frac{1}{2}$	5.65	$5\frac{13}{32}$	13	6	6				
$1\frac{5}{8}$	6.50	$5\frac{1}{2}$	$13\frac{1}{2}$	$5\frac{1}{2}$	5			5	
$1\frac{3}{4}$	6.50	$5\frac{1}{2}$	$13\frac{1}{2}$	$5\frac{1}{2}$	5				
$1\frac{3}{4}$	7.20	$5\frac{1}{2}$	14	5	5			5	
$1\frac{25}{32}$	7.20	$5\frac{1}{2}$	14	5	5				
$1\frac{7}{8}$	8.25	$6\frac{1}{8}$	$14\frac{1}{2}$	5	$4\frac{1}{2}$			$4\frac{1}{2}$	
$1\frac{3}{2}$	8.25	$6\frac{1}{8}$	$14\frac{1}{2}$	5	$4\frac{1}{2}$			$4\frac{1}{2}$	$4\frac{1}{2}$
2	9.25	$6\frac{1}{8}$	15	$4\frac{1}{2}$	$4\frac{1}{2}$			$4\frac{1}{2}$	$4\frac{1}{2}$
$2\frac{1}{32}$	9.25	$6\frac{1}{8}$	15	$4\frac{1}{2}$	$4\frac{1}{2}$			$4\frac{1}{2}$	$4\frac{1}{2}$
$2\frac{1}{8}$	10.80	$6\frac{1}{8}$	$15\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$			$4\frac{1}{2}$	$4\frac{1}{2}$
$2\frac{5}{32}$	10.80	$6\frac{1}{8}$	$15\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$			$4\frac{1}{2}$	$4\frac{1}{2}$
$2\frac{1}{4}$	12.25	$6\frac{1}{8}$	16	$4\frac{1}{2}$	$4\frac{1}{2}$			$4\frac{1}{2}$	4
$2\frac{9}{32}$	12.25	$6\frac{1}{8}$	16	$4\frac{1}{2}$	$4\frac{1}{2}$			$4\frac{1}{2}$	
$2\frac{3}{8}$	13.80	$6\frac{1}{8}$	$16\frac{1}{2}$	4	$4\frac{1}{2}$			$4\frac{1}{2}$	4
$2\frac{1}{2}$	13.80	$6\frac{1}{8}$	$16\frac{1}{2}$	4	$4\frac{1}{2}$			$4\frac{1}{2}$	
$2\frac{1}{2}$	15.00	$6\frac{7}{8}$	17	4	4			4	4
$2\frac{17}{32}$	15.00	$6\frac{7}{8}$	17	4	4			4	
$2\frac{5}{8}$	16.80	$6\frac{7}{8}$	$17\frac{1}{2}$	4	4			4	4
$2\frac{3}{4}$	16.80	$6\frac{7}{8}$	$17\frac{1}{2}$	4	4			4	
$2\frac{3}{4}$	18.00	$6\frac{7}{8}$	18	4	4			4	$3\frac{1}{2}$
$2\frac{29}{32}$	18.00	$6\frac{7}{8}$	18	4	4			4	
$2\frac{7}{8}$	19.80	$6\frac{7}{8}$	$18\frac{1}{2}$	$3\frac{1}{2}$	4			4	$3\frac{1}{2}$
$2\frac{29}{32}$	19.80	$6\frac{7}{8}$	$18\frac{1}{2}$	$3\frac{1}{2}$	4			4	
3	21.60	$7\frac{23}{32}$	19	$3\frac{1}{2}$	$3\frac{1}{2}$			$3\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{1}{32}$	21.60	$7\frac{23}{32}$	19	$3\frac{1}{2}$	$3\frac{1}{2}$			$3\frac{1}{2}$	
$3\frac{1}{8}$	24.70	$7\frac{23}{32}$	$19\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$			$3\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{5}{32}$	24.70	$7\frac{23}{32}$	$19\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$			$3\frac{1}{2}$	
$3\frac{1}{4}$	26.88	$7\frac{23}{32}$	$19\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$			$3\frac{1}{2}$	$3\frac{1}{4}$
$3\frac{9}{32}$	26.88	$7\frac{23}{32}$	$19\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$			$3\frac{1}{2}$	
$3\frac{3}{8}$	28.75	$8\frac{13}{32}$	20	$3\frac{1}{4}$	$3\frac{1}{4}$			$3\frac{1}{4}$	$3\frac{1}{4}$
$3\frac{1}{2}$	28.75	$8\frac{13}{32}$	20	$3\frac{1}{4}$	$3\frac{1}{4}$			$3\frac{1}{4}$	
$3\frac{1}{2}$	31.25	$8\frac{13}{32}$	20	$3\frac{1}{4}$	$3\frac{1}{4}$			$3\frac{1}{4}$	$3\frac{1}{4}$
$3\frac{17}{32}$	31.25	$8\frac{13}{32}$	20	$3\frac{1}{4}$	$3\frac{1}{4}$			$3\frac{1}{4}$	
$3\frac{5}{8}$	33.75	$8\frac{13}{32}$	$20\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{4}$			$3\frac{1}{4}$	$3\frac{1}{4}$
$3\frac{21}{32}$	33.75	$8\frac{13}{32}$	$20\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{4}$			$3\frac{1}{4}$	
$3\frac{3}{4}$	36.88	$9\frac{1}{16}$	$20\frac{1}{2}$	3	3			3	3
$3\frac{25}{32}$	36.88	$9\frac{1}{16}$	$20\frac{1}{2}$	3	3			3	
$3\frac{7}{8}$	38.75	$9\frac{1}{16}$	21	3	3			3	3
$3\frac{29}{32}$	38.75	$9\frac{1}{16}$	21	3	3			3	
4	41.88	$9\frac{1}{16}$	21	3	3			3	3
$4\frac{1}{32}$	41.88	$9\frac{1}{16}$	21	3	3			3	

*Machine or Nut Taps $\frac{3}{16}$ inch, with 32 threads per inch, Whitworth Standard Form, will be furnished at regular list and discount.

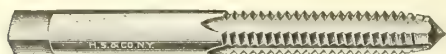
Sizes and threads not listed will be considered special and subject to special prices. Left Hand Taps are special.

U. S. Standard Thread always furnished unless otherwise specified.

For Tap Drill List, see pages 96 and 97

Taps

Machine Screw



Card No. 112, Morse No. 140

Size of Screw Gauge Number	Standard Number of Threads	Each	Per Dozen	Whole Length Inches	Length of Threads Inches	Other Threads also Furnished
1	..	\$.35	\$4.00	1 3/4	1 1/2	56, 60, 64, 72
1 1/2	56	.35	4.00	1 3/4	1 1/2	
2	56	.35	4.00	1 3/4	1 1/2	48, 64
3	48	.35	4.00	1 3/4	1 1/2	40, 56
4	36	.35	4.00	1 3/4	1 1/2	32, 40, 42, 48
5	36	.35	4.00	1 3/4	1 1/2	32, 40
6	32	.35	4.00	1 3/4	5/8	30, 36, 38, 40, 48
7	32	.35	4.00	1 3/4	5/8	30, 40
8	32	.35	4.00	2 1/4	5/8	30, 36, 40
9	30	.35	4.00	2 3/8	1 1/2	28, 32
10	24	.35	4.00	2 3/8	1 1/2	28, 30, 32, 36
11	24	.35	4.00	2 3/8	1 1/2	28, 30
12	24	.35	4.00	2 3/8	1 1/2	20, 32
13	22	.38	4.40	2 1/2	1	20, 24, 32
14	20	.38	4.40	2 1/2	1	18, 24
15	20	.38	4.40	2 1/2	1	18, 24
16	18	.38	4.40	2 1/2	1	16, 20
18	18	.38	4.40	2 1/2	1	16, 20
20	16	.45	5.30	2 3/2	1 1/8	18
22	16	.45	5.30	2 3/2	1 1/8	18
24	16	.45	5.30	2 15/16	1 1/4	14, 18
26	16	.53	6.30	2 15/16	1 1/4	14
28	14	.53	6.30	3 5/32	1 7/16	16
30	14	.53	6.30	3 5/32	1 7/16	16

Note: We carry a stock of these Taps and will furnish them whenever called for but we strongly recommend the adoption of the A. S. M. E. Less than six Taps of a size and thread at single prices.

A. S. M. E. Standard

Card No. 112A, Morse No. 140A

Size of Screw Gauge Number	Approximate Diameter of Tap Inch	Standard Number of Threads	Each	Per Dozen	Whole Length Inches	Threads as follows furnished at Regular List and Discount
0	.060	80	\$.35	\$4.00	1 3/4	
1	.073	72	.35	4.00	1 3/4	64
2	.086	64	.35	4.00	1 3/4	56
3	.099	56	.35	4.00	1 3/4	48
4	.112	48	.35	4.00	1 3/4	36, 40
5	.125	44	.35	4.00	1 3/4	36, 40
6	.138	40	.35	4.00	1 3/4	32, 36
7	.151	36	.35	4.00	1 3/4	30, 32
8	.164	36	.35	4.00	2 1/4	30, 32
9	.177	32	.35	4.00	2 3/8	24, 30
10	.190	30	.35	4.00	2 3/8	24, 32
12	.216	28	.35	4.00	2 3/8	24
14	.242	24	.38	4.40	2 1/2	20
16	.268	22	.38	4.40	2 1/2	20
18	.294	20	.38	4.40	2 1/2	18
20	.320	20	.45	5.30	2 3/2	18
22	.346	18	.45	5.30	2 3/2	16
24	.372	16	.45	5.30	2 15/16	18
26	.398	16	.53	6.30	2 15/16	14
28	.424	14	.53	6.30	3 5/32	16
30	.450	14	.53	6.30	3 5/32	16

As recommended by the American Society of Mechanical Engineers at the Indianapolis meeting May, 1907.

We recommend the use of this standard wherever possible.

It replaces the makeshift sizes heretofore used and makes possible interchangeability of Taps and Screws produced by the different manufacturers.

Less than six Taps of a size and thread at single prices.

Sizes and threads not listed subject to special prices.

Left Hand Taps are special.

Hob or Master, Long



Card No. 105, Morse No. 142

Diameter Inches	Each	United States Standard	V Form	Whitworth Standard	Morse Whole Length Inches	Card Whole Length Inches
1/4	\$.75	20	20	20	5 1/2	3 1/2
5/16	.87	18	18	18	5 7/8	4
3/8	1.00	16	16	16	6 1/8	4 1/2
7/16	1.12	14	14	14	6 1/2	5
1/2	1.25	*13	12	12	6 3/4	5 1/2
9/16	1.44	12	12	12	7 1/8	6
5/8	1.62	11	11	11	7 3/8	6 1/2
11/16	1.81	11	11	11	7 3/4	7
3/4	2.00	10	10	10	8	7 1/2
13/16	2.25	10	10	10	8 1/4	8
7/8	2.62	9	9	9	8 1/2	8 1/2
15/16	3.00	9	9	9	8 3/4	8 3/4
1	3.50	8	8	8	9	9
1 1/8	4.00	7	7	7	9 1/2	9 1/4
1 1/4	4.62	7	7	7	10	9 1/2
1 3/8	5.25	6	6	6	10 1/2	9 3/4
1 1/2	5.87	6	6	6	11	10
1 5/8	6.62	5 1/2	5	5	11 3/8	10 1/4
1 3/4	7.50	5	5	5	11 3/4	10 1/2
1 7/8	8.50	5	4 1/2	4 1/2	12 1/8	10 3/4
2	9.62	4 1/2	4 1/2	4 1/2	12 3/8	11

*We also furnish 1/2 inch size with 12 threads to the inch U. S. Form at regular list and discount.

Hob, Short



Card No. 106, Morse No. 144

Diameter Inches	United States Standard	V Form	Whitworth Standard	Each	Whole Length Inches
1/4	20	20	20	\$.60	3
5/16	18	18	18	.70	3 1/4
3/8	16	16	16	.80	3 1/2
7/16	14	14	14	.90	3 3/4
1/2	*13	12	12	1.00	4
9/16	12	12	12	1.15	4 1/4
5/8	11	11	11	1.30	4 1/2
11/16	11	11	11	1.45	4 3/4
3/4	10	10	10	1.60	5
13/16	10	10	10	1.80	5 1/8
7/8	9	9	9	2.10	5 3/8
15/16	9	9	9	2.40	5 5/8
1	8	8	8	2.80	5 7/8
1 1/8	7	7	7	3.20	6 1/4
1 1/4	7	7	7	3.70	6 5/8
1 3/8	6	6	6	4.20	7
1 1/2	6	6	6	4.70	7 3/8
1 5/8	5 1/2	5	5	5.30	7 3/4
1 3/4	5	5	5	6.00	8
1 7/8	5	4 1/2	4 1/2	6.80	8 1/4
2	4 1/2	4 1/2	4 1/2	7.70	8 1/2

*We also furnish 1/2 inch size with 12 threads to the inch U. S. Form at regular list and discount.

In ordering, always state whether they are required for hobbing chasers in Bolt Cutters, Solid Dies, or Screw Plate Dies.

Special designs made from description or drawings submitted with orders, giving details of lengths and diameter required.

Left hand thread or other pitches than those listed will be furnished to order at special prices.

U. S. Standard thread always furnished unless otherwise ordered.

Rough Iron Sizes of Standard Pitches, in United States Standard and V threads, furnished at regular prices.

S. A. E. or A. L. A. M. Standard sizes furnished at regular prices.

For Tap Drill List, see pages 96 and 97

Tapper Taps



Card No. 108, Morse No. 147

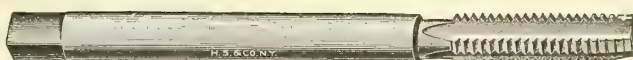
From 1/4 to 1 1/2 inches only

U. S. Standard Thread always furnished unless otherwise ordered. Sizes, lengths and threads not listed are subject to special prices. Furnished with shank ends to fit all prominent Nut Tapping Machines. Left hand threads are special. Specify form of thread required

Number of Threads to Inch										Number of Threads to Inch									
Diam- eter Inch	Length of Thread Inches	United States Standard	United States Standard Form	Whole Length, Each						Diam- eter Inch	Length of Thread Inches	United States Standard	United States Standard Form	Whole Length, Each					
				V Form	Whitworth	11 Standard	12 Inch	14 Inch	15 Inch					V Form	Whitworth	11 Standard	12 Inch	14 Inch	15 Inch
1/4	1 3/4	20	28	20	20	.70	.75	.80	.90	1 3/8	2 3/4	10	.....	10	10	\$2.05	\$2.10	\$2.25	\$2.35
1/4	1 3/4	20	.....	20	..	.70	.75	.80	.90	1 3/8	2 3/4	10	.....	10	..	2.05	2.10	2.25	2.35
1/4	1 3/4	20	.....	20	..	.70	.75	.80	.90	1 3/8	3	9	14, 18	9	9	2.35	2.45	2.60	2.75
1/4	2	18	24	18	18	.80	.85	.90	1.00	1 3/8	3	9	.....	9	..	2.35	2.45	2.60	2.75
1/4	2	18	.....	18	..	.80	.85	.90	1.00	1 3/8	3	9	.....	9	9	2.70	2.75	3.00	3.15
1/4	2	18	.....	18	..	.80	.85	.90	1.00	1 3/8	3	9	.....	9	..	2.70	2.75	3.00	3.15
3/8	2	16	24	16	16	.90	.95	1.00	1.10	1 1/2	3 1/2	8	12, 14	8	8	3.15	3.20	3.50	3.65
3/8	2	16	.....	16	..	.90	.95	1.00	1.10	1 1/2	3 1/2	8	.....	8	..	3.15	3.20	3.50	3.65
3/8	2	16	.....	16	..	.90	.95	1.00	1.10	1 1/2	3 1/2	7	12	7	7	3.60	3.70	3.95	4.10
3/8	2 1/4	14	20	14	14	1.00	1.05	1.15	1.25	1 1/2	3 1/2	7	.....	7	..	3.60	3.70	3.95	4.10
3/8	2 1/4	14	.....	14	..	1.00	1.05	1.15	1.25	1 1/2	3 1/2	7	12	7	7	4.15	4.25	4.50	4.65
3/8	2 1/4	14	.....	14	..	1.00	1.05	1.15	1.25	1 1/2	3 1/2	7	.....	7	..	4.15	4.25	4.50	4.65
1/2	2 1/4	13	12, 20	*12	12	1.12	1.15	1.25	1.35	1 3/8	4	6	12	6	6	4.70	4.80	5.05	5.20
1/2	2 1/4	13	12	*12	..	1.12	1.15	1.25	1.35	1 3/8	4	6	.....	6	..	4.70	4.80	5.05	5.20
1/2	2 1/4	13	12	*12	..	1.12	1.15	1.25	1.35	1 3/8	4	6	12	6	6	5.30	5.40	5.65	5.80
1/2	2 1/2	12	18	12	12	1.30	1.35	1.45	1.55	1 3/8	4	6	.....	6	..	5.30	5.40	5.65	5.80
1/2	2 1/2	12	.....	12	..	1.30	1.35	1.45	1.55	1 3/8	4 1/2	5 1/2	.....	5	5	6.10	6.30	6.50	6.65
1/2	2 1/2	12	.....	12	..	1.30	1.35	1.45	1.55	1 3/8	4 1/2	5 1/2	.....	5	..	6.10	6.30	6.50	6.65
5/8	2 1/2	11	18	11	11	1.45	1.50	1.65	1.75	1 3/4	4 3/4	5	.....	5	5	6.70	7.00	7.20	7.40
5/8	2 1/2	11	.....	11	..	1.45	1.50	1.65	1.75	1 3/4	4 3/4	5	.....	5	..	6.70	7.00	7.20	7.40
5/8	2 1/2	11	.....	11	..	1.45	1.50	1.65	1.75	1 3/4	5	5	.....	4 1/2	4 1/2	7.80	8.00	8.25	8.35
5/8	2 1/2	11	16	11	11	1.62	1.70	1.80	1.95	1 3/4	5	5	.....	4 1/2	..	7.80	8.00	8.25	8.35
5/8	2 1/2	11	.....	11	..	1.62	1.70	1.80	1.95	2	5	4 1/2	.....	4 1/2	4 1/2	8.70	8.90	9.05	9.25
3/4	2 3/4	10	16	10	10	1.80	1.85	2.00	2.10	2 3/4	5	4 1/2	.....	4 1/2	..	8.70	8.90	9.05	9.25
3/4	2 3/4	10	.....	10	..	1.80	1.85	2.00	2.10										

*We also furnish in both Even and Rough Iron sizes, 1/2 inch size with 13 threads to the inch, V Form, at regular list and discount.

Pulley Taps



Card No. 107, Morse No. 141

U. S. Standard Thread always furnished unless otherwise ordered. Sizes, lengths and threads not listed are subject to special prices. Pulley Taps with left hand threads are special

Diam- eter Inch	Number of Threads to Inch				Whole Length, Each											
	United States Standard	V Form	Whitworth Standard		6 Inch	8 Inch	10 Inch	12 Inch	14 Inch	16 Inch	18 Inch	20 Inch	22 Inch	24 Inch		
1/4	20	20	20		\$.65	\$.70	\$.80	\$.90								
3/8	18	18	18		.75	.80	1.00	1.20								
1/2	16	16	16		.80	.90	1.10	1.30	\$1.40	\$1.55	\$1.70					
3/4	14	14	14		.90	1.00	1.20	1.40	1.50	1.65	1.80					
1 1/2	*13	*12	12		1.00	1.15	1.30	1.45	1.60	1.75	1.90	\$2.05				
1 3/8	12	12	12		1.10	1.30	1.45	1.55	1.70	1.85	2.05	2.20	\$2.35			
1 1/4	11	11	11		1.20	1.35	1.50	1.60	1.75	1.90	2.10	2.25	2.40	\$2.55		
1 1/8	11	11	11		1.30	1.45	1.55	1.70	1.90	2.05	2.20	2.35	2.50	2.65		
3/4	10	10	10		1.40	1.50	1.60	1.80	2.00	2.15	2.30	2.45	2.60	2.75		
1 1/8	10	10	10		1.60	1.70	1.80	2.00	2.15	2.30	2.45	2.60	2.75	2.90		
7/8	9	9	9		1.80	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50		
1 5/8	9	9	9		2.00	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.70		
1	8	8	8		2.25	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.70	3.90		

*We also furnish 1/2 inch Pulley Taps with 12 threads to the inch, United States Standard form, and 13 threads to the inch, V form, at regular list and discount. When ordering any taps on this page specify length desired.

For Tap Drill List, see pages 96 and 97

Taps

Spindle Stay-Bolt



Card No. 113 A, Morse No. 149½

Spindle Stay-Bolt Taps with 12 threads to the inch, United States Standard and Whitworth Standard form, furnished at regular prices.

Other sizes and lengths than those named below will be furnished to order at special prices.

These Taps will be furnished with V form of thread, 12 to the inch, unless otherwise specified.

Used for retapping Stay-bolt holes from the inside of firebox of locomotives.

Diameter Inches	Each	Length of Fluted Thread Inches	Length of Unfluted Thread Inches	Total Length Inches	Diameter of Spindle Inches	Length of Spindle Inches
¾	\$8.00	3¼	2¾	7⅝	¾	11
13/16	8.50	3¼	2¾	7⅝	13/16	11
15/16	9.00	3¼	2¾	7⅝	15/16	11
1	9.50	3¼	2¾	7⅝	1	11
1 1/16	10.00	3¼	2¾	7⅝	1 1/16	11
1 1/8	10.50	3¼	2¾	7⅝	1 1/8	11
1 1/4	11.00	3¼	2¾	7⅝	1 1/4	11
1 1/2	11.50	3¼	2¾	7⅝	1 1/2	11
1 5/8	12.00	3¼	2¾	7⅝	1 5/8	11
1 3/4	12.25	3¼	2¾	7⅝	1 3/4	11
1 7/8	12.50	3¼	2¾	7⅝	1 7/8	11
1 15/16	12.75	3¼	2¾	7⅝	1 15/16	11
2	13.00	3¼	2¾	7⅝	2	11

If these Taps are desired with threaded holes and a threaded spindle they can be so furnished at special prices. Send full specifications with order or request for prices

Stay-Bolt

Card No. 113, Morse No. 149

In ordering, state diameter and number of threads to the inch; also length and dimensions of parts as indicated in cut by letters A, B, C, D, E.

Stay-Bolt Taps will be furnished with 12 V threads to the inch, unless a different thread is specified.

Stay-Bolt Taps, with 12 threads to the inch, United States Standard Form and Whitworth Standard Form, furnished at regular list and discount.

Diameter given is that of the thread at its straight part.

Prices are for each inch of length 16 inches and upwards.

Taps shorter than 16 inches will be charged as if 16 inches long.

Diameter, Inches	Per Inch
¾ to 7/8 inclusive	\$.40
15/16 to 1 inclusive	.45
1 1/16 to 1 1/8 inclusive	.50
1 1/8 to 1 1/4 inclusive	.55
1 1/4 to 1 1/2 inclusive	.60
1 1/2 to 1 5/8 inclusive	.65
1 5/8 to 1 3/4 inclusive	.70

The Table of Lengths given below is one made up of average lengths taken from a large number of orders, and is listed merely as a suggestion or aid in making up specifications.

Average Lengths

Whole Length of Tap Inches	Length, Inches				
	A	B	C	D	E
12	1	3	3	2 1/2	2 1/2
14	1	4	3	3	3
16	1	4 1/2	3	3 1/2	4
18	1	5	3 1/2	4	4 1/2
21	1	6	4	4 1/2	5 1/2
24	1	8	4	5	6
27	1	9	4	6	7
30	1	10	5	6	8
33	1	11	5	6	10
36	1	12	5	6	12
39	1	13	6	7	12
42	1	14	6	8	13
48	1	16	8	9	14
54	1	18	8	10	17

Patch-Bolt



Card No. 117, Morse No. 146

These Taps are made especially for boiler makers. They are slightly tapered for the purpose of making the bolt a steam-tight fit.

Patch-Bolt Taps are furnished in either V, United States Standard or Whitworth Standard form of thread.

V thread furnished unless otherwise specified.

Patch-Bolt Taps 1/2 inch over size furnished at regular prices.

Diameter Inch	Number of V Threads to Inch	Each	Diameter Inches	Number of V Threads to Inch	Each
1/2	12	\$.70	1 5/16	12	\$1.80
9/16	12	.80	1 1/8	12	2.00
5/8	12	.90	1 1/4	12	2.15
11/16	12	1.05	1 3/8	12	2.25
3/4	12	1.20	1 1/2	12	2.45
13/16	12	1.40	1 5/8	12	2.60
7/8	12	1.60			

Blacksmiths Taper



Card No. 118, Morse No. 150

These Taps are furnished with the V form of thread and are tapered 1/4 of an inch to the foot.

Diameter Inches	Number of Threads to Inch	Each
1/4	18, 20, 24	\$.30
5/16	16, 18, 20	.30
3/8	14, 16, 18	.35
7/16	14, 16, 18	.40
1/2	12, 13, 14, 16	.40
5/8	12, 14	.50
3/4	10, 11, 12	.50
7/8	10, 12	.65
1	9, 10	.90
1 1/8	8	1.25
1 1/4	7, 8	1.50
1 1/2	7, 8	1.75
	6	3.00

Sizes and threads not listed are subject to special prices

Straight and Taper Boiler



Straight



Taper

Card No. 117 A, Morse No. 146 A

Straight and Taper Boiler Taps are furnished in either V, United States Standard or Whitworth Standard forms of thread.

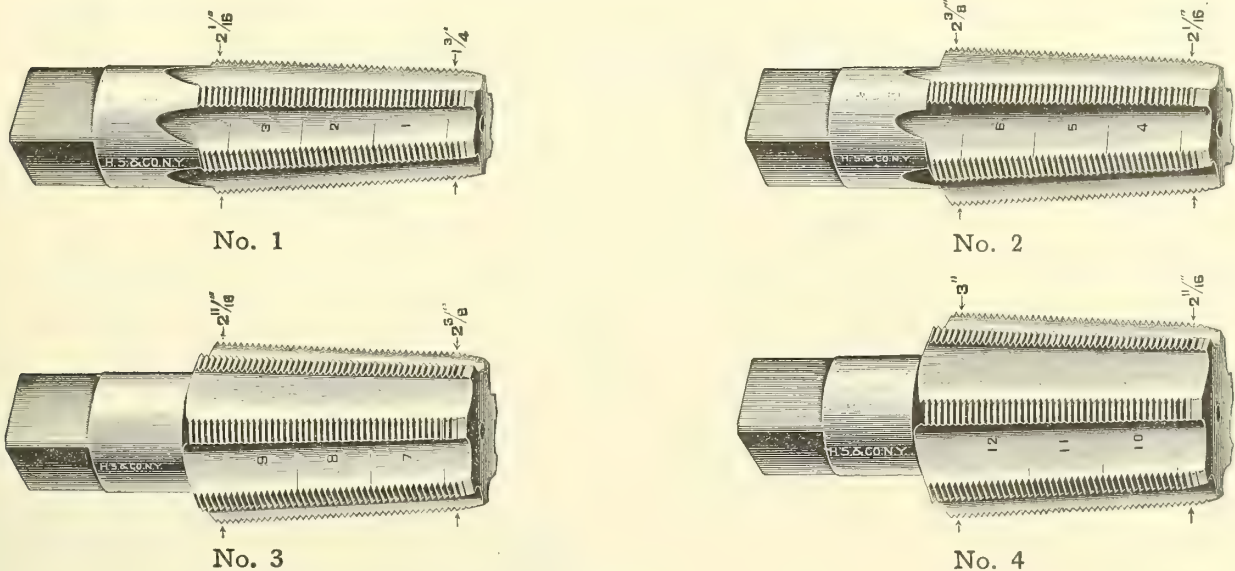
V thread furnished unless otherwise specified.

Boiler Taps 1/2 inch over size to 1 1/4 inches at regular prices.

Number of V Threads to Inch			Number of V Threads to Inch		
Diameter Inches	Threads to Inch	Each	Diameter Inches	Threads to Inch	Each
1/2	12	\$1.00	1 5/16	12	\$4.00
9/16	12	1.15	1 3/8	12	4.30
5/8	12	1.30	1 1/4	12	4.60
11/16	12	1.45	1 3/8	12	4.90
3/4	12	1.60	1 5/8	12	5.10
13/16	12	1.80	1 3/4	12	5.40
7/8	12	2.10	1 7/8	12	5.70
15/16	12	2.40	2	12	6.00
1	12	2.80	2 1/8	12	6.50
1 1/16	12	3.00	2 1/4	12	7.00
1 1/8	12	3.20	2 3/8	12	7.50
1 1/4	12	3.40	2 1/2	12	8.00
1 1/2	12	3.70			

For Tap Drill List, see pages 96 and 97

Mud Plug or Washout Taps



Card No. 117 B, Morse No. 146 B

Used for tapping washout holes in locomotives.
A set consists of four Taps having 1 1/4-inch taper in 12 inches.
Tap No. 1 is 1 3/4 inches in diameter at small end, and Tap No. 4 is 3 inches in diameter at large end.
The Taps are marked as shown in the illustrations and correspond with taper plugs bearing the same numbers as the twelve diameters shown in the four Taps.
The Taps are 6 1/2 inches long and all have the same size square.

Number	Taper, Inches	Each
1	1 3/4 to 2 1/4	\$6.00
2	2 1/8 to 2 3/8	7.50
3	2 3/8 to 2 11/16	9.00
4	2 11/16 to 3	10.50

Taps for Beaman & Smith Holders



Card No. 119, Morse No. 143

U. S. form of thread always furnished unless otherwise ordered

Diameter Inches	Threads per Inch		Each	Fitting Holders
	United States Standard	V Form		
1/4	20	20	\$.45	No. 1
5/16	18	18		
3/8	16	16		
7/16	14	14		
1/2	13	12		
9/16	12	12	.80	No. 2
5/8	11	11	.90	
5/8	11	11	.90	
11/16	11	11	1.05	
3/4	10	10	1.20	
13/16	10	10	1.40	No. 2
7/8	9	9	1.60	
15/16	9	9	1.80	
1	8	8	2.00	
1 1/8	7	7	2.25	
1 1/4	7	7	2.60	

These Taps are used in the Beaman & Smith Patent Safety Drill and Tap Holders.
Sizes and threads not listed will be considered as special and subject to special prices.
Prices of Taps fitting Nos. 2 1/2 and 3 Holders given on application.
These Taps will be furnished in the S. A. E. or A. L. A. M. Standard Thread at regular list and discount.
Left Hand Taps are special.

Sellers Hob Taps



Morse No. 145

U. S. Form of thread always furnished unless otherwise ordered

Diameter Inches	Threads per Inch		Each	Whole Length Inches
	United States Standard	V Form		
1/4	20	20	\$.90	4 5/8
5/16	18	18	1.05	5
3/8	16	16	1.20	5 3/8
7/16	14	14	1.35	5 7/8
1/2	*13	12	1.50	6 1/8
9/16	12	12	1.75	6 1/2
5/8	11	11	1.95	7
11/16	11	11	2.20	7
3/4	10	10	2.40	7 3/8
13/16	10	10	2.70	7 3/8
7/8	9	9	3.15	8 1/8
15/16	9	9	3.60	8 1/8
1	8	8	4.20	8 3/4
1 1/8	7	7	4.80	9 3/4
1 1/4	7	7	5.55	9 3/4
1 3/8	6	6	6.30	11
1 1/2	6	6	7.05	11
1 5/8	5 1/2	5	7.95	11 3/4
1 3/4	5	5	9.00	12 3/4
1 7/8	5	4 1/2	10.20	12 7/8
2	4 1/2	4 1/2	11.55	13 7/8

* We also furnish 1/2 inch size with 12 threads to the inch U. S. Form at regular list and discount.
We also furnish the above sizes in Whitworth Standard Threads.
Sizes and threads not listed will be furnished to order at special prices.
Left Hand Taps are special.

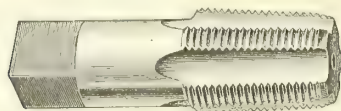
For Tap Drill List, see pages 96 and 97

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Pipe Taps

Taper (Briggs Standard)



Morse No. 136, Walworth No. 2983

Size Inch	Each	Threads per Inch	Size Inches	Each	Threads per Inch	Size Inches	Each	Threads per Inch
1/8	\$1.12	27	1	\$3.12	11 1/2	2 1/2	\$10.50	8
1/4	1.25	18	1 1/4	3.75	11 1/2	3	15.00	8
3/8	1.50	18	1 1/2	4.62	11 1/2	3 1/2	22.00	8
1/2	1.87	14	2	6.25	11 1/2	4	33.00	8
3/4	2.50	14						

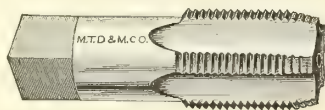
Standard Taper is 3/4 inch to the foot. Pipe Taps larger than 3 inches, have inserted teeth.

Right Hand Threads always furnished unless Left Hand is specified on the order.

Walworth Fine Thread for Plumbers Brass Tubing

Inches	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	2 1/4
Each	\$1.75	2.00	2.25	2.75	3.75	4.75	5.50	6.25	8.00
Number of Threads	20	20	18	18	18	18	18	18	18

Straight Plug



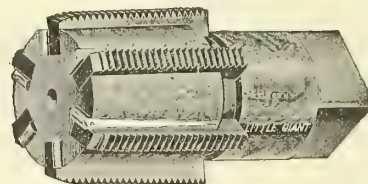
Morse No. 136 B

These Taps are furnished at same list as No. 136 and take same number threads, but special discount. They are plugged on entering end and are used for tapping out Lock Nuts or Straight Fittings. Outside diameters are 1/4 inch less than actual external diameter of wrought iron steam and gas pipe.

There is no recognized standard for outside diameter of these Taps; if other than the above are desired send sample nut or fitting.

For Tap Drill List, see pages 96 and 97

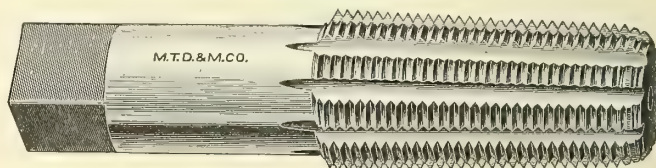
With Inserted Lands (Briggs Standard)



The lands are made of the very best grade of steel, highly tempered, and they can easily be replaced, when worn, at very little cost.

Inches	2 1/2	3	3 1/2	4	4 1/2	5
Each	\$6.00	8.00	10.00	14.00	25.00	35.00
Extra Lands.....Per set	2.00	2.00	2.50	2.50	3.00	3.00
Inches	6	7	8	9	10	
Each	\$50.00	70.00	85.00	100.00	120.00	
Extra Lands.....Per set	5.00	5.00	7.00	7.00	7.00	

Hob (Briggs Standard)

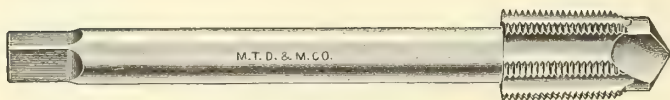


Morse No. 136 D

Size Inch	Each	Threads per Inch	Size Inches	Each	Threads per Inch	Size Inches	Each	Threads per Inch
1/8	\$1.12	27	1	\$3.12	11 1/2	2 1/2	\$10.50	8
1/4	1.25	18	1 1/4	3.75	11 1/2	3	15.00	8
3/8	1.50	18	1 1/2	4.62	11 1/2	3 1/2	22.00	8
1/2	1.87	14	2	6.25	11 1/2	4	33.00	8
3/4	2.50	14						

Left Hand Threads at regular prices. Right Hand Threads always furnished unless Left Hand is specified on the order.

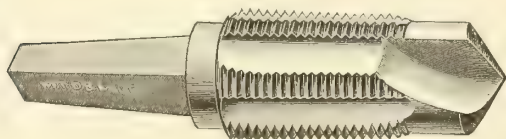
Combined Pipe Taps and Drills



Morse No. 133 A

For tapping gas and water pipes under pressure with Tapping Machines
Standard Taper 3/4 inch to the foot

Size Inch	Each	Size Inch	Each	Size Inches	Each
1/4	\$3.00	5/8	\$4.50	1 1/4	\$6.00
3/8	3.00	3/4	4.50	1 1/2	7.00
1/2	4.00	1	5.00	2	8.00



Morse No. 133

For tapping gas and water pipes. Standard Taper 3/4 inch to the foot

Shanks for sizes 1/4 to 1 1/2 inches are 1 1/8 inch by 1/2 inch, and 1 1/4 inches long. Shanks for sizes 2 to 3 inches are 1 inch by 3/4 inch, and 2 3/4 inches long. The above Tools furnished with special shanks fitting Pipe Tapping Machines on receipt of order and sketch giving necessary data. Prices quoted on application.

Prices apply for lengths given in following table

Style Number	Whole Length Inches	Diameter of Shank, Inch	Size of Square
1	9 3/4	.831	5/8
2	10 3/4	.831	5/8
3	10 3/4	.831	5/8
4	13	.831	5/8
1 E	13 3/4	.831	5/8
2 E	16	.935	1 1/16

For Corporation Cocks

Prices quoted on application

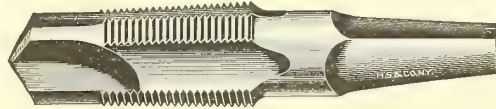
Style Number	Whole Length Inches	Diameter of Shank, Inch	Size of Square
1 1/2 E	15 3/4	.831	5/8
2 1/2 E	19 3/4	.935	1 1/16

Numbers 1 1/2 E and 2 1/2 E are made of various tapers per foot. When writing for prices or in ordering, specify number, size and taper per foot.

Other sizes and styles furnished on receipt of order and sketch giving necessary data. Prices quoted on application.

Size, Inches	Whole Length, Inches	Each
1/8	3 3/4	\$1.50
1/4	3 1/8	1.50
3/8	4 1/8	1.75
1/2	4 1/2	2.20
3/4	4 11/16	3.00
1	4 15/16	3.80
1 1/4	5 1/16	4.80
1 1/2	5 7/16	5.80
2	6 1/4	7.60
2 1/2	7	10.00
3	7 5/8	15.00

Combined Drill, Reamer and Tap



Walworth No. 2984

For tapping gas and water pipes Standard Taper $\frac{3}{4}$ inch to the foot

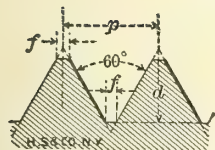
Inches	.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Each	.....	\$2.50	2.50	3.00	4.50	6.00	7.25	8.50	10.75

Data on Screw Threads

United States Standard

Formula

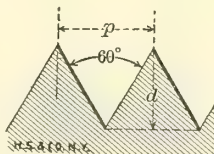
$$\begin{aligned} p &= \text{pitch} = \frac{1}{\text{No. thds. per in.}} \\ d &= \text{depth} = p \times .64952 \\ f &= \text{flat} = \frac{p}{8} \end{aligned}$$



Sharp V Form (Theoretical)

Formula

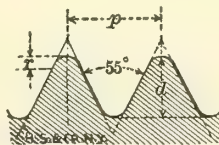
$$\begin{aligned} p &= \text{pitch} = \frac{1}{\text{No. thds. per in.}} \\ d &= \text{depth} = p \times .86603 \end{aligned}$$



Whitworth Standard

Formula

$$\begin{aligned} p &= \text{pitch} = \frac{1}{\text{No. thds. per in.}} \\ d &= \text{depth} = p \times .64033 \\ r &= \text{radius} = p \times .1373 \end{aligned}$$



Diam. of Screw Inches	Threads per Inch	Diameter at Root of Thread Inches	Width of Flat Inch	Diam. of Screw Inches	Threads per Inch	Diameter at Root of Thread Inches	Width of Flat Inch
$\frac{1}{4}$	20	.185	.0062	$1\frac{1}{2}$	6	1.2835	.0208
$\frac{5}{16}$	18	.2403	.0069	$1\frac{5}{8}$	$5\frac{1}{2}$	1.3888	.0227
$\frac{3}{8}$	16	.2938	.0078	$1\frac{3}{4}$	5	1.4902	.0250
$\frac{7}{16}$	14	.3447	.0089	$1\frac{7}{8}$	5	1.6152	.0250
$\frac{1}{2}$	13	.4001	.0096	2	$4\frac{1}{2}$	1.7113	.0278
$\frac{9}{16}$	12	.4542	.0104	$2\frac{1}{4}$	$4\frac{1}{2}$	1.9613	.0278
$\frac{5}{8}$	11	.5069	.0114	$2\frac{1}{2}$	4	2.1752	.0313
$\frac{3}{4}$	10	.6201	.0125	$2\frac{3}{4}$	4	2.4252	.0313
$\frac{7}{8}$	9	.7307	.0139	3	$3\frac{1}{2}$	2.6283	.0357
1	8	.8376	.0156	$3\frac{1}{4}$	$3\frac{1}{2}$	2.8788	.0357
$1\frac{1}{8}$	7	.9394	.0179	$3\frac{1}{2}$	$3\frac{1}{4}$	3.1003	.0385
$1\frac{1}{4}$	7	1.0644	.0179	$3\frac{3}{4}$	3	3.3170	.0417
$1\frac{3}{8}$	6	1.1585	.0208	4	3	3.5670	.0417

S. A. E. Standard

(Society Automobile Engineers)

United States Standard Form

Diameter of Tap Inch	Number of Threads per Inch	Diameter of Tap Inch	Number of Threads per Inch	Diameter of Tap Inches	Number of Threads per Inch
$\frac{1}{4}$	28	$\frac{9}{16}$	18	1	12 & 14
$\frac{5}{16}$	24	$\frac{5}{8}$	18	$1\frac{1}{8}$	12
$\frac{3}{8}$	24	$\frac{11}{16}$	16	$1\frac{1}{4}$	12
$\frac{7}{16}$	20	$\frac{3}{4}$	16	$1\frac{3}{8}$	12
$\frac{1}{2}$	20	$\frac{7}{8}$	14 & 18	$1\frac{1}{2}$	12

A. S. M. E. Standard (American Society of Mechanical Engineers). For Machine Screws. United States Standard Form. Standard Sizes

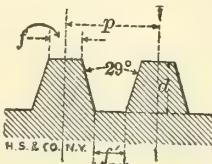
Note:—Maximum sizes given are the standard sizes

Basic Size No.	O. D. T. P. I.	Outside Diameter Minimum	Outside Diameter Maximum	Pitch Minimum	Diameter Maximum	Root Minimum	Diameter Maximum
0	.060—80	.0572	.0600	.0505	.0519	.0410	.0438
1	.073—72	.0700	.0730	.0625	.0640	.0520	.0550
2	.086—64	.0828	.0860	.0742	.0759	.0624	.0657
3	.099—56	.0955	.0990	.0857	.0874	.0721	.0758
4	.112—48	.1082	.1120	.0966	.0985	.0808	.0849
5	.125—44	.1210	.1250	.1082	.1102	.0910	.0955
6	.138—40	.1338	.1380	.1197	.1218	.1007	.1055
7	.151—36	.1466	.1510	.1308	.1330	.1097	.1149
8	.164—36	.1596	.1640	.1438	.1460	.1227	.1279
9	.177—32	.1723	.1770	.1544	.1567	.1307	.1364
10	.190—30	.1852	.1900	.1660	.1684	.1407	.1467
12	.216—28	.2111	.2160	.1903	.1928	.1633	.1696
14	.242—24	.2368	.2420	.2123	.2149	.1807	.1879
16	.268—22	.2626	.2680	.2358	.2385	.2013	.2090
18	.294—20	.2884	.2940	.2587	.2615	.2208	.2290
20	.320—20	.3144	.3200	.2847	.2875	.2468	.2550
22	.346—18	.3402	.3460	.3070	.3099	.2649	.2738
24	.372—16	.3660	.3720	.3284	.3314	.2810	.2908
26	.398—16	.3920	.3980	.3544	.3574	.3070	.3168
28	.424—14	.4178	.4240	.3745	.3776	.3204	.3312
30	.450—14	.4438	.4500	.4005	.4036	.3464	.3572

Acme Standard

Formula

$$\begin{aligned} p &= \text{pitch} = \frac{1}{\text{No. thds. per in.}} \\ d &= \text{depth} = \frac{1}{2} p + .010 \\ f &= \text{flat on top of thread} = p \times .3707 \\ f' &= \text{flat on bottom of thread} = p \times .3707 - .0052 \end{aligned}$$



Number of Threads per Inch Linear	Depth of Thread	Width at Top of Thread	Width at Bottom of Thread	Space at Top of Thread	Thickness at Root of Thread
1	.5100	.3707	.3655	.6293	.6345
$1\frac{1}{3}$	.3850	.2780	.2728	.4720	.4772
2	.2600	.1853	.1801	.3147	.3199
3	.1767	.1235	.1183	.2098	.2150
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0529	.0478	.0899	.0951
8	.0725	.0463	.0411	.0787	.0839
9	.0655	.0413	.0361	.0699	.0751
10	.0600	.0371	.0319	.0629	.0681

This thread has been devised to take the place of the Square Thread. It has the same depth, but is stronger, as the bottom of the thread is wider. The sides are at the same inclination as is now generally adopted in cutting worms.

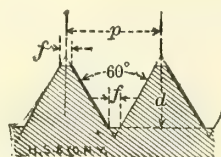
Taps and Dies to this Standard are made only to order, and prices will be given on application.

For International and French Standard, see next page

Data on Screw Threads

International and French Standard

(Metric System)



Formula

$$p = \text{pitch}$$

$$d = \text{depth} = p \times .64952$$

$$f = \text{flat} = \frac{p}{8}$$

International

French

Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.
6	1.0	20	2.5	48	5.0	3	.5	16	2.0	36	4.0
7	1.0	22	2.5	52	5.0	4	.75	18	2.5	38	4.0
8	1.25	24	3.0	56	5.5	5	.75	20	2.5	40	4.0
9	1.25	27	3.0	60	5.5	6	1.0	22	2.5	42	4.5
10	1.5	30	3.5	64	6.0	7	1.0	24	3.0	44	4.5
11	1.5	33	3.5	68	6.0	8	1.0	26	3.0	46	4.5
12	1.75	36	4.0	72	6.5	9	1.0	28	3.0	48	5.0
14	2.0	39	4.0	76	6.5	10	1.5	30	3.5	50	5.0
16	2.0	42	4.5	80	7.0	12	1.5	32	3.5		
18	2.5	45	4.5			14	2.0	34	3.5		

We furnish, when desired, Taps, Dies and Screw Plates made to the above standards. Prices quoted on application

Tap Drill List

For Hand Taps

U. S. Standard Form

V Form

Size of Tap	Threads per Inch	Tap Drill Size	Size of Tap	Threads per Inch	Tap Drill Size
$\frac{1}{16}$	60, 64, 72	57, 56, 56	$\frac{1}{16}$	60, 64, 72	58, 57, 56
$\frac{3}{64}$	56, 60, 64, 72	53, 53, 53, 52	$\frac{3}{64}$	56, 60, 64, 72	54, 53, 53, 52
$\frac{1}{8}$	48, 50, 54, 56, 60	50, 50, 49, 49, 48	$\frac{1}{8}$	48, 50, 54, 56, 60	51, 50, 50, 49, 48
$\frac{7}{64}$	48, 56	44, 43	$\frac{7}{64}$	48, 56	44, 43
$\frac{1}{4}$	32, 36, 40, 48, 50	43, 42, 41, 38, 37	$\frac{1}{4}$	32, 36, 40, 48, 50	44, 43, 42, 40, 39
$\frac{9}{64}$	32, 36, 40	37, 35, 34	$\frac{9}{64}$	32, 36, 40	39, 37, 35
$\frac{5}{32}$	30, 32, 36, 40	31, 31, $\frac{1}{8}$, 30	$\frac{5}{32}$	30, 32, 36, 40	33, 32, 31, 30
$\frac{11}{64}$	32, 36	29, 28	$\frac{11}{64}$	32, 36	29, 29
$\frac{3}{16}$	24, 27, 30, 32, 36	28, 27, 25, 24, $\frac{5}{32}$	$\frac{3}{16}$	24, 27, 30, 32, 36	29, 28, 27, 26, 24
$\frac{13}{64}$	24, 32	23, 19	$\frac{13}{64}$	24, 32	26, 19
$\frac{7}{32}$	24, 28, 32	18, 16, 14	$\frac{7}{32}$	24, 28, 32	18, 17, 15
$\frac{15}{64}$	24, 32	13, 8	$\frac{15}{64}$	24, 32	15, 10
$\frac{1}{2}$	20, 24, 27, 28	11, 7, 5, 4	$\frac{1}{2}$	20, 24, 27, 32	12, 9, 7, 4
$\frac{5}{16}$	18, 20, 24, 27	D, F, $\frac{17}{64}$, I	$\frac{5}{16}$	20	2
$\frac{3}{8}$	16, 20, 24, 27	N, O, $\frac{21}{64}$, Q	$\frac{3}{8}$	18, 20, 24, 27, 32	D, $\frac{1}{4}$, F, $\frac{17}{64}$, I
$\frac{7}{16}$	14, 20, 27	$\frac{23}{64}$, V, $\frac{25}{64}$, 7	$\frac{7}{16}$	18	J
$\frac{1}{2}$	12, 13, 20, 27	$\frac{13}{32}$, $\frac{13}{32}$, $\frac{13}{32}$, 7, $\frac{29}{64}$	$\frac{1}{2}$	14, 16, 18, 20, 24, 27	$\frac{3}{32}$, N, N, $\frac{5}{16}$, P, $\frac{21}{64}$
$\frac{9}{16}$	12, 18, 27	$\frac{15}{32}$, $\frac{1}{2}$, $\frac{33}{64}$	$\frac{9}{16}$	16	Q
$\frac{5}{8}$	11, 12, 18, 27	$\frac{33}{64}$, $\frac{17}{32}$, $\frac{9}{16}$, $\frac{37}{64}$	$\frac{5}{8}$	12, 14, 16, 20, 24, 27	P, T, T, U, W, $\frac{25}{64}$
$\frac{11}{8}$	11, 12, 16	$\frac{64}{64}$, $\frac{37}{32}$, $\frac{15}{16}$, $\frac{15}{32}$	$\frac{11}{8}$	14	W
$\frac{3}{4}$	10, 12, 16, 27	$\frac{41}{64}$, $\frac{21}{32}$, $\frac{43}{64}$, $\frac{45}{64}$	$\frac{3}{4}$	12, 13, 14, 16, 20, 24, 27	Y, Y, $\frac{13}{32}$, Z, $\frac{7}{16}$, $\frac{7}{16}$, $\frac{29}{64}$
$\frac{13}{8}$	10, 12	$\frac{45}{64}$, $\frac{23}{32}$	$\frac{13}{8}$	12, 13	$\frac{27}{64}$, $\frac{27}{64}$
$\frac{7}{8}$	9, 12, 14, 27	$\frac{64}{64}$, $\frac{37}{32}$, $\frac{51}{64}$, $\frac{53}{64}$	$\frac{7}{8}$	12, 14, 27	$\frac{15}{32}$, $\frac{15}{32}$, $\frac{33}{64}$
$\frac{15}{8}$	9, 12	$\frac{13}{16}$, $\frac{27}{32}$	$\frac{15}{8}$	12	$\frac{31}{64}$, $\frac{31}{64}$
1	8, 12, 14, 27	$\frac{55}{64}$, $\frac{29}{32}$, $\frac{59}{64}$, $\frac{61}{64}$	1	10, 11, 12, 20, 24, 27	$\frac{31}{64}$, $\frac{33}{64}$, $\frac{33}{64}$, $\frac{9}{16}$, $\frac{9}{16}$, $\frac{37}{64}$
$1\frac{1}{8}$	7, 12	$\frac{64}{64}$, $\frac{1}{32}$	$1\frac{1}{8}$	11	$\frac{35}{64}$, $\frac{35}{64}$
$1\frac{1}{4}$	7, 12	$\frac{64}{64}$, $\frac{1}{32}$	$1\frac{1}{4}$	10, 11, 12	$\frac{37}{64}$, $\frac{37}{64}$, $\frac{37}{64}$
$1\frac{3}{8}$	6	$\frac{111}{64}$	$1\frac{3}{8}$	11	$\frac{41}{64}$, $\frac{41}{64}$, $\frac{41}{64}$
$1\frac{1}{2}$	6	$\frac{119}{64}$	$1\frac{1}{2}$	10, 12, 20, 27	$\frac{45}{64}$, $\frac{45}{64}$, $\frac{45}{64}$
$1\frac{5}{8}$	$5\frac{1}{2}$	$\frac{123}{64}$	$1\frac{5}{8}$	10	$\frac{47}{64}$, $\frac{47}{64}$, $\frac{47}{64}$
$1\frac{3}{4}$	5	$\frac{133}{64}$	$1\frac{3}{4}$	10, 12	$\frac{49}{64}$, $\frac{49}{64}$, $\frac{49}{64}$
$1\frac{7}{8}$	5	$\frac{141}{64}$	$1\frac{7}{8}$	10	$\frac{51}{64}$, $\frac{51}{64}$, $\frac{51}{64}$
2	$4\frac{1}{2}$	$\frac{147}{64}$	2	9, 10, 12, 27	$\frac{53}{64}$, $\frac{53}{64}$, $\frac{53}{64}$
		$\frac{153}{64}$		9	$\frac{55}{64}$, $\frac{55}{64}$, $\frac{55}{64}$

Tap Drill List

For Machine Screw Taps

A. S. M. E. Standard
(American Society of Mechanical Engineers)

V Form

Size of Tap	Number of Threads	Size of Drill	Size of Tap	Threads per Inch	Tap Drill Size
0	80	.0465	1	56, 60, 64, 72	55, 54, 53, 52
1	64	.055	1½	56	52
1	72	.0595	2	48, 56, 64	50, 49, 48
2	56	.0670	3	40, 48, 56	48, 47, 45
2	64	.070	4	32, 36, 40, 42, 48	45, 44, 43, 42, 41
3	48	.076	5	32, 36, 40	40, 38, 37
3	56	.0785	6	30, 32, 36, 38, 40, 48	36, 35, 34, 33, 32, 31
4	36	.080	7	30, 32, 40	31, 31, 30
4	40	.082	8	30, 32, 36, 40	30, 29, 29, 28
4	48	.089	9	28, 30, 32	28, 27, 26
5	36	.0935	10	24, 28, 30, 32, 36	26, 24, 23, 21, 19
5	40	.098	11	24, 28, 30	22, 20, 19
5	44	.0995	12	20, 24, 32	20, 18, 14
6	32	.1015	13	20, 22, 24, 32	16, 16, 15, 10
6	36	.1065	14	18, 20, 24	16, 13, 10
6	40	.110	15	18, 20, 24	12, 10, 6
7	30	.113	16	16, 18, 20	10, 6, 5
7	32	.116	17	16, 18, 20	6, 3, 2
7	36	.120	18	16, 18, 20	2, 1, B
8	30	.1285	19	16, 18	A, C
8	32	.1285	20	16, 18	D, F
8	36	.136	22	16, 18	I, K
9	24	.1285	24	14, 16, 18	L, N, O
9	30	.136	26	14, 16	O, P
9	32	.1405	28	14, 16	R, S
10	24	.140	30	14, 16	U, V
10	30	.152			
10	32	.154			
12	24	.166			
12	28	.173			
14	20	.182			
14	24	.1935			
16	20	.209			
16	22	.213			
18	18	.228			
18	20	.234			
20	18	.257			
20	20	.261			
22	16	.272			
22	18	.281			
24	16	.295			
24	18	.302			
26	14	.316			
26	16	.323			
28	14	.339			
28	16	.348			
30	14	.368			
30	16	.377			

The diameter given for each hole to be tapped allows for a practical clearance at root of the thread of the screw and will not impose undue strain upon the tap in service.

For Pipe Taps

Briggs Standard

Size of Taps.....	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Size of Drill, inches.....	⅜	⅞	¾	1	1¼	1½	1¾	2	2¼	2½	3

Reamers should be used for the larger sizes

For Drill list of hand taps, see preceding page

Books

The Mechanics Tool-Book

By W. B. Harrison

With practical rules and suggestions for use of machinists, iron-workers and others. 44 illustrations, 5 x 7½, 286 pages.....\$1.50

Contents: Contains a veritable mine of valuable information for the mechanic about the use of his various tools to their best advantage and shows how to make small tools and how to use these as auxiliaries or by themselves.

Practical Metal Turning

By J. G. Horner

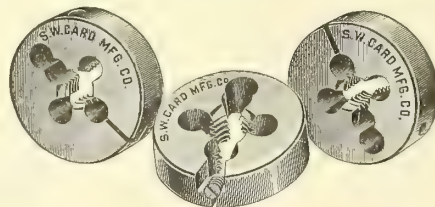
A handbook for machinists, technical students and amateurs. 488 illustrations, 5¼ x 8½, 405 pages.....\$4.50

Contents: The Lathe, Its Work and the Tools; Turning Between Centers; Work Supported at One End; Internal Work; Screw Cutting and Turret Work; Special Work; Tool Holders; Speeds and Feeds; Tool Steel.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Round Adjustable Dies



Machine Screw Sizes

V Standard

Size of Screw Gauge Number	Card No. 804		Card No. 805		Number of Threads to Inch	
	$\frac{5}{8}$ Inch Diameter $\frac{1}{4}$ Inch Thick Each	$\frac{11}{16}$ Inch Diameter $\frac{1}{4}$ Inch Thick Each	1 Inch Diameter $\frac{3}{8}$ Inch Thick Each	V Form	V Threads also Furnished	
1	\$.40	\$.40	....	..	56, 60, 64, 72	
1 $\frac{1}{2}$	.40	.40	....	..	56	
2	.40	.40	....	56	48, 64	
3	.40	.40	....	48	40, 56	
4	.40	.40	\$.75	36	32, 40, 42, 48	
5	.40	.40	.75	36	32, 40	
6	.40	.40	.75	32	30, 36, 38, 40, 48	
7	.40	.40	.75	32	30, 40	
8	.40	.40	.75	32	30, 36, 40	
9	.40	.40	.75	30	28, 32	
10	.40	.40	.75	24	28, 30, 32, 36	
11	.40	.40	.75	..	24, 28, 30	
12	.40	.40	.75	24	20, 32	
13	.40	.40	.75	..	20, 22, 24, 32	
14	.40	.40	.75	20	18, 24	
15	....	.40	.75	..	18, 20, 24	
16	....	.40	.75	18	16, 20	
18	....	.40	.75	18	16, 20	
20	....	.40	.75	16	18	
22	....	....	.75	16	18	
24	....	....	.75	16	14, 18	
26	....	....	.75	16	14	
28	....	....	.75	14	16	
30	....	....	.75	14	16	

A. S. M. E. Standard (American Society of Mechanical Engineers)

Size of Screw Gauge Number	Card No. 804A		Card No. 805A		Standard Number of Threads	Threads also Furnished
	$\frac{5}{8}$ Inch Diameter $\frac{1}{4}$ Inch Thick Each	$\frac{11}{16}$ Inch Diameter $\frac{1}{4}$ Inch Thick Each	1 Inch Diameter $\frac{3}{8}$ Inch Thick Each			
0	\$.40	\$.40	....	80		
1	.40	.40	....	72	64	
2	.40	.40	....	64	56	
3	.40	.40	....	56	48	
4	.40	.40	\$.75	48	36, 40	
5	.40	.40	.75	44	36, 40	
6	.40	.40	.75	40	32, 36	
7	.40	.40	.75	36	30, 32	
8	.40	.40	.75	36	30, 32	
9	.40	.40	.75	32	24, 30	
10	.40	.40	.75	30	24, 32	
12	.40	.40	.75	28	24	
14	.40	.40	.75	24	20	
16	....	.40	.75	22	20	
18	....	.40	.75	20	18	
20	....	.40	.75	20	18	
22	....	....	.75	18	16	
24	....	....	.75	16	18	
26	....	....	.75	16	14	
28	....	....	.75	14	16	
30	....	....	.75	14	16	

Fractional Sizes

U. S. Standard Thread always furnished unless otherwise specified

Cutting Size	Card No. 804		Card No. 805		Number of Threads to Inch			Other Threads also Furnished	
	$\frac{5}{8}$ Inch Outside Diameter $\frac{1}{4}$ Inch Thick Each	$\frac{11}{16}$ Inch Outside Diameter $\frac{1}{4}$ Inch Thick Each	1 Inch Outside Diameter $\frac{3}{8}$ Inch Thick Each	United States Standard	V Form	Whitworth Standard	U. S. Standard Form	V Form	
$\frac{1}{16}$	\$.40	\$.40	....	64	72	60	60, 72	60, 64	
$\frac{5}{64}$	.40	.40	....	..	72	..	56, 60, 64, 72	56, 60, 64	
$\frac{3}{32}$	.40	.40	....	50	56	48	48, 54, 56, 60	48, 50, 54, 60	
$\frac{7}{64}$	.40	.40	....	..	56	..	48, 56	48	
$\frac{1}{8}$	.40	.40	\$.75	40	40	40	32, 36, 48, 50	32, 36, 48, 50	
$\frac{9}{64}$	.40	.40	.75	..	40	..	32, 36, 40	32, 36	
$\frac{5}{32}$	.40	.40	.75	36	32	32	30, 32, 40	30, 36, 40	
$\frac{11}{64}$	.40	.40	.75	..	32	..	32, 36	36	
$\frac{3}{16}$	.40	.40	.75	24	24	*24	27, 30, 32, 36	27, 30, 32, 36	
$\frac{13}{64}$	.40	.40	.75	..	24	..	24, 32	32	
$\frac{7}{32}$	.40	.40	.75	28	24	24	24, 32	32	
$\frac{15}{64}$	.40	.40	.75	..	24	..	24, 32	32	
$\frac{1}{4}$	.40	.40	.75	20	20	20	24, 27, 28	24, 27, 32	
$\frac{17}{64}$	.40	.40	.75	20	20	..	..	..
$\frac{9}{32}$	....	.40	.75	20	20	..	..	..
$\frac{5}{16}$	....	.40	.75	18	18	18	20, 24, 27	20, 24, 27, 32	
$\frac{21}{64}$	....	....	.75	18	18	..	..	..
$\frac{11}{32}$	....	....	.75	18	18	..	..	..
$\frac{3}{8}$	....	....	.75	16	16	16	20, 24, 27	14, 18, 20, 24, 27	
$\frac{25}{64}$	....	....	.75	16	16	..	..	..
$\frac{13}{32}$	....	....	.75	16	16	..	..	..
$\frac{7}{16}$	....	....	.75	14	14	14	20, 27	12, 16, 20, 24, 27	
$\frac{1}{2}$	....	....	.75	13	12	12	12, 20, 27	13, 14, 16, 20, 24, 27	

Sizes and threads not listed are subject to special prices. Left hand dies are special.

*We also furnish $\frac{1}{8}$ Round Dies at regular list and discount, with 32 threads to the inch, Whitworth Standard form.

Round Adjustable Dies



Card No. 805

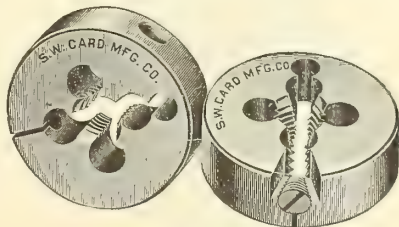
Cutting Size	1 ⁵ / ₁₆ Inch Outside Diameter	1 1/2 Inch Outside Diameter	1 7/8 Inch Outside Diameter	Number of Threads to Inch			Other Threads also Furnished	
	7/16 Inch Thick Each	1/2 Inch Thick Each	5/8 Inch Thick Each	United States Standard	V Standard	Whitworth Standard	United States Standard Form	V Form
3/16	\$1.00	\$1.00	.....	24	24	*24	27, 30, 32, 36	27, 30, 32, 36
1/8	1.00	1.00	.....	..	24	..	24, 32	32
5/32	1.00	1.00	.....	28	24	24	24, 32	32
3/8	1.00	1.00	.....	..	24	..	24, 32	32
7/16	1.00	1.00	\$1.25	20	20	20	24, 27, 28	24, 27, 32
1/2	1.00	1.00	1.25	20	20	..	..	..
9/16	1.00	1.00	1.25	20	20	..	..	..
5/8	1.00	1.00	1.25	18	18	18	20, 24, 27	20, 24, 27, 32
3/4	1.00	1.00	1.25	18	18	..	..	..
7/8	1.00	1.00	1.25	18	18	..	..	..
1	1.00	1.00	1.25	16	16	16	20, 24, 27	14, 18, 20, 24, 27
1 1/8	1.00	1.00	1.25	16	16	..	..	..
1 1/4	1.00	1.00	1.25	16	16	..	..	..
1 1/2	1.00	1.00	1.25	14	14	14	20, 27	12, 16, 20, 24, 27
1 3/4	1.00	1.00	1.25	14	14	..	..	..
2	1.00	1.00	1.25	14	14	..	..	..
2 1/4	1.00	1.00	1.25	13	12	12	12, 20, 27	13, 14, 16, 20, 24, 27
2 1/2	1.00	1.00	1.25	13	12	..	12	13
2 3/4	1.00	1.00	1.25	12	12	12	18, 27	14, 27
3	1.00	1.00	1.25	12	12	..	..	..
3 1/4	1.00	1.00	1.25	12	12	..	..	..
3 1/2	1.00	1.00	1.25	12	12	..	..	..
3 3/4	1.00	1.00	1.25	11	11	11	12, 18, 27	10, 12, 20, 24, 27
4	1.00	1.00	1.25	11	11	..	..	..
4 1/4	1.00	1.00	1.25	11	11	..	..	..
4 1/2	1.00	1.00	1.25	11	11	..	..	..

U. S. Standard Threads always furnished unless otherwise specified. *We also furnish 3/16 Dies, with 32 threads to the inch, Whitworth Standard form, at regular price

Card No. 805

Cutting Size	1 3/4 Inch Diam.	2 1/4 Inch Diam.	Number of Threads to Inch		Other Threads also Furnished		
	1 3/4 Inch Thick Each	2 1/4 Inch Thick Each	U. S. Standard	V Standard	Whitworth Standard	United States Standard Form	V Form
1/4	\$1.25	\$1.50	20	20	20	24, 27, 28	24, 27, 32
5/16	1.25	1.50	20	20	..	..	..
3/8	1.25	1.50	20	20	..	..	..
7/16	1.25	1.50	18	18	18	20, 24, 27	20, 24, 27, 32
1/2	1.25	1.50	18	18	..	..	..
9/16	1.25	1.50	18	18	..	..	..
5/8	1.25	1.50	16	16	16	20, 24, 27	14, 18, 20, 24, 27
3/4	1.25	1.50	16	16	..	..	..
7/8	1.25	1.50	14	14	14	20, 27	12, 16, 20, 24, 27
1	1.25	1.50	14	14	..	..	..
1 1/8	1.25	1.50	13	12	12	12, 20, 27	13, 14, 16, 20, 24, 27
1 1/4	1.25	1.50	13	12	..	12	13
1 1/2	1.25	1.50	13	12	..	12	13
1 3/4	1.50	1.75	12	12	12	18, 27	14, 27
2	1.50	1.75	12	12	..	..	..
2 1/4	1.50	1.75	12	12	..	..	..
2 1/2	1.50	1.75	11	11	11	12, 18, 27	10, 12, 20, 24, 27
2 3/4	1.50	1.75	11	11	..	..	..
3	1.50	1.75	11	11	..	..	..
3 1/4	1.75	2.00	11	11	11	12, 16	10, 12
3 1/2	1.75	2.00	11	11	..	..	..
3 3/4	1.75	2.00	10	10	10	12, 16, 27	12, 20, 27
4	1.75	2.00	10	10	..	..	..
4 1/4	2.25	2.50	10	10	10	12	12
4 1/2	2.25	2.50	9	9	9	12, 14, 18, 27	10, 12, 27
4 3/4	2.25	2.50	9	9	..	..	..
5	2.50	2.50	9	9	9	12	12
5 1/4	2.50	2.50	8	8	8	12, 14, 27	12, 27
5 1/2	2.50	2.50	8	8	..	..	..

S. A. E. Standard (Society Automobile Engineers) or A. L. A. M.



Card No. 805B

These Dies are supplied in the outside diameters given in the table below. We also furnish S. A. E. Standard sizes in any other outside diameter dies that we list at regular prices

Diameter Inch	Number Threads to Inch	U. S. Standard Form					
		1 Inch Diameter	1 1/8 Inch Diameter	1 1/4 Inch Diameter	1 3/8 Inch Diameter	1 1/2 Inch Diameter	2 1/4 Inch Diameter
1/4	28	\$.75	\$1.00	\$1.00	\$1.25	\$1.50	
5/16	24	.75	1.00	1.00	1.25	1.50	
3/8	24	.75	1.00	1.00	1.25	1.50	
7/16	20	.75	1.00	1.00	1.25	1.50	
1/2	20	.75	1.00	1.00	1.25	1.50	
9/16	18	....	....	1.00	1.25	1.75	
5/8	18	....	....	1.00	1.25	1.75	
11/16	16	....	....	....	....	2.00	
3/4	16	....	....	....	....	2.00	
7/8	14	....	....	....	....	2.25	
1	14	....	....	....	....	2.50	

Sizes and threads not listed are subject to special prices. Left Hand Dies are special

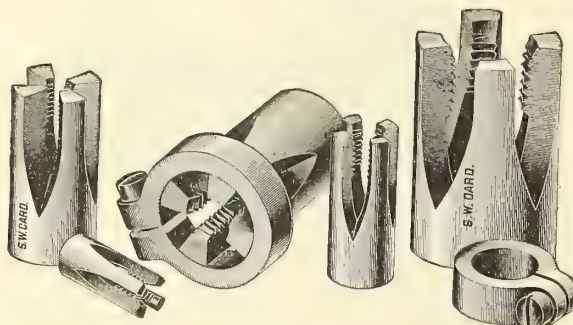
SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Spring Screw Threading Dies and Clamp Collars

Card No. 803
Dies



Card No. 803A
Clamp Collars

Size of Die Diam. Length Inches Inches	Cutting Size	United States Stan- dard	V Standard	Whitworth Standard	V Thread also Furnished	Die Each	Clamp Collar Each
1/2 1 1/4	1/8	40	40	40	32, 36	\$1.50	.50
1/2 1 1/4	3/16	24	24	*24	32, 36	1.50	.50
1/2 1 1/4	1/4	20	20	20	.....	1.50	.50
3/4 1 3/4	1/4	20	20	20	.....	1.75	.60
3/4 1 3/4	5/16	18	18	18	20	1.75	.60
3/4 1 3/4	3/8	16	16	16	14, 18	1.75	.60
1 2	3/8	16	16	16	14, 18	2.00	.70
1 2	7/16	14	14	14	16	2.00	.70
1 2	1/2	13	12	12	13, 14	2.00	.70
1 3/16 2 1/4	5/8	11	11	11	10, 12	2.00	.80
1 3/16 2 1/4	11/16	11	11	11	12	2.00	.80
1 3/16 2 1/4	3/4	10	10	10	12	2.00	.80
1 1/4 2 1/2	3/8	16	16	16	14, 18	2.00	.80
1 1/4 2 1/2	7/16	14	14	14	16	2.00	.80
1 1/4 2 1/2	1/2	13	12	12	13, 14	2.00	.80
1 1/4 2 1/2	9/16	12	12	12	14	2.00	.80
1 1/4 2 1/2	5/8	11	11	11	10, 12	2.00	.80
1 1/4 2 1/2	3/4	10	10	10	12	2.00	.80
1 3/8 2 1/2	1/2	13	12	12	13, 14	2.40	1.00
1 3/8 2 1/2	9/16	12	12	12	14	2.40	1.00
1 3/8 2 1/2	5/8	11	11	11	10, 12	2.40	1.00

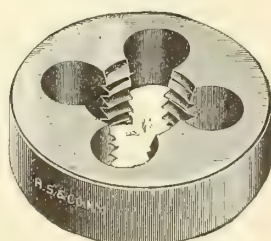
Size of Die Diam. Length Inches Inches	Cutting Size	United States Stan- dard	V Standard	Whitworth Standard	V Thread also Furnished	Die Each	Clamp Collar Each
1 3/8 2 1/2	3/4	10	10	10	12	\$2.40	\$1.00
1 5/8 2 1/2	5/8	11	11	11	10, 12	2.75	1.00
1 5/8 2 1/2	3/4	10	10	10	12	2.75	1.00
1 5/8 2 1/2	13/16	10	10	10	.....	2.75	1.00
1 5/8 2 1/2	7/8	9	9	9	10	2.75	1.00
1 5/8 2 1/2	1	8	8	8	.....	2.75	1.00
2 3	3/4	10	10	10	12	3.50	1.25
2 3	7/8	9	9	9	10	3.50	1.25
2 3	15/16	9	9	9	.....	3.50	1.25
2 3	1	8	8	8	.....	3.50	1.25
2 3	1 1/8	7	7	7	8	3.50	1.25
2 3	1 1/4	7	7	7	.....	3.50	1.25
2 1/2 3 1/2	1	8	8	8	.....	8.00	2.00
2 1/2 3 1/2	1 1/8	7	7	7	.....	8.00	2.00
2 1/2 3 1/2	1 1/4	7	7	7	.....	8.00	2.00
2 1/2 3 1/2	1 3/8	6	6	6	.....	8.00	2.00
2 1/2 3 1/2	1 1/2	6	6	6	.....	8.00	2.00
3 1/4 4	1 5/8	5 1/2	5	5	.....	12.00	3.00
3 1/4 4	1 3/4	5	5	5	.....	12.00	3.00
3 1/4 4	1 7/8	5	4 1/2	4 1/2	.....	12.00	3.00
3 1/4 4	2	4 1/2	4 1/2	4 1/2	.....	12.00	3.00

*We also furnish 3/16 Spring Dies at regular list and discount, with 32 threads to the inch, United States Standard form, and 32 threads to the inch, Whitworth Standard form.
†Spring Dies, cutting 1/2 inch with 12 threads to the inch, United States Standard form, furnished at regular list and discount.

Machine Screw Sizes

Size of Die Diameter Inch	Length Inches	Size of Screw Gauge	Standard Number of Threads Per Inch	Die, Each	Clamp Collar Each
1/2	1 1/4	2	56	\$1.50	.50
1/2	1 1/4	3	48	1.50	.50
1/2	1 1/4	4	36	1.50	.50
1/2	1 1/4	5	36	1.50	.50
1/2	1 1/4	6	32	1.50	.50
1/2	1 1/4	8	32	1.50	.50
3/4	1 3/4	8	32	1.75	.60
3/4	1 3/4	10	24	1.75	.60
3/4	1 3/4	12	24	1.75	.60
3/4	1 3/4	14	20	1.75	.60

Round Solid Dies



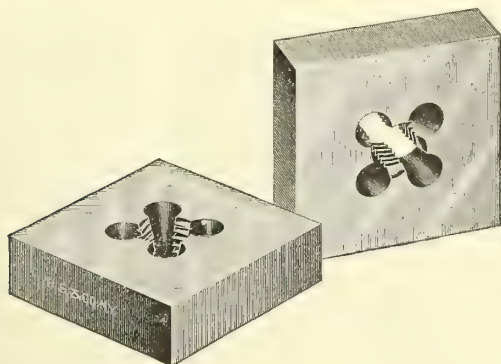
Card No. 806

Size of Die Diameter Inches	Thickness Inch	Cutting Size	Each
5/8	1/4	4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20	.40
5/8	1/4	1/16, 3/32, 7/64, 1/8, 3/16, 1/4	.40
1	3/8	3/16, 1/4, 5/16, 3/8, 7/16	.75
1 5/16	7/16	1/4, 5/16, 3/8, 7/16, 1/2	1.00
1 9/16	1 1/16	5/16, 3/8, 7/16, 1/2, 9/16, 5/8	1.25
2 1/4	3/4	1/4, 5/16, 3/8, 7/16, 1/2	1.50
2 1/4	3/4	9/16, 5/8, 3/4	1.75
2 1/4	3/4	1 1/16, 3/4	1.75
2 1/4	3/4	3/4	2.00
2 1/4	3/4	7/8	2.25
2 1/4	3/4	1	2.50

U. S. Standard Thread furnished unless otherwise specified. V Standard and Whitworth Standard furnished if desired

Machine or Solid Bolt Dies

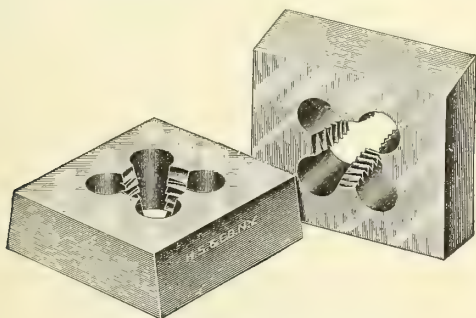
United States Standard Thread always furnished unless otherwise specified



Card No. 901, Morse No. 161

$\frac{1}{4}$ to 2 inches

These Dies are furnished for rough iron $\frac{1}{8}$ inch, over size from $\frac{1}{4}$ to $\frac{3}{8}$ inch inclusive; $\frac{1}{32}$ over size from $\frac{1}{4}$ to 2 inches inclusive.



Card No. 902, Morse No. 160

$\frac{1}{4}$ to $1\frac{1}{2}$ inches only

These Dies are made with bevelled edges and fit the Bolt Cutters made by Boynton & Plummer of Worcester, Mass.

Dies $2\frac{1}{4}$ inches square fit the No. 2 Machine.

Dies 3 inches square fit the No. 3 Machine.

They are furnished for rough iron $\frac{1}{8}$ inch, over size from $\frac{1}{4}$ to $\frac{1}{16}$ inch inclusive; $\frac{1}{32}$ over size from $\frac{1}{4}$ to $1\frac{1}{2}$ inches inclusive at regular prices.

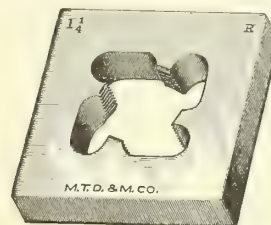
Cutting Size Inches	Number of Threads to Inch United States Standard	Outside Dimensions Size of Square Inches Nos. 901 and 161	Outside Dimensions Size of Square Inches Nos. 902 and 160	Outside Dimensions Thickness Inches	Each
$\frac{1}{4}$	20	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{1}{2}$	\$1.80
$\frac{5}{16}$	18	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{1}{2}$	1.80
$\frac{3}{8}$	16	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{1}{2}$	1.80
$\frac{7}{16}$	14	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{1}{2}$	1.80
$\frac{1}{2}$	*13	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	1.80
$\frac{9}{16}$	12	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	1.90
$\frac{5}{8}$	11	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	2.00
$\frac{11}{16}$	11	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	2.15
$\frac{3}{4}$	10	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	2.20
$\frac{13}{16}$	10	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	2.30
$\frac{7}{8}$	9	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	2.40
$\frac{15}{16}$	9	$2\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	2.55
1	8	$2\frac{1}{2}$	$2\frac{1}{4}$	1	2.70
$1\frac{1}{8}$	7	$2\frac{1}{2}$	3	1	3.00
$1\frac{1}{4}$	7	$2\frac{1}{2}$	3	1	3.30
$1\frac{3}{8}$	6	$2\frac{1}{2}$	3	1	3.60
$1\frac{1}{2}$	5	3	3	1	3.90
$1\frac{5}{8}$	$5\frac{1}{2}$	3	...	1	4.20
$1\frac{3}{4}$	5	3	...	$1\frac{1}{4}$	5.40
$1\frac{7}{8}$	5	$3\frac{1}{2}$	...	$1\frac{1}{2}$	6.50
2	$4\frac{1}{2}$	$3\frac{1}{2}$	...	2	7.50

*We also furnish $\frac{1}{2}$ inch Machine or Solid Bolt Dies in both even and rough iron sizes, at regular list and discount, with 12 threads to the inch, United States Standard form. Sizes and threads not listed are special and subject to special prices

Pipe Dies

Solid. Morse No. 159

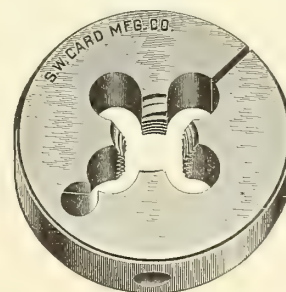
Standard Taper is $\frac{3}{4}$ inch to the foot



Cutting Size Pipe, Inches	Size of Square Inches	Thickness Inches	Each
$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$	2	$\frac{1}{2}$	\$1.50
$\frac{1}{4}$, $\frac{3}{8}$	2	$\frac{5}{8}$	2.00
$\frac{1}{2}$	2	$\frac{3}{4}$	2.00
$\frac{1}{4}$, $\frac{3}{8}$	$2\frac{3}{8}$	$\frac{5}{8}$	2.00
$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1	$2\frac{3}{8}$	$\frac{3}{4}$	2.00
1	$2\frac{3}{8}$	1	2.00
$\frac{1}{4}$, $\frac{3}{8}$	$2\frac{1}{2}$	$\frac{5}{8}$	2.00
$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1	$2\frac{1}{2}$	$\frac{3}{4}$	2.00
1	$2\frac{1}{2}$	1	2.00
$\frac{3}{4}$, 1, $1\frac{1}{4}$	$2\frac{7}{8}$	$\frac{3}{4}$	2.50
1, $1\frac{1}{4}$	$2\frac{7}{8}$	1	2.50
$\frac{3}{4}$, 1, $1\frac{1}{4}$	3	$\frac{3}{4}$	2.50
1, $1\frac{1}{4}$	3	1	2.50
$1\frac{1}{4}$, $1\frac{1}{2}$, 2	$3\frac{7}{8}$	$\frac{7}{8}$	3.50
$1\frac{1}{4}$, $1\frac{1}{2}$, *2	$3\frac{7}{8}$	1	3.50
*2	$3\frac{7}{8}$	$1\frac{1}{8}$	3.50
$1\frac{1}{4}$, $1\frac{1}{2}$, 2	4	$\frac{7}{8}$	3.50
$1\frac{1}{4}$, $1\frac{1}{2}$, *2	4	1	3.50
*2	4	$1\frac{1}{8}$	3.50
$2\frac{1}{2}$, 3	5	$1\frac{1}{4}$	9.00
$2\frac{1}{2}$, *3	5	$1\frac{1}{2}$	9.00

*These Dies are thick enough to cut to Briggs' Standard

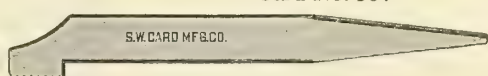
Smith Patent Adjustable, Card No. 850



Cutting Size Inch	Thread	1 Inch Diameter $\frac{3}{8}$ Inch Thick	$1\frac{5}{16}$ Inches Diameter $\frac{1}{16}$ Inch Thick	$1\frac{3}{8}$ Inches Diameter $\frac{1}{16}$ Inch Thick	$2\frac{1}{4}$ Inches Diameter $\frac{3}{4}$ Inch Thick
$\frac{1}{8}$	27	\$.75	\$1.00	\$1.50	\$1.80
$\frac{1}{4}$	18	....	1.00	1.50	1.80
$\frac{3}{8}$	18	....	1.00	1.50	1.80
$\frac{1}{2}$	14	....	....	1.50	1.80
$\frac{3}{4}$	14	....	....	....	1.80
1	$11\frac{1}{2}$	....	....	....	2.00

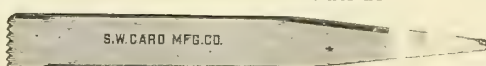
Inside

Card No. 904



Card No. 904 A

Outside



Chasers for Screws

These Screw Chasers have V Threads only

Cutting 5, 6, 7, 8, 9, 10, 11, $11\frac{1}{2}$, 12, 13, 14, 15 and 16 threads to the inch.....	Each	Per Pair
Cutting 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 56, 60, 62, 64 and 70 threads to the inch.....	.25	.50

Screw Plates

Russell Opening Die

For Double Die feature, see page 104

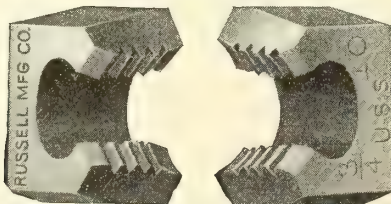


- No. 22 $\frac{1}{4}$ to $\frac{3}{4}$ inch, 5 sizes. In Handsome Wood Case..... \$13.50
Stock 26 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{3}{8}$ -16, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10.
- No. 22-A Same as No. 22 but without Tap Wrench..... 12.50
- No. 22-B Same as No. 22 but without Case... 12.50
- No. 22-C Same as No. 22 but without Tap Wrench or Case..... 11.60
- No. 55 Diameter of Collets in above sets $2\frac{3}{4}$ inches. $\frac{1}{4}$ to $\frac{3}{4}$ inch, 7 sizes. In Handsome Wood Case..... 16.00
Stock 26 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{1}{8}$ -18, $\frac{3}{8}$ -16, $\frac{1}{2}$ -14, $\frac{5}{8}$ -13, $\frac{3}{4}$ -11, $\frac{1}{2}$ -10.
- No. 55-A Same as No. 55 but without Tap Wrench..... 15.00
- No. 55-B Same as No. 55 but without Case.... 15.00
- No. 55-C Same as No. 55 but without Tap Wrench or Case..... 14.10
- Diameter of Collets in above sets $2\frac{3}{4}$ inches.
- No. 77 $\frac{1}{4}$ to 1 inch, 9 sizes. In Handsome Wood Case... 25.50
Stock 26 inches long. Adjustable Tap Wrench No. 4. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{1}{8}$ -18, $\frac{3}{8}$ -16, $\frac{1}{2}$ -14, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{1}{2}$ -9, 1-8.
- No. 77-A Same as No. 77 but without Tap Wrench..... 24.50
- No. 77-B Same as No. 77 but without Case..... 24.00
- No. 77-C Same as No. 77 but without Tap Wrench or Case. 23.10
- Diameter of Collets in above sets $2\frac{3}{4}$ inches.
- U. S. Standard furnished unless otherwise specified. Left Hand Threads at special prices

Assortments

- No. 11 $\frac{1}{4}$ to $\frac{1}{2}$ inch, 5 sizes. In Handsome Wood Case. \$12.00
Stock 26 inches long. Adjustable Tap Wrench No. 2. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{1}{8}$ -18, $\frac{3}{8}$ -16, $\frac{1}{2}$ -14, $\frac{1}{2}$ -13.
- No. 11-A Same as No. 11 but without Tap Wrench..... 11.00
- No. 11-B Same as No. 11 but without Case..... 11.00
- No. 11-C Same as No. 11 but without Tap Wrench or Case.. 10.10
- Diameter of Collets in above sets $2\frac{3}{4}$ inches.
- Supplied at same price, in V thread, over size V thread exact, U. S. Standard, S. A. E. or A. L. A. M. Standard, or Whitworth (English) Standard.

No. 10 Die



Left Hand Dies furnished at special prices

Diameter Inch	No. 10 Die	Number of Threads to Inch		
		V Standard	United States Standard	Whitworth Standard
$\frac{1}{4}$	\$1.00	20	20	20
$\frac{5}{16}$	1.00	18	18	18
$\frac{3}{8}$	1.25	16	16	16
$\frac{7}{16}$	1.25	14	14	14
$\frac{1}{2}$	1.50	12	13	12
$\frac{9}{16}$	1.50	12	12	12
$\frac{5}{8}$	1.75	11	11	11
$\frac{11}{16}$	1.75	11	11	11
$\frac{3}{4}$	2.00	10	10	10
$\frac{13}{16}$	2.00	10	10	10
$\frac{7}{8}$	2.75	9	9	9
$\frac{15}{16}$	2.75	9	9	9
1	2.75	8	8	8

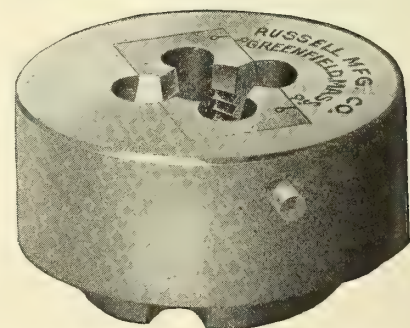
Adjustable Tap and Reamer Wrench



The handles are of the best steel tubing, capped and knurled, and both are firmly fixed, the motion to the jaw being given through an independent knurled nut. The jaws of ample size are made of fine tool steel, and held in perfect alignment on ways, true and strong. The stocks are drop-forged and gunlock finished. The whole is thoroughly made in every particular—complete, durable and handsome.

- No. 28. Size No. 2. Length, 11 inches..... \$2.00
Holds Hand Taps $\frac{1}{8}$ inch to $\frac{5}{8}$ inch.
Holds Machine Screw Taps No. 14 to No. 24.
- No. 29 Size No. 3. Length, 16 inches..... 2.50
Holds Hand Taps $\frac{1}{4}$ inch to $\frac{3}{4}$ inch.
Holds Pipe Taps $\frac{1}{8}$ inch to $\frac{3}{8}$ inch.
- No. 42 Size No. 4. Length, 21 inches..... 3.50
Holds Hand Taps $\frac{1}{4}$ inch to 1 inch.
Holds Pipe Taps $\frac{1}{8}$ inch to $\frac{1}{2}$ inch.
- No. 31 Size No. 5. Length, 34 inches..... 8.00
Holds Hand Taps $\frac{5}{8}$ inch to $1\frac{1}{2}$ inches.
Holds Pipe Taps $\frac{1}{2}$ inch to $1\frac{1}{4}$ inches.

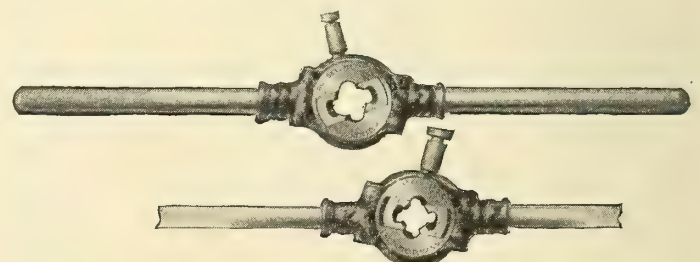
No. 38 Collet



$\frac{1}{4}$ to 1 inch, $2\frac{3}{4}$ inch diameter, Guide, \$.20; Cap, \$.30; Complete, \$.50.

In ordering, give cutting size of Die for which Collet is wanted.

Stock



The Dies are opened or closed by a single movement of the lever on the side of the stock. When a thread has been cut to the required length, the operator pushes the lever, thus throwing the Dies open clear of the thread and the whole tool is quickly lifted off the finished work. When free of the work, the reversing of the lever closes the Dies exactly to size again ready to cut another thread. There are three marked advantages in the use of these Dies:

- (1) The time usually wasted in running back over the finished thread is saved—about one-third of the total time.
- (2) The marring, or stripping of the threads caused by chips crowding into the Die teeth in turning back is avoided.
- (3) The life of the Die is almost doubled, as turning back over the thread in the old way causes much wear of the Dies.

- No. 14 Stock, 26 inches long, for Collets $2\frac{3}{4}$ inches diameter. \$2.00

Screw Plates

Russell Style B

For Double Die feature. see page 104



Assortments

No. 1	$\frac{1}{4}$ to $\frac{1}{2}$ inch, 5 sizes. In Handsome Wood Case....	\$12.00
No. 1-A	Same as No. 1 but without Tap Wrench.....	11.00
No. 1-B	Same as No. 1 but without Case.....	11.00
No. 1-C	Same as No. 1 but without Tap Wrench or Case... Diameter of Collets in above sets, $2\frac{3}{4}$ inches.	10.10
No. 2	$\frac{1}{4}$ to $\frac{3}{4}$ inch, 5 sizes. In Handsome Wood Case... Stock 23 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{3}{8}$ -16, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10.	13.50
No. 2-A	Same as No. 2 but without Tap Wrench.....	12.50
No. 2-B	Same as No. 2 but without Case.....	12.50
No. 2-C	Same as No. 2 but without Tap Wrench or Case.. Diameter of Collets in above sets, $2\frac{3}{4}$ inches.	11.60
No. 5	$\frac{1}{4}$ to $\frac{3}{4}$ inch, 7 sizes. In Handsome Wood Case... Stock 23 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{3}{8}$ -18, $\frac{1}{2}$ -16, $\frac{5}{8}$ -14, $\frac{3}{4}$ -13, $\frac{7}{8}$ -11, $\frac{15}{16}$ -10.	16.00

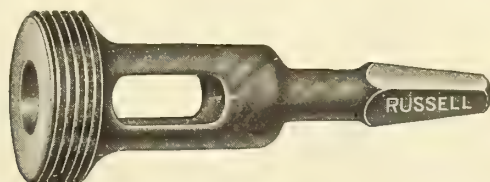
Supplied at same price, in V thread over size, V thread exact, U. S. Standard, S. A. E. or A. L. A. M. Standard or Whitworth (English) Standard. U. S. Standard Left Hand Thread at special prices

No. 37 Die



Left Hand Dies furnished at special prices

Diameter Inches	No. 37 Die	Number of Threads to Inch		
		V Standard	United States Standard	Whitworth Standard
$\frac{1}{4}$	\$1.00	20	20	20
$\frac{5}{16}$	1.00	18	18	18
$\frac{3}{8}$	1.25	16	16	16
$\frac{7}{16}$	1.25	14	14	14
$\frac{1}{2}$	1.50	12	13	12
$\frac{9}{16}$	1.50	12	12	12
$\frac{5}{8}$	1.75	11	11	11
$\frac{11}{16}$	1.75	11	11	11
$\frac{3}{4}$	2.00	10	10	10
$\frac{13}{16}$	2.00	10	10	10
$\frac{7}{8}$	2.75	9	9	9
$\frac{15}{16}$	2.75	9	9	9
1	2.75	8	8	8
$1\frac{1}{8}$	4.00	7	7	7
$1\frac{1}{4}$	4.00	7	7	7
$1\frac{3}{8}$	5.00	6	6	6
$1\frac{1}{2}$	5.00	6	6	6

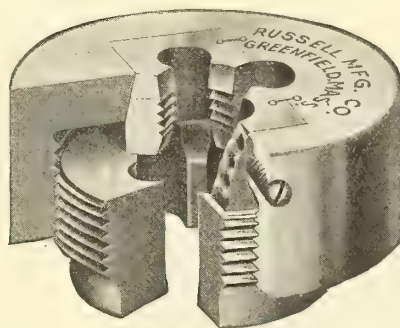


For Tap Wrenches, see page 102

No. 5-A	Same as No. 5 but without Tap Wrench.....	\$15.00
No. 5-B	Same as No. 5 but without Case	15.00
No. 5-C	Same as No. 5 but without Tap Wrench or Case.....	14.10
Diameter of Collets in above sets, $2\frac{3}{4}$ inches		
No. 7	$\frac{1}{4}$ to 1 inch, 9 sizes. In Handsome Wood Case.....	25.50
Stock 29 inches long. Adjustable Tap Wrench No. 4. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{3}{8}$ -18, $\frac{1}{2}$ -16, $\frac{5}{8}$ -14, $\frac{3}{4}$ -13, $\frac{7}{8}$ -11, $\frac{15}{16}$ -10, $\frac{1}{2}$ -9, 1-8.		
No. 7-A	Same as No. 7 but without Tap Wrench.....	24.50
No. 7-B	Same as No. 7 but without Case	24.00

No. 7-C	Same as No. 7 but without Tap Wrench or Case... Diameter of Collets in above sets, $2\frac{3}{4}$ inches	23.10
No. 25	$\frac{7}{8}$ to $1\frac{1}{2}$ inches, 6 sizes. In Handsome Wood Case Stock 52 inches long. Adjustable Tap Wrench No. 5. Taper Taps, Dies and Collets cutting $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6.	45.00
No. 25-C	Same as No. 25 but without Tap Wrench or Case.... Diameter of Collets in above sets $4\frac{1}{2}$ inches	40.50
No. 50	$\frac{1}{4}$ to $1\frac{1}{2}$ inches, 13 sizes. In Handsome Wood Case Two stocks, 29 and 52 inches long. Adjustable Tap Wrenches No. 3 and No. 5. Taper Taps, Dies and Collets cutting $\frac{1}{4}$ -20, $\frac{3}{8}$ -18, $\frac{1}{2}$ -16, $\frac{5}{8}$ -14, $\frac{3}{4}$ -13, $\frac{7}{8}$ -11, $\frac{15}{16}$ -10, $\frac{1}{2}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6.	60.00
No. 50-C	Same as No. 50 but without Tap Wrenches or Case.. Diameter of Collets in above sets 1 inch and under $2\frac{3}{4}$ inches; $1\frac{1}{2}$ and over $4\frac{1}{2}$ inches	54.00

Sectional View of Collet



The Screw Guide below forces the beveled edges of the Die snugly against the beveled surfaces of the Collet.

The surfaces being exactly alike, a combined screw and taper fit is effected, the most positive and rigid fit known in mechanics, and one which constantly corrects itself and compensates for wear. Adjustment of cutting size is accomplished by turning the screws back of the Die halves in or out for tight or loose fits of bolts and nuts.

The zero marks on the tops of the Die and Collet make it possible to adjust each half perfectly in relation to the center.

Number	Inches	Diameter, inches	Guide	Cap	Complete
15	$\frac{1}{4}$ to 1	$2\frac{3}{4}$	\$.20	\$.30	\$.50
16	$\frac{7}{8}$ to $1\frac{1}{2}$	$4\frac{1}{2}$	.50	1.00	1.50

In ordering give cutting size of Die for which Collet is wanted. The Screw Guide below forces the beveled edges of the Die snugly against the beveled surfaces of the Collet.



Stock

No. 17	Stock 23 inches long.	For Collets $2\frac{3}{4}$ inches diameter..	\$2.00
No. 18	Stock 29 inches long.	For Collets $2\frac{3}{4}$ inches diameter..	2.00
No. 19	Stock 52 inches long.	For Collets $4\frac{1}{2}$ inches diameter..	6.00

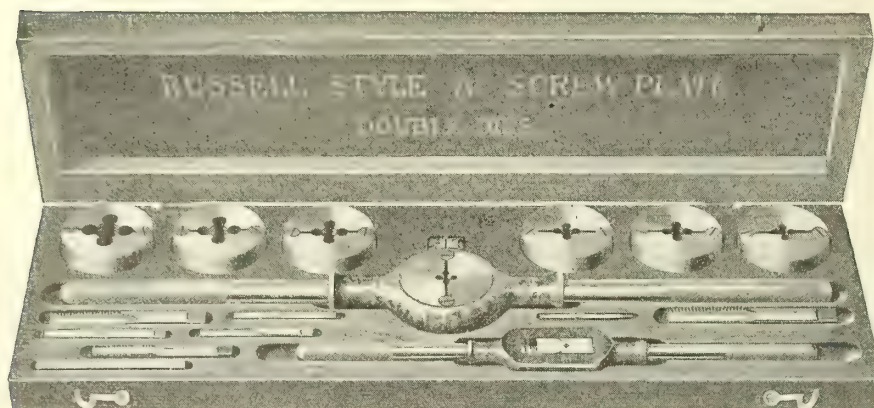
Attachment No. 13

With this attachment the Style B Collets, $2\frac{3}{4}$ inches diameter, may be transformed into Bit Brace Holders at any time, by simply removing the Guide and screwing the attachment in its place. This attachment is supplied with all Russell Style B Screw Plate assortments, containing sizes $\frac{1}{4}$ inch and smaller. (A bit brace has not sufficient leverage to thread sizes larger than $\frac{1}{4}$ inch.)

If ordered separately.....Each \$.50

Screw Plates

Russell Style A



Assortments

No. 1112	$\frac{1}{4}$ to 1 inch, 9 sizes. In Handsome Wood Case	\$25.20
Two Stocks 22 inches and 29 inches long. Adjustable Tap Wrench No. 4. Taper Taps, Dies and Guides cutting $\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8.		
No. 1112-A	Same as No. 1112 but without Tap Wrench.....	24.15
No. 1112-B	Same as No. 1112 but without Case.....	23.65
No. 1112-C	Same as No. 1112 but without Tap Wrench or Case	22.60
Diameter of Dies in above sets $\frac{3}{4}$ inch and under $2\frac{1}{8}$ inches, $\frac{7}{8}$ inch and over $2\frac{3}{4}$ inches		

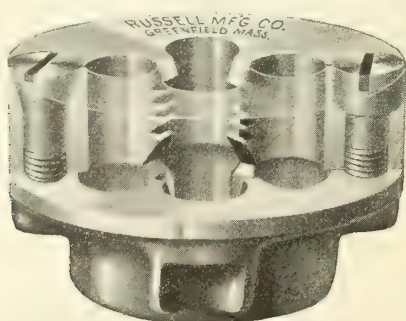
Supplied at same price in V thread, over size, V thread exact, U. S. Standard, S. A. E. or A. L. A. M. Standard or Whitworth (English) Standard. U. S. Standard furnished unless otherwise specified. Left Hand Threads at special prices

No. 1124	$\frac{1}{4}$ to $\frac{3}{4}$ inch, 5 sizes. In Handsome Wood Case.....	\$11.80
Stock 22 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Guides cutting $\frac{1}{4}$ -20, $\frac{5}{16}$ -16, $\frac{1}{2}$ -13, $\frac{3}{8}$ -11, $\frac{3}{4}$ -10.		
No. 1124-A	Same as No. 1124 but without Tap Wrench.....	10.75
No. 1124-B	Same as No. 1124 but without Case.....	10.75
No. 1124-C	Same as No. 1124 but without Tap Wrench or Case.....	9.70
Diameter of Dies in above sets $2\frac{1}{8}$ inches		
No. 1104	$\frac{1}{4}$ to $\frac{3}{4}$ inch, 7 sizes. In Handsome Wood Case.....	14.70
Stock 22 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Guides cutting $\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10.		
No. 1104-A	Same as No. 1104 but without Tap Wrench.....	13.65
No. 1104-B	Same as No. 1104 but without Case.....	13.65
No. 1104-C	Same as No. 1104 but without Tap Wrench or Case	12.60
Diameter of Dies in above sets $2\frac{1}{8}$ inches		
No. 2029	$\frac{1}{4}$ to $\frac{1}{2}$ inch, 5 sizes. In Handsome Wood Case.	11.30
Stock 18 inches long. Adjustable Tap Wrench No. 2. Taper Taps, Dies and Guides cutting $\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13.		
No. 2029-A	Same as No. 2029 but without Tap Wrench....	10.25
No. 2029-B	Same as No. 2029 but without Case.....	10.25
No. 2029-C	Same as No. 2029 but without Tap Wrench or Case	9.20
Diameter of Dies in above sets $2\frac{1}{8}$ inches		

Dies and Guides, Fitting Above Assortments

(Adjustable with one screw)

The cup-headed screw on the right holds the halves firmly together, acting as a hinge while the size is regulated by the wedge-shape (taper-headed) screw in the left; the whole being clamped rigidly in an elastic stock.



Size Inches	Dies Diameter Outside $2\frac{1}{8}$ Inches No. 20	Guides Diameter Outside $2\frac{1}{8}$ Inches No. 39	Number of Threads to Inch		
			V Standard	United States Standard	Whitworth Standard
$\frac{1}{4}$	\$1.25	\$.25	20	20	20
$\frac{5}{16}$	1.25	.25	18	18	18
$\frac{3}{8}$	1.50	.25	16	16	16
$\frac{7}{16}$	1.50	.25	14	14	14
$\frac{1}{2}$	1.50	.25	12	13	12
$\frac{9}{16}$	1.60	.25	12	12	12
$\frac{5}{8}$	1.75	.25	11	11	11
$\frac{11}{16}$	1.90	.25	11	11	11
$\frac{3}{4}$	2.00	.25	10	10	10
Diameter Outside $2\frac{3}{4}$ Inches No. 21			Diameter Outside $2\frac{3}{4}$ Inches No. 23		
$\frac{13}{16}$	2.25	.25	10	10	10
$\frac{7}{8}$	2.50	.25	9	9	9
$\frac{15}{16}$	2.75	.25	9	9	9
1	3.00	.25	8	8	8
$1\frac{1}{8}$	3.50	.25	7	7	7
$1\frac{1}{4}$	4.00	.25	7	7	7

General Data

Double Die Feature

The Dies in all Russell Screw Plates are made to cut from both faces and will do certain work which it is impossible to accomplish with the old style Dies. When a thread is to be cut close up to a shoulder, or a very short piece is to be threaded, the cut is made from the front face of the Die. In this way the space, which the thickness of the guide prevents being utilized, when cutting from the guide side of the Die, can be threaded and the thread cut clear up to the shoulder or work holder. It is not necessary to start the thread with the guide side of the Die. If a little care is taken to hold the Die true in starting, a perfect thread can be cut without the guide. The guide is a convenience in starting a thread quickly but is not a necessity.

The life of these Dies is almost double that of the old style, because when one side is worn out the other face of the Die may be used, thus bringing into action a new set of cutting edges.

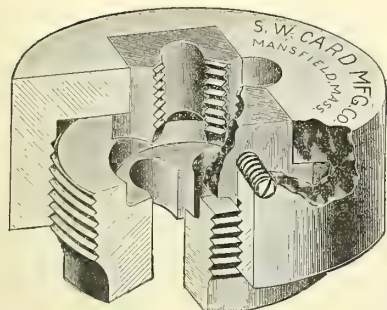
Interchangeable Dies

The Dies in each of the Russell three types of Screw Plates are interchangeable with those of similar types made by others.

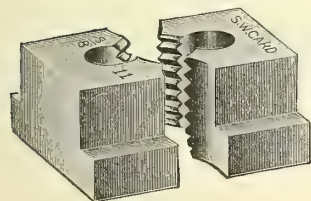
Guarantee

All Russell products are guaranteed to be of the highest quality of workmanship and material, and perfect in every detail. A rigid inspection after every operation renders it almost impossible for anything not up to the standard to leave the plant. Should any item be found defective in any way, we will replace it free of charge upon its return.

Paragon Screw Plates



Sectional View of Collet Die and Guide

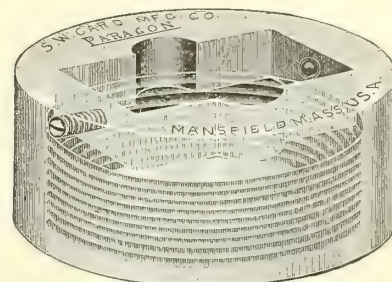


Adjustable Die



Horsfield Patent Adjustable Tap Wrench

All Paragon Screw Plates are supplied with this Tap Wrench



Collet



Guide

In the manufacture of Paragon Screw Plates, the greatest care has been exercised in turning out a finished product with the result that its user will find it a paragon of excellence in every way.

By referring to illustrations the construction of the Paragon Die and Guide is easily apparent.

The method of a square lock in fitting the die into the cap, gives an exceptionally good bearing surface to the die, and insures perfect alignment when the guide is screwed into place. There is no chance for wear and displacement of die in this style of fit, thus the alignment is sure to be maintained during the whole life of the die.

The parallel adjustment feature of this die is an improvement over the ordinary round die, and a strong point in its favor.

It is not possible to get practical adjustment in round dies except perhaps for tight and loose fits, and then the adjustment is only on one side of the die, and the cutting sections not parallel.

Paragon Dies, when dull, can be removed from the collet very easily and ground, which also is impossible with a round die, and a very conclusive argument in favor of their use.

When from continued use new dies are necessary they can be purchased at slight cost.

To cut close to a shoulder start the thread with the guide side of the die and finish with the face side.

We strongly recommend the Paragon Die in all screw plate assortments from ¼ inch to 1½ inches.

The Stocks are beautifully mottled and are supplied with hollow steel knurled handles, which make them very light, and they are also strong and serviceable.

Each screw plate assortment is supplied with one or more drop forged Horsfield Patent Tap and Reamer Wrenches necessary to cover the range of sizes in the assortment.

When ordering repairs give the Set Number and Collet Number.

Duplicate parts can be furnished for these plates without returning them to the factory, as they are all made interchangeable.

Paragon Screw Plates are fully warranted and we will replace, free of charge, any imperfect tools returned.

One-Stock Sets—Taper Taps

Set No.	Cutting	Each
501	¼-20, ⅜-16, ½-13	\$9.50
502	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13	12.00
503	¼-20, ⅜-16, ½-13, ⅝-11, ¾-10	13.50
504	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10	16.00
504½	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, 9/16-12, ⅝-11, ¾-10	18.50
505	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, 7/8-9, 1-8	25.50
505½	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, 9/16-12, ⅝-11, ¾-10, 7/8-9, 1-8	28.00
506	½-13, ⅝-11, ¾-10, 7/8-9, 1-8	17.50
507	⅝-11, ¾-10, 7/8-9, 1-8	15.00
508	7/8-9, 1-8, 1½-7, 1¼-7, 1⅜-6, 1½-6	45.00
509	1½-7, 1¼-7, 1⅜-6, 1½-6	37.50

Two-Stock Sets—Taper Taps

Set No.	Cutting	Each
510	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10	\$18.00
511	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, 7/8-9, 1-8	27.50
512	¾-10, 7/8-9, 1-8, 1½-7, 1¼-7, 1⅜-6, 1½-6	52.50
513	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, 7/8-9, 1-8, 1½-7, 1¼-7	40.00
514	⅝-11, ¾-10, 7/8-9, 1-8, 1½-7, 1¼-7	37.50
515	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, 7/8-9, 1-8, 1½-7, 1¼-7, 1⅜-6, 1½-6	60.00

Three-Stock Sets—Taper Taps

Set No.	Cutting	Each
516	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, 7/8-9, 1-8, 1½-7, 1¼-7	\$42.00
517	¼-20, ⅝-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, 7/8-9, 1-8, 1½-7, 1¼-7, 1⅜-6, 1½-6	62.00

S. A. E. or A. L. A. M. Standard Sets—Plug Taps

For Automobile Repair Work

Set No.	Cutting	Each
518	¼-28, ⅝-24, ⅜-24, 7/16-20, ½-20	\$12.00
518½	¼-28, ⅝-24, ⅜-24, 7/16-20, ½-20, ⅝-18, ¾-16	16.00
519	9/16-18, ⅝-18, 11/16-16, ¾-16, 7/8-14, 1-14	22.00
519½	¼-28, ⅝-24, ⅜-24, 7/16-20, ½-20, 9/16-18, ⅝-18, 11/16-16, ¾-16, 7/8-14, 1-14	34.00

See next page for larger sizes and extra parts.

Screw Plates will be sent with United States Standard Threads unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough Iron sizes in V and United States Standard furnished if desired. Machinists Hand Taps furnished with these sets.

Paragon Screw Plates

(Continued from preceding page)

One-Stock Sets—Taper, Plug and Bottoming Taps

Set No.	Cutting	Each
551	$\frac{1}{4}$ -20, $\frac{3}{8}$ -16, $\frac{1}{2}$ -13	\$12.50
552	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13	15.50
553	$\frac{1}{4}$ -20, $\frac{3}{8}$ -16, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10	18.00
554	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10	22.00
554½	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{9}{16}$ -12, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10	25.25
555	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8	36.00
555½	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{9}{16}$ -12, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8	39.25
556	$\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8	25.00
557	$\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8	22.00
558	$\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6	63.00
559	$1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6	51.00

Two-Stock Sets—Taper, Plug and Bottoming Taps

Set No.	Cutting	Each
560	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10	\$24.00
561	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8	38.00
562	$\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6	70.00
563	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7	55.00
564	$\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7	50.00
565	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6	84.00

Three-Stock Sets—Taper, Plug and Bottoming Taps

Set No.	Cutting	Each
566	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7	\$57.00
567	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6	86.00

Screw Plates will be sent with United States Standard Threads unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough Iron sizes in V and United States Standard furnished if desired. Machinists Hand Taps furnished with these sets.

Extra Parts

Stocks



Dies



Number of Stock	Length of Stock Inches	Fitting Collets Number	Diameter Collets Inches	Each
13	16	13	2	\$1.50
14	24	14	2½	2.00
15	31	15	3	2.00
16	38	16	3½	6.00
18	52	18	4½	8.00

Collets and Guides



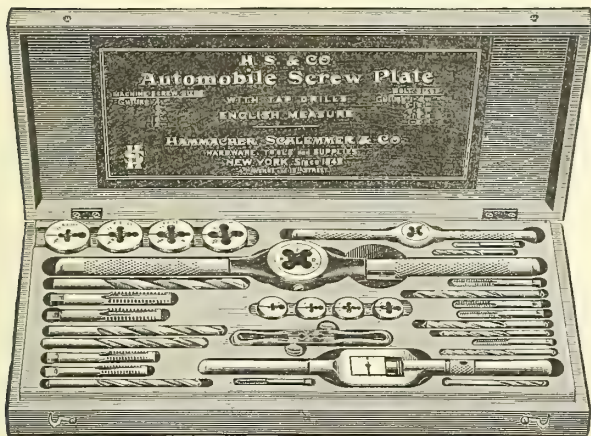
Size of Die Inches	Number of Collet	Diameter of Collet, Inches	Guide	Collet	Collet and Guide
$\frac{1}{4}$ to $\frac{1}{2}$	13	2	\$.20	\$.30	\$.50
$\frac{1}{4}$ to $\frac{3}{4}$	14	2½	.20	.30	.50
$\frac{1}{4}$ to 1	15	3	.20	.30	.50
$\frac{5}{8}$ to $1\frac{1}{4}$	16	3½	.50	1.00	1.50
$\frac{5}{8}$ to $1\frac{1}{2}$	18	4½	.50	1.00	1.50

Cutting Sizes Inches	U.S. Standard Threads	V Form	Whitworth Standard	A. L. A. M. Standard	Each
$\frac{1}{4}$	20	20	20	28	\$1.00
$\frac{5}{16}$	18	18	18	24	1.00
$\frac{3}{8}$	16	16	16	24	1.25
$\frac{7}{16}$	14	14	14	20	1.25
$\frac{1}{2}$	13	12	12	20	1.50
$\frac{9}{16}$	12	12	12	18	1.50
$\frac{5}{8}$	11	11	11	18	1.75
$\frac{11}{16}$	11	11	11	16	1.75
$\frac{3}{4}$	10	10	10	16	2.00
$\frac{13}{16}$	10	10	10	..	2.00
$\frac{7}{8}$	9	9	9	14	2.75
$\frac{15}{16}$	9	9	9	..	2.75
1	8	8	8	14	2.75
$1\frac{1}{8}$	7	7	7	12	4.00
$1\frac{1}{4}$	7	7	7	12	4.00
$1\frac{3}{8}$	6	6	6	12	5.00
$1\frac{1}{2}$	6	6	6	12	5.00

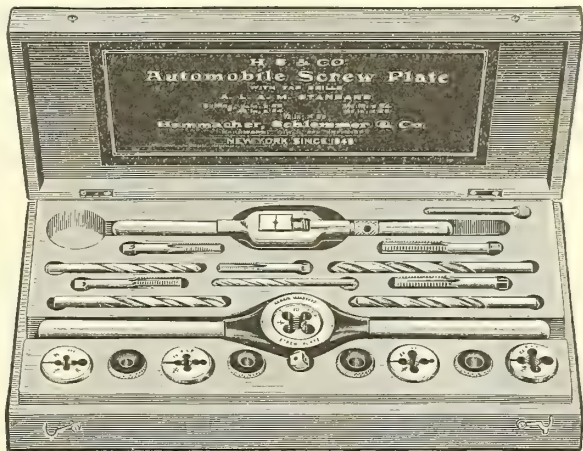
Rough Iron sizes in V and United States Standard Threads furnished at regular prices. For prices on extra Taps, see Index for Machinists Hand Tap list. For prices on Horsfield Patent Tap Wrench, see page 111. Left Hand Dies are special. U. S. Standard Threads furnished unless otherwise ordered. When ordering give number of Collet wanted, also cutting size of Die with which Collet is to be used.

Automobile Screw Plates

H. S. & Co.



With Diamond Stocks and Dies



With Improved Stocks and Dies

English, Metric, S. A. E., or A. L. A. M. Standards

As the name implies the Automobile Screw Plate was originally designed for the automobilist's use, but embodying as it does all of the principal screw and bolt sizes it is particularly handy for general use.

We have also included in it the necessary Morse Tap Drills of the correct size for each tap.

The English Measure Plate cuts 4-36, 6-32, 8-32, 10-24, and 12-24 machines screw threads, and 1/4-20, 5/16-18, 3/8-16, 7/16-14, and 1/2-13 U. S. Standard Threads. Has two tap wrenches and two stocks.

The Metric Measure Plate cuts 3-5, 4-75, 5-75, 6-1, 7-1, 8-1, 9-1, 10-1.5, 11-1.5 and 12-1.5 mm., and has two tap wrenches and two stocks.

The S. A. E. or A. L. A. M. Plate cuts 1/4-28, 5/16-24, 3/8-24, 7/16-20, and 1/2-20 threads and has one tap wrench and one stock.

English Measure, with Diamond Stocks and Dies.....	set	\$20.00
English Measure, with Improved Stocks and Dies.....	set	25.00
Metric Measure with Diamond Stocks and Dies.....	set	20.00
S. A. E. or A. L. A. M. Measure, with Improved Stock and Dies.....	set	17.50

Diamond

S. A. E. or A. L. A. M. Standard and French Standard (Metric System)

For Automobile Repair Work



Set No. 1. S. A. E. or A. L. A. M. Standard.	Each
Stock, 14 inches long, with 5 Dies 1 5/16 inches diameter, and 5 Taps; cutting 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20.....	\$8.40
Set No. 2. S. A. E. or A. L. A. M. Standard.	
One Stock, 14 inches long, with 5 Dies 1 5/16 inches diameter, and 5 Taps; cutting 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20.	
One Stock, 29 inches long with 6 Dies 2 1/4 inches diameter, and 6 Taps; cutting 1/8-18, 5/8-18, 1 1/16-16, 3/4-16, 7/8-14, 1, 1 1/4.....	27.00
Set No. 3. French Standard. (Metric System)	
One Stock, 7 inches long, with 5 Dies 1 3/16 inches diameter, and 5 Taps; cutting 3 mm., 0.5; 4 mm., 0.75; 5 mm., 0.75; 6 mm., 1.0; 7 mm., 1.0.	
One Stock, 18 inches long, with 5 Dies 1 9/16 inches diameter, and 5 Taps; cutting 8 mm., 1.0; 9 mm., 1.0; 10 mm., 1.5; 12 mm., 1.5; 14 mm., 2.0.....	12.00
Set No. 4. French Standard. (Metric System)	
One Stock, 14 inches long, with 6 Dies 1 1/8 inches diameter, and 6 Taps; cutting 6 mm., 1.0; 7 mm., 1.0; 8 mm., 1.0; 9 mm., 1.0; 10 mm., 1.5; 12 mm., 1.5.	
One Stock, 29 inches long, with 6 Dies 2 1/4 inches diameter, and 6 Taps; cutting 14 mm., 2.0; 16 mm., 2.0; 18 mm., 2.5; 20 mm., 2.5; 22 mm., 2.5; 24 mm., 3.0.....	28.50

Extra Taps and Dies (Metric System)

Diameter mm.	Pitch mm.	Taps Taper, Plug or Bottoming Each	Round Adjustable Dies			
			1 1/8 Inch Diameter	1 5/8 Inch Diameter	1 3/4 Inch Diameter	2 1/4 Inch Diameter
3	.5	\$.35	\$.40			
4	.75	.35	.40			
5	.75	.35	.40			
6	1.0	.45	.40	\$1.00	\$1.25	
7	1.0	.45	.40	1.00	1.25	
8	1.0	.50	.....	1.00	1.25	
9	1.0	.55	.....	1.00	1.25	
10	1.5	.55	.....	1.00	1.25	
12	1.5	.70	.....	1.00	1.25	
14	2.0	.80	.....	.....	1.25	\$1.75
16	2.0	.90	.....	.....	.....	1.75
18	2.5	1.05	.....	.....	.....	2.00
20	2.5	1.40	.....	.....	.....	2.25
22	2.5	1.60	.....	.....	.....	2.25
24	3.0	1.80	.....	.....	.....	2.50

Machinists Screw Plates

Diamond



Screw Plates of fractional sizes furnished U.S. Standard unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough iron sizes in V and U. S. Standard furnished if desired.

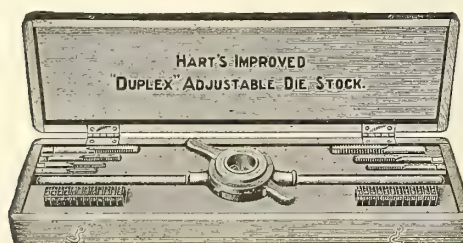
Set	Diameter of Dies Inches	Cutting	Each
A	$\frac{5}{8}$	4-36, 6-32, 8-32, 10-24, 12-24, 14-20....	\$4.90
B	$\frac{5}{8}$	4-36, 6-32, 8-32, 10-24, 12-24.....	4.40
C	$\frac{5}{8}$	6-32, 8-32, 10-24, 12-24.....	3.90
D	$\frac{5}{8}$	2-56, 3-48, 4-36, 6-32, 8-32, 10-24, 12-24, 14-20.....	6.20
E	$\frac{5}{8}$	2-56, 3-48, 4-36, 5-32, 6-32, 8-32, 10-32, 10-24, 12-24, 14-20.....	7.25
N	$\frac{13}{16}$	4-36, 6-32, 8-32, 10-24, 12-24.....	5.65
NN	$\frac{13}{16}$	4-36, 6-32, 8-32, 10-24, 12-24, 14-20.....	6.25
O	$\frac{13}{16}$	4-36, 6-32, 8-32, 10-24, 12-24, 14-20, 16-18.....	6.75
P	$\frac{13}{16}$	4-36, 6-32, 8-32, 10-24, 12-24, 14-20, 16-18, 18-18.....	7.30
P-1	$\frac{13}{16}$	2-56, 3-48, 4-36, 6-32, 8-32, 10-24, 12-24, 14-20.....	7.30
P-2	$\frac{13}{16}$	2-56, 3-48, 4-36, 6-32, 8-32, 10-24, 12-24, 14-20, 16-18, 18-18.....	8.00
Q	$\frac{13}{16}$	$\frac{1}{8}$ -40, $\frac{5}{32}$ -32, $\frac{3}{16}$ -24, $\frac{7}{32}$ -24, $\frac{1}{4}$ -20.....	5.75
R	$\frac{13}{16}$	$\frac{1}{8}$ -40, $\frac{5}{32}$ -32, $\frac{3}{16}$ -24, $\frac{7}{32}$ -24, $\frac{1}{4}$ -20, $\frac{5}{16}$ -18.....	6.50
S	$\frac{13}{16}$	$\frac{1}{16}$ -72, $\frac{1}{8}$ -40, $\frac{3}{16}$ -24, $\frac{1}{4}$ -20, $\frac{5}{16}$ -18.....	5.75
T	$\frac{13}{16}$	$\frac{1}{16}$ -72, $\frac{3}{32}$ -56, $\frac{1}{8}$ -40, $\frac{5}{32}$ -32, $\frac{3}{16}$ -24, $\frac{7}{32}$ -24, $\frac{1}{4}$ -20, $\frac{5}{16}$ -18.....	8.50
25	$\frac{13}{16}$	4-48, 6-40, 8-36, 10-30, 12-28.....	5.65
26	$\frac{13}{16}$	4-48, 6-40, 8-36, 10-30, 12-28, 14-24....	6.25
27	$\frac{13}{16}$	4-48, 6-40, 8-36, 10-30, 12-28, 14-24, 16-22.....	6.75
28	$\frac{13}{16}$	4-48, 6-40, 8-36, 10-30, 12-28, 14-24, 16-22, 18-20.....	7.30
29	$\frac{13}{16}$	M. 2-64, 3-56, 4-48, 6-40, 8-36, 10-30, 12-28, 14-24.....	7.30
30	$\frac{13}{16}$	A. 2-64, 3-56, 4-48, 6-40, 8-36, 10-30, 12-28, 14-24, 16-22, 18-20.....	8.00
16	1	$\frac{3}{16}$ -24, $\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13.....	6.60
17	1	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14.....	5.70
17A	1	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13.....	6.75
18	1	12-24, 14-20, 16-18, 18-18, 20-16, 24-16.....	6.90
18A	1	12-24, 14-20, 16-18, 18-18, 20-16.....	6.00
19	1	14-20, 16-18, 18-18, 20-16.....	5.00
21	$1\frac{5}{16}$	$\frac{3}{16}$ -24, $\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13.....	9.60
22	$1\frac{5}{16}$	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13.....	8.40
23	$1\frac{5}{16}$	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{1}{2}$ -13.....	7.00
24	$1\frac{5}{16}$	$\frac{1}{4}$ -20, $\frac{3}{8}$ -16, $\frac{1}{2}$ -13.....	5.75

With Tap Wrench

Without Tap Wrench

Hart "Duplex"

For Bolts and Rods



A prominent feature of the "Duplex" is that it is unnecessary to turn back over the thread after it is once cut.

When set to any desired size, can instantly be released and lifted off and reset in same size without trial, thus insuring all the threads uniformly alike. It adjusts to all the variations in iron—rough oversized iron is shaved to standard size and threaded at the same time.

No wrenches or screw drivers are required for the adjustment of dies.

Plug taps cutting even sizes will be shipped with these sets unless otherwise specified. We can supply sets with $\frac{1}{2}$ over sizes, in which case taper taps will be sent. Tap Wrenches are not included unless ordered. Packed in neat hardwood box as shown.

With U. S. Standard, V or Whitworth Threads
U. S. Standard supplied unless otherwise ordered

Set	Cutting	Set
AA	$\frac{3}{16}$ -24, $\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13*	\$15.00
A	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10.....	20.00
B	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8.....	30.00
B2	$\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8.....	22.00
B3	$\frac{3}{16}$ -24, $\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8.....	35.00
BB	$\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7.....	37.00
BB2	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7.....	48.00
C	$\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6.....	45.00
C2	$\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6.....	40.00
C3	$\frac{1}{4}$ -20, $\frac{5}{16}$ -18, $\frac{3}{8}$ -16, $\frac{7}{16}$ -14, $\frac{1}{2}$ -13*, $\frac{5}{8}$ -11, $\frac{3}{4}$ -10, $\frac{7}{8}$ -9, 1-8, $1\frac{1}{8}$ -7, $1\frac{1}{4}$ -7, $1\frac{3}{8}$ -6, $1\frac{1}{2}$ -6.....	57.00

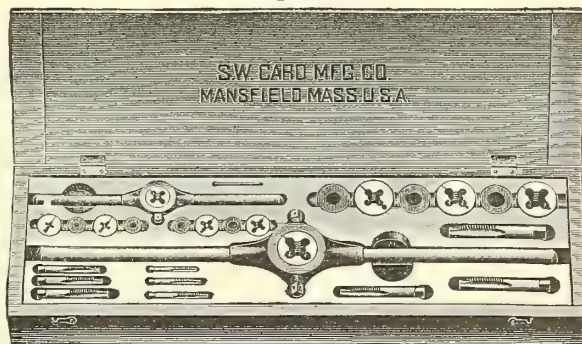
*Sets with V or Whitworth threads are furnished $\frac{1}{2}$ inch, 12 threads.
Sets B3, BB2, and C3 have two stocks.

With Metric Threads (International Standard)

Set	Cutting	Set
AA	6, 7, 8, 9, 10, 11 and 12 mm.....	\$13.00
A	6, 7, 8, 9, 10, 11, 12, 14, 16, 18 and 20 mm.....	21.00
B	6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24 and 27 mm.....	31.50
B2	14, 16, 18, 20, 22, 24 and 27 mm.....	22.00
BB	14, 16, 18, 20, 22, 24, 27, 30 and 33 mm.....	39.00
C	14, 16, 18, 20, 22, 24, 27, 30, 33, 36 and 39 mm.....	45.00
C2	22, 24, 27, 30, 33, 36 and 39 mm.....	37.00

Machinists Screw Plates

Improved



These Screw Plates are furnished with Round Adjustable Dies and Steel Guides. The dies are adjusted by means of a tapering screw, which permits sufficient adjustment to obtain either a tight or a loose fit. They are constructed so that they will always grip the screw whether it is moved in or out, thereby keeping the cutting teeth in perfect alignment.

Sets Nos. 40 to 56 are furnished with plug, and Sets Nos. 60 to 100A with taper taps. Sets Nos. 40 to 56 have adjustable tap wrench 7½ inches long. Sets Nos. 100 and 100A have two stocks.

Sets Nos. 40 to 45 are for cutting A. S. M. E. machine screw threads.

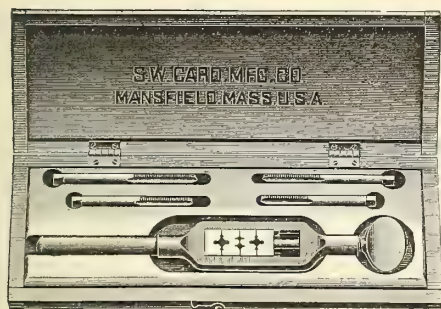
Each set is furnished in a hardwood case, as shown.

Set No.	Cutting	Length Stock Inches	Each	Set No.	Cutting	Length Stock Inches	Each
40	4-48, 6-40, 8-36, 10-30, 12-28	7	\$5.75	53	1/8-40, 5/32-32, 3/16-24, 7/32-24, 1/4-20	7	\$5.75
41	4-48, 6-40, 8-36, 10-30, 12-28, 14-24	7	6.50	54	1/8-40, 5/32-32, 3/16-24, 7/32-24, 1/4-20, 5/16-18	7	6.50
42	4-48, 6-40, 8-36, 10-30, 12-28, 14-24, 16-22	7	7.00	55	1/8-40, 5/32-32, 3/16-24, 7/32-24, 1/4-20, 5/16-18	7	5.25
43	4-48, 6-40, 8-36, 10-30, 12-28, 14-24, 16-22, 18-20	7	8.00	56	1/8-40, 5/32-32, 3/16-24, 7/32-24, 1/4-20, 5/16-18, 5/8-11	7	7.00
44	2-64, 3-56, 4-48, 6-40, 8-36, 10-30, 12-28, 14-24	7	8.00	60	1/4-20, 5/16-18, 3/8-16, 7/16-14	10½	8.75
45	2-64, 3-56, 4-48, 6-40, 8-36, 10-30, 12-28, 14-24, 16-22, 18-20	7	9.00	60A	1/4-20, 5/16-18, 3/8-16, 7/16-14	10½	7.50
50	4-36, 6-32, 8-32, 10-24, 12-24	7	5.75	70	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13	14	10.50
50½	4-36, 6-32, 8-32, 10-24, 12-24, 14-20	7	6.50	70A	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13	14	8.90
51	4-36, 6-32, 8-32, 10-24, 12-24, 14-20, 16-18	7	7.00	80	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	23	16.00
52	4-36, 6-32, 8-32, 10-24, 12-24, 14-20, 16-18, 18-18	7	8.00	80A	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	23	13.00
52A	2-56, 3-48, 4-36, 6-32, 8-32, 10-24, 12-24, 14-20	7	8.00	80B	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	23	9.25
52B	2-56, 3-48, 4-36, 6-32, 8-32, 10-24, 12-24, 14-20, 16-18, 18-18	7	9.00	90	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	29	26.00
				90A	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	29	22.00
				90B	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	29	18.50
				100	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	14 and 29	25.00
				100A	1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11	10½ and 23	17.00

Screw plates of fractional sizes will be furnished U. S. Standard Threads unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough Iron sizes in V and U. S. Standard threads furnished if desired.

Card

Set No. 00. Stock, 6 inches long; 4 pairs of Dies and 4 Taps; cutting 2-56, 3-48, 4-36, 6-32	Each \$2.50
Set No. 00 A. Stock, 6 inches long; 3 pairs of Dies and 4 Taps; cutting 4-36, 6-32, 8-32, 10-24	2.50
Set No. 00 M. Stock, 6 inches long; 3 pairs of Dies and 4 Taps; cutting 1/8-72, 5/32-56, 7/64-56, 1/8-40	2.50
Set No. 00 N. Stock, 6 inches long; 3 pairs of Dies and 4 Taps; cutting 1/8-40, 9/64-40, 5/32-32, 3/16-24	2.50
Set No. 0. Stock, 7½ inches long; 4 pairs of Dies and 4 Taps; cutting 4-36, 6-32, 10-24, 14-20	3.00
Set No. 0 A. Stock, 7½ inches long; 3 pairs of Dies and 4 Taps; cutting 10-24, 12-24, 14-20, 16-18	3.25
Set No. 0 M. Stock, 7½ inches long; 4 pairs of Dies and 4 Taps; cutting 7/64-56, 1/8-40, 3/16-24, 1/4-20	3.00
Set No. 0 N. Stock, 7½ inches long; 3 pairs of Dies and 4 Taps; cutting 3/16-24, 5/32-24, 1/4-20, 3/32-20	3.25



For Plug Taps fitting this plate see Index

Each complete Plate as catalogued sent in a hard wood case

Extra Stocks and Dies

Stocks for 00 Plates	Each \$1.00	Dies	Each \$.50
Stocks for 0 Plates	1.25	Dies	.50

Watchmakers

Card No. 401

Set No. 1. Stock, 3¼ inches long; Dies, 7/16 inch in diameter; 4 Taps and 5 Dies, including Tap Wrench Die; cutting 80, 100, 120, 140 threads

Each \$3.50
Extra Dies .35
Extra Taps .35

For extra Stocks see Index

The sizes and threads in this Plate correspond to the sizes of watch screws.

The Dies in this Plate are adjustable for making tight or loose fits.



Jewelers

Card No. 402

Set No. 1. Stock, 3¼ inches long; Dies, 7/16 inch in diameter; 4 Taps and 5 Dies, including Tap Wrench Die; cutting 1/16-72, 3/32-60, 1/8-50, 5/64-40

Each \$3.50
Extra Dies .35

For extra Taps and Stocks see index

We have selected these sizes and threads as those best suited to the use of jewelers.

The Dies in this Plate are adjustable for making tight or loose fits.

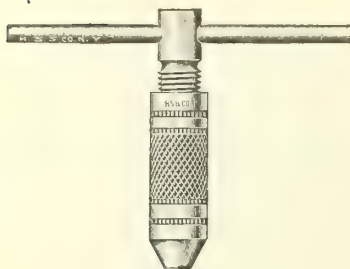


SINCE
1848

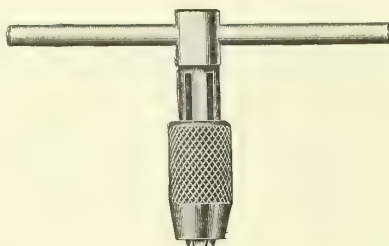
HAMMACHER SCHLEMMER & CO. NEW YORK

Tap Wrenches

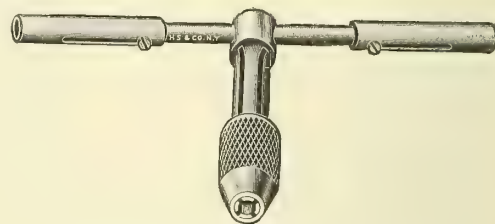
Jaws are made of hardened tool steel. The long knurled sleeves provide a good strong grip



No. 21



No. 22



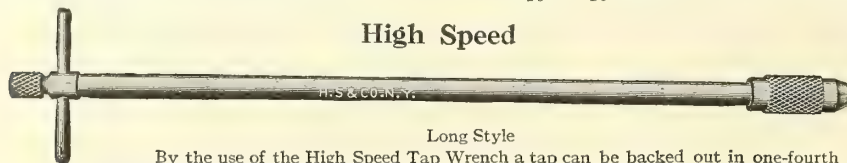
No. 23, Adjustable Handle

Holds Taps $\frac{1}{16}$ to $\frac{1}{4}$ inch; holds
Drills $\frac{1}{16}$ to $\frac{3}{16}$ inch.....Each \$.50

Holds Taps $\frac{3}{16}$ to $\frac{1}{2}$ inch; holds
Drills $\frac{3}{16}$ to $\frac{5}{16}$ inch.....Each \$1.00

Holds Taps from $\frac{3}{16}$ to $\frac{1}{2}$ inch; holds
Drills $\frac{3}{16}$ to $\frac{5}{16}$ inch.....Each \$1.50
Handle 8 ins. over all when extended, $5\frac{3}{4}$ ins. when closed

High Speed



Long Style

By the use of the High Speed Tap Wrench a tap can be backed out in one-fourth of the time taken by the old time wrench. The thumb piece also is a palm rest, which gives a better hold of the wrench, resulting in better work and fewer broken taps. Note the extra lengths in which these are supplied. Every tool room should have a set.

Capacity $\frac{1}{8}$ to $\frac{1}{4}$ inch
No. 4, $2\frac{3}{4}$ inches long Each \$.40
No. 4A, $6\frac{1}{4}$ inches long75

Capacity $\frac{1}{8}$ to $\frac{1}{4}$ inch
No. 5, $3\frac{1}{2}$ inches long \$ 50
No. 5A, 7 inches long90
No. 5B, 13 inches long 1.00

Capacity $\frac{3}{16}$ to $\frac{1}{2}$ inch
No. 6, $4\frac{5}{8}$ inches long \$1.00
No. 6A, $7\frac{1}{4}$ inches long 1.50
No. 6B, $13\frac{1}{4}$ inches long 1.60

Pulley

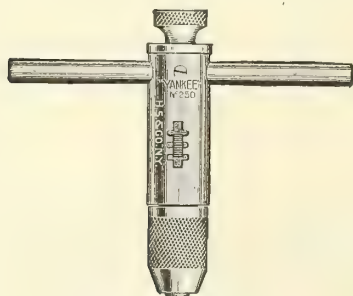
No. 5X 13 inches long, capacity $\frac{1}{8}$ to $\frac{1}{4}$ inch.....Each \$1.00
No. 6X $13\frac{1}{4}$ inches long, capacity $\frac{3}{16}$ to $\frac{7}{16}$ inch.....Each 1.60



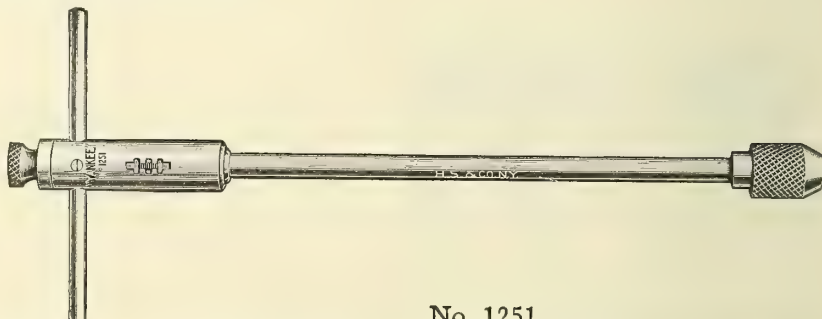
Ratchet

Yankee

Right and Left Hand, and Rigid



Nos. 250 and 251



No. 1251

The distinguishing features are its adaptability, convenience, and efficiency for working in close quarters, corners, and inaccessible places.

With the shifter at top, ratchet is left hand; at bottom, right hand; in center, rigid, as ordinary Tap Wrench.

The crossbar is held central by a friction device and of ample leverage for even larger taps than the chuck will hold.

A knurled thumb piece at top of Wrench affords a ready means of starting in and backing out the tap quickly. In the end of this thumb piece is a countersunk hole to use Tap Wrench on lathe center when desired.

The cross arm can be readily withdrawn, so that little room is taken up in tool chest or drawer.

Particularly suitable in holding small drills for use on lathe centers.

The ratchet and pawls are made of tool steel, hardened and tempered. The chuck has hardened steel jaws. All parts of tool are made of steel and polished.

No. 250. Holds up to $\frac{1}{8}$ inch Taps; outside diameter of chuck, $\frac{3}{4}$ inch; length over all, $3\frac{1}{4}$ inches Each \$1.25

No. 251 Holds up to $\frac{5}{16}$ inch Taps, outside diameter of chuck, $\frac{3}{8}$ inch; length over all, 5 inches Each \$1.75

No. 1251 Same as No. 251, except length over all is 13 inches for work in steel cars, etc., and where long reach is necessary Each \$2.25

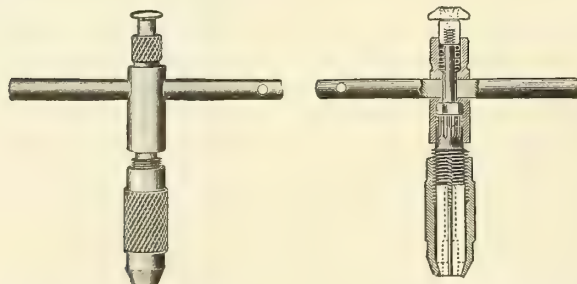
Alert

This wrench can be quickly changed from a solid to a right and left, turning too without the inconvenience of adjusting by pin or pawl. The change is made by simply pressing a swivel button with the thumb or palm. When this button is released the wrench again becomes a solid tool. The cross bar is drilled both through the center and on extreme end. This feature, with the ratchet arrangement, makes it possible to do tapping operations in corners and out-of-the way places.

Another excellent feature is the knurled upper sleeve, for quick backing out.

The push button is centered, for tapping on a lathe. The wrenches carefully made, hardened, tempered and inspected.

No. 1	Capacity $\frac{1}{16}$ to $\frac{3}{16}$ inch taps	Each \$1.25
No. 2	Capacity $\frac{1}{8}$ to $\frac{1}{4}$ inch taps	Each 1.25
No. 3	Capacity $\frac{3}{16}$ to $\frac{7}{16}$ inch taps	Each 1.50



Wrenches or Holders for Taps, Reamers or Drills

Horsefield Patent Tap and Reamer

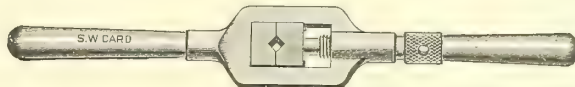


Card No. 208

These Wrenches are drop-forged from bar steel, have hardened tool steel jaws, and are light, strong and durable. In workmanship, style and finish they are unexcelled.

Number	Length, Inches	Holding Taps	Each
6	7	$\frac{1}{16}$ to $\frac{1}{4}$	\$1.50
7	11	$\frac{3}{16}$ to $\frac{1}{2}$	2.00
8	15	$\frac{1}{4}$ to $\frac{3}{4}$	2.50
9	20	$\frac{3}{8}$ to 1	3.50
10	30	$\frac{3}{4}$ to $1\frac{1}{2}$	7.00
12	40	$1\frac{1}{4}$ to $2\frac{1}{4}$	16.00

Adjustable Tap



Card No. 206

Number	Length, Inches	Holding Taps	Each
0	5	$\frac{1}{16}$ to $\frac{3}{16}$	\$1.00
1	$7\frac{1}{2}$	$\frac{1}{8}$ to $\frac{3}{8}$	1.50
$1\frac{1}{2}$	$9\frac{1}{2}$	$\frac{3}{16}$ to $\frac{1}{2}$	2.00
2	12	$\frac{1}{4}$ to $\frac{5}{8}$	2.00
3	14	$\frac{1}{2}$ to $\frac{3}{4}$	3.00
4	19	$\frac{3}{4}$ to $1\frac{1}{8}$	4.00
5	24	$\frac{7}{8}$ to $1\frac{1}{2}$	5.25

Adjustable Tap and Reamer



Morse No. 156

Style of No. 0

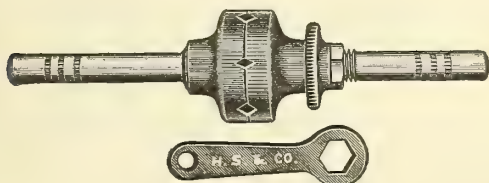


Morse No. 155

Style of all sizes from No. 1 up

Size	Length Over All Inches	Fitting Taps Inches Inclusive	Fitting Reamers Inches Inclusive	Fitting Squares Inches Inclusive	Each
No. 0	$5\frac{1}{8}$	$\frac{1}{16}$ to $\frac{1}{4}$	$\frac{1}{8}$ to $\frac{11}{32}$	$\frac{1}{16}$ to $\frac{3}{16}$	\$1.60
No. 1	6	$\frac{1}{16}$ to $\frac{5}{16}$	$\frac{1}{8}$ to $\frac{15}{32}$	$\frac{1}{16}$ to $\frac{1}{4}$	2.00
No. 2	$8\frac{1}{2}$	$\frac{1}{8}$ to $\frac{9}{16}$	$\frac{3}{16}$ to $\frac{5}{8}$	$\frac{1}{8}$ to $\frac{5}{16}$	2.50
Style A	$12\frac{3}{4}$	$\frac{1}{4}$ to $\frac{13}{16}$	$\frac{1}{4}$ to $\frac{11}{16}$	$\frac{3}{16}$ to $\frac{7}{16}$	3.00
Style B	$17\frac{1}{8}$	$\frac{1}{2}$ to $1\frac{1}{8}$	$\frac{3}{8}$ to $1\frac{11}{32}$	$\frac{1}{4}$ to $\frac{3}{4}$	4.00
Style C	23	$\frac{3}{4}$ to $1\frac{5}{8}$	$\frac{11}{16}$ to $1\frac{21}{32}$	$\frac{7}{16}$ to 1	5.00
Style D	$45\frac{1}{4}$	$1\frac{1}{4}$ to $2\frac{1}{16}$	$1\frac{1}{16}$ to $2\frac{1}{16}$	$\frac{3}{4}$ to $1\frac{1}{4}$	15.00
Style E	50	$1\frac{3}{4}$ to $2\frac{1}{2}$	$1\frac{7}{16}$ to $2\frac{1}{2}$	1 to $1\frac{5}{8}$	47.50
Style F	56	$2\frac{1}{8}$ to $3\frac{1}{8}$	$2\frac{1}{8}$ to 3	$1\frac{1}{4}$ to 2	62.50

Turret Head Tap and Drill



Holds drills from No. 50 to $\frac{1}{4}$ inch. Taps from $\frac{1}{16}$ to $\frac{1}{2}$ inch.

This tool has six sizes of milled square holes, ranging from $\frac{1}{16}$ to $\frac{1}{2}$ inch square. Turret head is 1 inch in diameter, of hardened tool steel.

The holes being diametrically opposite, a center for truing drills or taps is available.

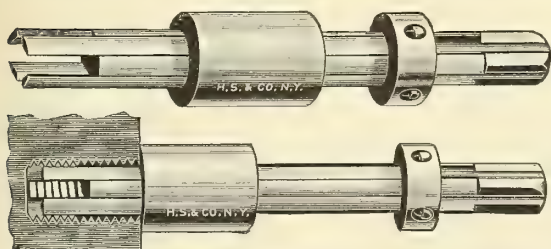
No. 133 With Wrench Each \$1.80

Tap Extractors

Walton

For Removing Broken Taps

This tool is a device for removing taps broken at or below the surface of the work. The broken tap is removed easily and quickly, and without injury to the thread.



Nominal Size of Tap	Each	Nominal Size of Tap	Each
No. 8	\$1.50	$\frac{1}{2}$	\$1.85
$\frac{3}{16}$	1.50	$\frac{9}{16}$	2.00
No. 10	1.50	$\frac{5}{8}$	2.20
No. 12	1.55	$\frac{3}{4}$	2.45
$\frac{1}{4}$	1.55	$\frac{7}{8}$	2.75
$\frac{5}{16}$	1.60	1	3.10
$\frac{3}{8}$	1.60	$1\frac{1}{8}$	3.50
$\frac{7}{16}$	1.70	$1\frac{1}{4}$	4.00

These tools can of course be used for equivalent gauge or fractional sizes, and for intermediate sizes to the next listed tool larger.

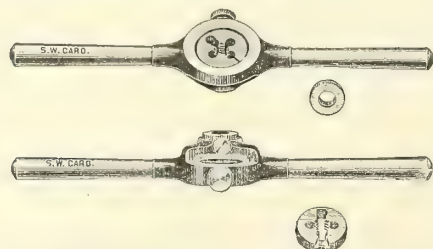
Die Holders

Diamond Die Stocks
Holding Round Solid and Round Adjustable Dies



Length Inches	Outside Diameter of Die Inches	Each
3 1/4	7/16	\$.40
5	5/8	.40
7	13/16	.50
9	1	1.00
14	1 5/16	1.25
18	1 1/2	1.25
18	1 9/16	1.50
23	1 3/4	1.50
29	2 1/4	1.75

Improved Die Stocks
Holding Round Solid and Round Adjustable Dies

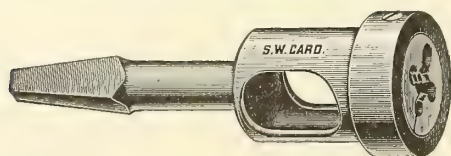


Length Inches	Outside Diameter of Die Inches	Each
7	13/16	\$1.00
10 1/2	1	1.50
14	1 5/16	2.00
23	1 3/4	2.25
29	2 1/4	2.50

Guides for Improved Screw Plate Stocks

	Each
For Dies, outside diameter 1 1/8 inches.....	\$.15
For Dies, outside diameter, 1 inch.....	.25
For Dies, outside diameter, 1 5/16 inches.....	.30
For Dies, outside diameter, 1 3/4 inches.....	.40
For Dies, outside diameter, 2 1/4 inches.....	.50

Bit Brace Die Holders

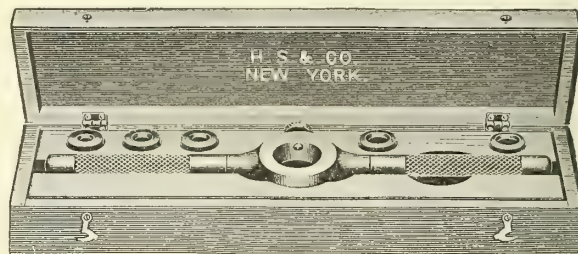


Card No. 802

No. 1. Holding Round Adjustable Dies, five-eighths of an inch in diameter.....	Each \$.50
No. 2. Holding Smith Patent Adjustable Dies, thirteen-sixteenths of an inch in diameter.....	.50
No. 3. Holding Smith Patent Adjustable Dies, one inch in diameter.....	.75

Prices are for Holders only

Improved Round Die Stocks
Guides for Each Cutting Size



Card No. 303

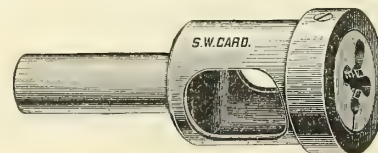
Assorted Numbers	Length Stock Inches	Diameter Die Stock Holders Inches	Range of Steel Guides	Stock and Guides
Machine Screw Sizes				
50 S	7	13/16	4, 6, 8, 10, 12, 14.....	\$1.90
51 S	7	13/16	4, 6, 8, 10, 12, 14, 16, 18.....	2.20
52 S	7	13/16	2, 3, 4, 6, 8, 10, 12, 14.....	2.20
53 S	7	13/16	2, 3, 4, 6, 8, 10, 12, 14, 16, 18.....	2.50
60 S-2	10 1/2	1	4, 6, 8, 10, 12, 14, 16, 18.....	3.50
Fractional Size V, U. S. S. or Whitworth				
54 S	7	13/16	1/8, 5/32, 3/16, 7/32, 1/4.....	1.75
55 S	7	13/16	1/8, 5/32, 3/16, 7/32, 1/4, 5/16.....	1.90
60 S	10 1/2	1	3/16, 1/4, 5/16, 3/8, 7/16.....	2.75
70 S	14	1 5/16	1/4, 5/16, 3/8, 7/16, 1/2.....	3.50
80 S	23	1 3/4	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4.....	5.00
90 S	29	2 1/4	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1.....	7.00
90 S-2	10 1/2-29	1-2 1/4	3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1.....	8.25

No Dies or Taps are furnished with these assortments.

Each Stock furnished with an assortment of Steel Guides within the range limits of the Dies Stock is intended to hold. Stock and Guides complete in hardwood hinged cover box. Everything in its place.

Lathe Die Holders

For Use in Lathe or Turret of Screw Machine



Card No. 801

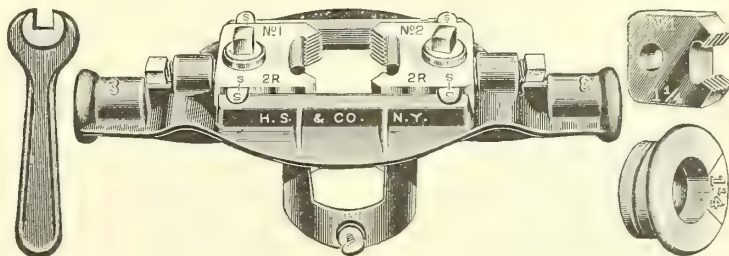
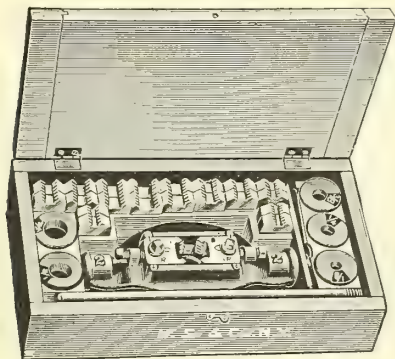
No. 1. Holding Round Adjustable Dies, five-eighths of an inch in diameter.....	Each \$.50
The Shanks of the No. 1 Holders are one-half inch in diameter.	
No. 1 1/2. Holding Smith Patent Adjustable Dies, thirteen-sixteenths of an inch in diameter.....	.50
The Shanks of the No. 1 1/2 Holders are one-half, nine-sixteenths, and eleven-sixteenths of an inch in diameter.	
No. 2. Holding Smith Patent Adjustable Dies, one inch in diameter.....	.75
The Shanks of the No. 2 Holders are one-half, nine-sixteenths, and eleven-sixteenths of an inch in diameter.	
No. 3. Holding Smith Patent Adjustable Dies, one and five-sixteenths inches in diameter.....	1.50
The Shanks of the No. 3 Holders are eleven-sixteenths, three-quarters, and thirteen-sixteenths of an inch in diameter.	
No. 4. Holding Smith Patent Adjustable Dies, one and nine-sixteenths inches in diameter.....	2.75
The Shanks of the No. 4 Holders are three-quarters, thirteen-sixteenths, and one inch in diameter.	
No. 5. Holding Smith Patent Adjustable Dies, two and one-quarter inches in diameter.....	4.00
The Shanks of the No. 5 Holders are one and one-sixteenth, one and one-eighth, and one and one-quarter inches in diameter.	

Prices are for Holders only.

When ordering mention size shank desired.

Adjustable Pipe Stocks and Dies

Genuine Armstrong

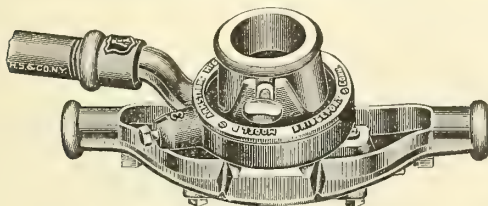


Number	Number of Dies	Cutting Pipe Inches	Complete	Extra Stock	Extra Dies	Extra Bushings	Extra Wrenches	Collar Screws	Adjusting Screws	Thumb Screws	Handles Set	Long Guide	Leader Screw
*1	4 Right	1/8 to 1/2	\$9.00	\$3.25	\$1.25	\$.20	\$.25	\$.12	\$.10	\$.10	\$.30		
1	4 each Right and Left	1/8 to 1/2	14.00	3.25	1.25	.20	.25	.12	.10	.10	.30		
*2	5 Right	1/4 to 1	12.00	4.00	1.50	.25	.25	.12	.10	.10	.50	\$.50	
2	6 Right	1/8 to 1	14.00	4.00	1.50	.25	.25	.12	.10	.10	.50	.50	
2	5 each Right and Left	1/4 to 1	20.00	4.00	1.50	.25	.25	.12	.10	.10	.50	.50	
2	6 each Right and Left	1/8 to 1	23.00	4.00	1.50	.25	.25	.12	.10	.10	.50	.50	
*2 1/2	4 Right	1/2 to 1 1/4	12.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
2 1/2	6 Right	1/4 to 1 1/4	18.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
2 1/2	4 each Right and Left	1/2 to 1 1/4	18.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
2 1/2	6 each Right and Left	1/4 to 1 1/4	23.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
*3	3 Right	1 1/4 to 2	20.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	4 Right	1 to 2	24.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	5 Right	3/4 to 2	28.50	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	6 Right	1/2 to 2	33.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	3 each Right and Left	1 1/4 to 2	32.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	4 each Right and Left	1 to 2	40.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	5 each Right and Left	3/4 to 2	48.50	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	6 each Right and Left	1/2 to 2	57.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
*6	2 Right	2 1/2 and 3	40.00	25.00	15.00	1.00	.50	.25	.20	.15	3.00	.....	\$4.00
6	2 each Right and Left	2 1/2 and 3	55.00	25.00	15.00	1.00	.50	.25	.20	.15	3.00	.....	4.00
*7	4 Right	2 1/2 to 4	60.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 Right	2 1/2 and 3	45.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 Right	3 1/2 and 4	45.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	4 each Right and Left	2 1/2 to 4	92.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 each Right and Left	2 1/2 and 3	60.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 each Right and Left	3 1/2 and 4	60.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00

Sets marked * will be supplied unless otherwise specified.

Ratchet Attachments

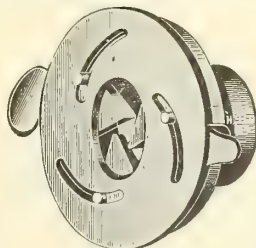
For Armstrong Pipe Stocks



For No. 2 Stock.....	Each \$2.50
For No. 2 1/2 Stock.....	3.00
For No. 3 Stock.....	3.50
For No. 6 Stock.....	5.00
For No. 7 Stock.....	5.00

Bard Adjustable Bushings

For Armstrong Pipe Stocks



For No. 1 Stock.....	Each \$4.50
For No. 2 Stock.....	5.00
For No. 2 1/2 Stock.....	6.00
For No. 3 Stock.....	8.00

Nye Skip Tooth Dies

For Armstrong Pipe Stocks

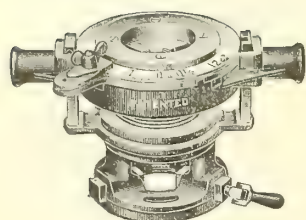
These Dies are made from a solid block of the finest steel obtainable and are warranted free from all defects in material or workmanship. They are made under the Nye skin tooth patent and are the easiest cutting Pipe Dies on the market.



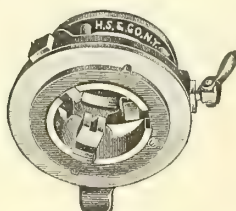
1/8 inch to 1/2 inch to fit No. 1 stock.....	Each \$3.50
1/8 inch to 1 inch to fit No. 2 stock.....	3.50
1/2 inch to 1 1/4 inch to fit No. 2 1/2 stock.....	5.00
1/2 inch x 3/4 D. E. inch to fit No. 2 1/2 stock.....	5.00
1 inch x 1 1/4 D. E. inch to fit No. 2 1/2 stock.....	5.00
1 1/2 inch to 2 inch to fit No. 3 stock.....	5.00
2 1/2 inch x 3 D. E. inch to fit No. 6 stock.....	25.00
3 1/2 inch x 4 D. E. inch to fit No. 7 stock.....	35.00

Pipe Die Stocks

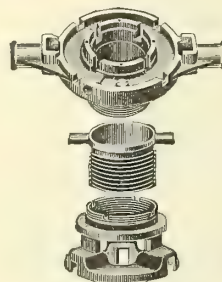
Beaver



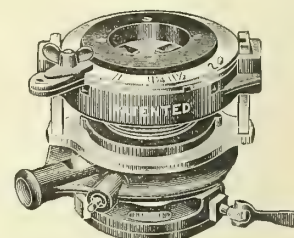
No. 25. 1 to 2 inches



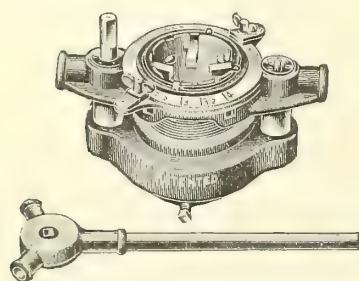
Universal Chuck



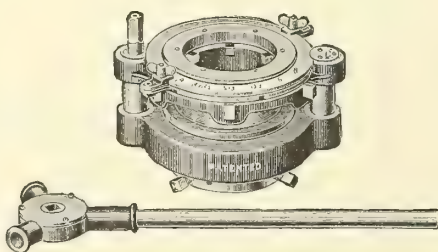
Detachable Barrel



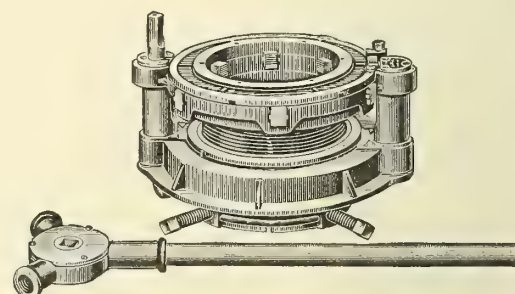
No. 26. 1 to 2-inch Ratchet



No. 41. 2½ to 4 inches



No. 60. 2½ to 6 inches



No. 80. 4½ to 8 inches

These Die Stocks have narrow receding dies, making it possible for one man to cut any size of pipe. They are adjustable for cutting over and under size threads.

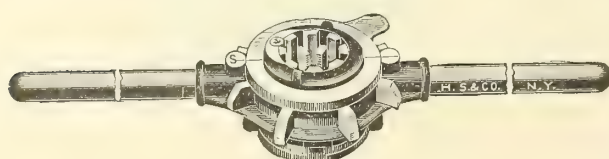
Nos. 25, 26 and 41 thread all sizes with one set of dies (no changing); No. 60 uses two sets (2½, 3, 3½) and (4, 4½, 5, 6); No. 80 two sets (4½, 5, 6), and (7, 8); Nos. 25 and 26 are furnished with a universal

chuck which centers and grips all sizes by simply turning a cam, insuring straight threads and doing away with all loose bushings and grip screws.

Nos. 25 and 26 have detachable barrels or lead screws, and in case of wear are easily replaced.

Number.....	25	26	41	60	80
Threads Pipe, right hand, inches	1 to 2	1 to 2	2½ to 4	2½ to 6	4½ to 8
Shipping Weight, pounds	25	30	100	200	230
Complete Stock	\$30.00	\$35.00	\$110.00	\$220.00	\$300.00
Extra Dies, per set	3.50	3.50	9.00	14.00	20.00

Beaverette



No. 6. ¼ to ¾ inch

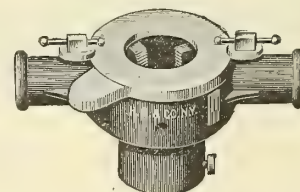
These Stocks thread four sizes of pipe, of two different pitches without changing dies. Two sets of dies, each threading two sizes, are held in the Stock. Both are operated by a single cam so as to retire one set while the other is being adjusted to the desired size. The dies are of the wide non-receding type. A three-jaw centering device does away with all loose bushings.

No. 6. Threads ¼, ⅜, ½ and ¾ inch complete, \$15.00.

Extra Dies, ⅛ (¼-⅜), (½-¾), (R. or L), per single set, \$3.00.

Net weight 8 pounds.

Warren



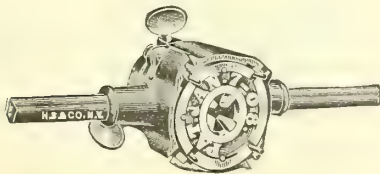
Especially adapted for threading electric conduit pipe

These Stocks thread two sizes of pipe with one set of dies. They are strong and simple in construction, made entirely of steel and malleable iron. The dies are of the wide non-receding type. Furnished with right or left hand dies, as ordered. Dies are adjustable to cut over and under size threads.

Number	Threading, Inch	Complete	Extra Dies
120	¼ and ⅜	\$6.50	\$1.50
121	½ and ¾	7.00	1.60
122	1 and 1¼	8.00	2.00
123	1½ and 2	10.00	2.50

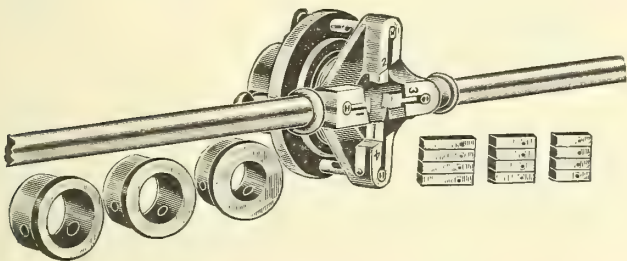
Toledo Pipe Threading Devices

Adjustable



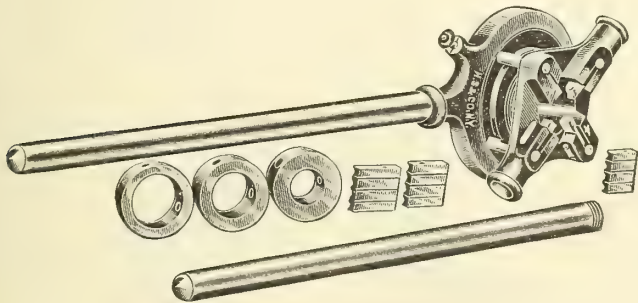
No. 0 threads 1/8 to 3/4-inch pipe, utilizing three sets of Dies, one set threads 1/8-inch pipe, another the 1/4 and 3/8 inch, and the third set 1/2 and 3/4 inch. The tool is light and compact, and measures 26 inches between tips of handles. Left Hand Dies for 1/2 inch and 3/4 inch sizes only, can be supplied. Weight 6 1/2 pounds.

No. 0, 1/8 to 3/4 inch inclusive, complete	\$16.00
Extra Dies, right hand, single set	2.50
Extra Dies, right hand, complete set	7.50



With a No. 1 device, one man can thread 2-inch pipe easily with one hand. A separate set of Dies is used for each size of pipe. The tool is compact and weighs 17 pounds.

No. 1, 1 to 2 inches inclusive, complete	\$24.00
Extra Dies, right hand, single set	2.50
Extra Dies, right hand, complete set	10.00



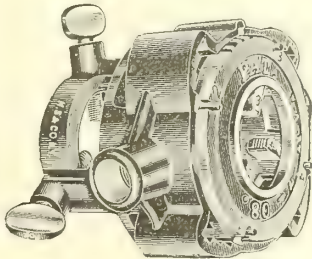
No. 1A device is adapted for threading pipe in restricted places, otherwise inaccessible. The tool is the same as the No. 1, except it has ratchet attachment.

No. 1A, 1 to 2 inches inclusive, complete	\$30.00
Extra Dies, right hand, single set	2.50
Extra Dies, right hand, complete set	10.00

Left Hand Devices

Both the No. 1 and No. 1A devices can be furnished (reversed in all their parts) for cutting left hand threads only. Neither tool will do both.

Adjustable

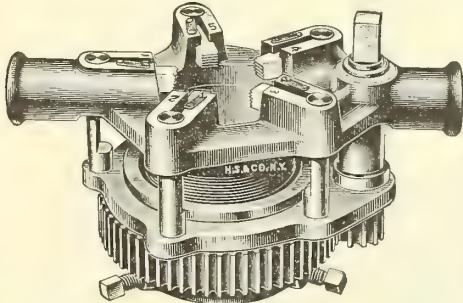


No. 10 tool will thread four sizes of pipe, from 1 to 2 inches, with one set of Dies. Entirely self-contained, there being no loose parts. Micrometer thumb screws enable the operator to center the tool on the pipe without bushings. Left hand Dies can be furnished, but require a separate set for each size of pipe, or four sets to thread the four sizes from 1 to 2 inch pipe. Tool weighs 17 pounds.

No. 10, 1 to 2 inches inclusive, right hand, complete	\$28.00
Extra Dies, right hand, per set	2.75
Extra Dies, left hand, single set	2.75
Extra Dies, left hand, complete set	11.00

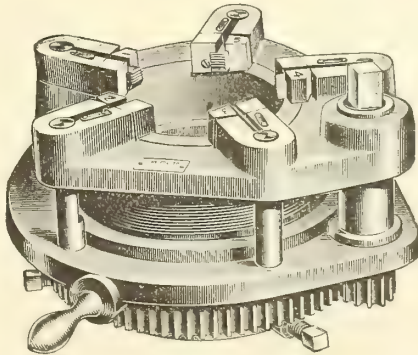
No. 10A is the same as the No. 10, except with ratchet attachment
No. 10A Complete 34.00

Geared Adjustable



No. 2 has a capacity of 2 1/2 to 4-inch pipe. With it one man can cut 4-inch threads easily. Tool is operated by ratchet handle or driving cross. Compact and portable. Weighs 80 pounds.

No. 2, 2 1/2 to 4 inches, complete	\$100.00
Extra Dies, right hand, single set	8.00
Extra Dies, right hand, complete set	32.00



No. 3 threads 8-inch pipe with such ease that one man can operate it. The tool is compact and portable. Its net weight is 155 pounds. With clearance in other directions it may be operated on a pipe, the center of which is within 10 inches of a wall or other obstruction.

No. 3, 4 1/2 to 8 inches, inclusive, complete	\$300.00
Extra Dies, right hand, single set	12.00
Extra Dies, right hand, complete set	60.00

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

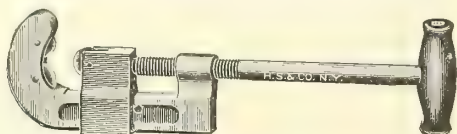
Pipe Cutters



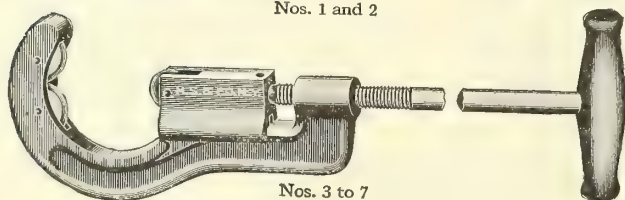
Genuine Saunders, Wheel and Roller

Number.....	1	2	3	4	5
Cuts pipe from, inches.....	$\frac{1}{8}$ to 1	1 to 2	2 to 3	$2\frac{1}{2}$ to 4	4 to 6
Each.....	\$3.00	4.50	11.00	18.00	28.00
Extra wheels or cutters, each....	.24	.32	.60	.60	.60
Extra rollers, each.....	.24	.32	.50	.50	.60

Barnes Improved Three Wheel

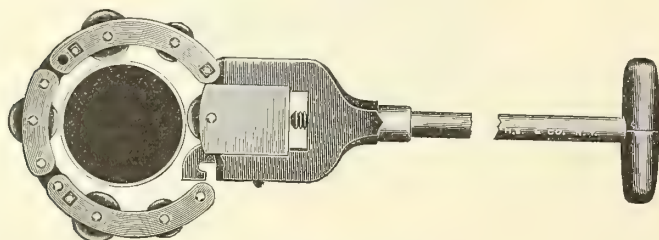


Nos. 1 and 2



Nos. 3 to 7

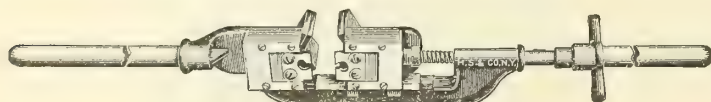
Number.....	1	2	3	4	5	6	7
Cuts pipe from, inches.....	$\frac{1}{8}$ to 1	$\frac{1}{2}$ to 2	$1\frac{1}{2}$ to 3	$2\frac{1}{2}$ to 4	4 to 6	6 to 8	9 to 12
Each.....	\$4.50	6.00	10.00	20.00	30.00	40.00	50.00
Extra cutters, each.....	.25	.30	.40	.50	.75	.75	.75



Hall Patent

For cutting Cast Iron or Soil Pipe

Number.....	1	2	3
Cuts cast iron pipe, inches.....	4, 6, 8	10, 12, 14	16, 18, 20, 24
Cutters complete, each.....	\$25.00	\$34.00	\$50.00
Extra loops, with wheels, each.....	7.00	8.25	10.00
Block with wheel, each.....	.95	1.00	1.25
Wheels, each.....	.23	.26	.26
Spindle with handle, each.....	.70	1.00	1.60
Extra bolts for loops, each.....	.12	.12	.14

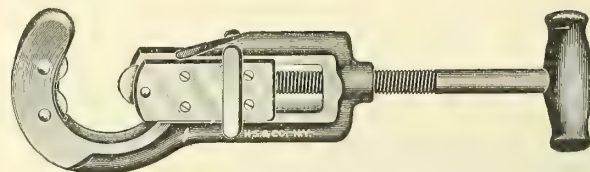


Beaver, "Square End"

They cut the pipe off square and clean, leaving no burrs to ream or file, and preserve the full pipe opening, and make square ends on which threading dies start easier, last longer and run straight.

Automatic feed. Simply pull on the handles same as a Die Stock. The form of the knives regulates the depth of cut. Quicker and easier than a wheel cutter and you cannot split or crush the pipe.

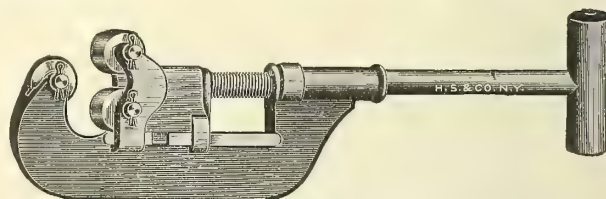
No.	Size Inches	Complete Tool (with two sets Extra Knives)	Shipping Weight Pounds	Extra Set Knives
1	$\frac{1}{8}$ to 1	\$18.00	8	\$1.20
5	$\frac{1}{2}$ to 2	20.00	13	1.50
10	$2\frac{1}{2}$ to 4	90.00	53	2.50



Genuine Armstrong Improved

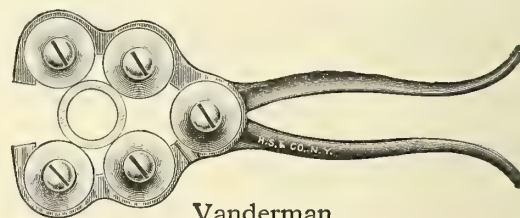
The Armstrong Cutter has a very large holding or cutting capacity. With each cutter is furnished two rollers to take the place of the two wheels in the hook, so that the cutter can be used as a single wheel or three-wheel cutter.

Number.....	1B	2B	3B
Cuts pipe from, inches.....	$\frac{1}{8}$ to $1\frac{1}{4}$	$\frac{1}{2}$ to $2\frac{1}{2}$	$1\frac{1}{2}$ to 4
Each.....	\$4.50	6.00	15.00
Extra cutter wheels.....	.25	.30	.50
Extra rollers.....	.25	.30	.50



Trimmo

Number.....	1	2	3
Cuts pipe from, inches.....	$\frac{1}{8}$ to $1\frac{1}{4}$	$\frac{1}{2}$ to 2	$1\frac{1}{4}$ to 3
Each.....	\$4.50	6.00	10.00
Extra wheels or cutters, each.....	.30	.30	.40
Extra rollers, each.....	.30	.30	.40
Extra frames, each.....	2.25	2.50	3.50
Extra handles, each.....	.35	.35	.35
Extra handle screws, each.....	1.00	1.25	2.00



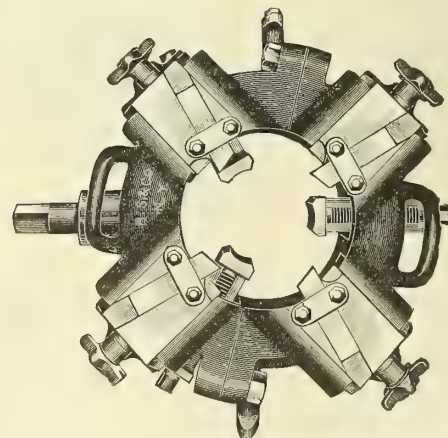
Vanderman

For cutting Lead Pipe

Cuts quickly and smoothly and makes no chips

Nickel-plated, each, \$1.25 Japanned, each, \$1.00

Extra Cutter Wheels, per set 25 cents



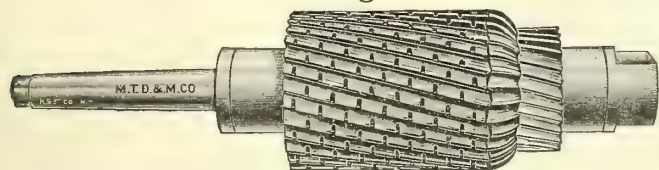
Toledo No. 250

The cutting is done by four knives automatically fed by star feed. Will cut pipe perfectly square without a burr. The knives are of uniform section and can be re-ground. The cutter can, if necessity demands, be split in two to go on pipe that is set up.

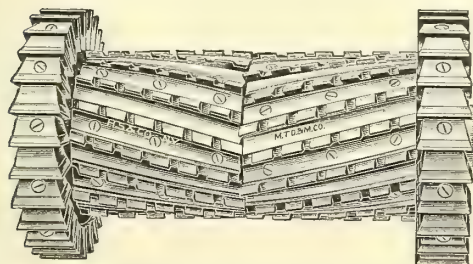
With ratchet attachment, each... \$80.00

Milling Cutters

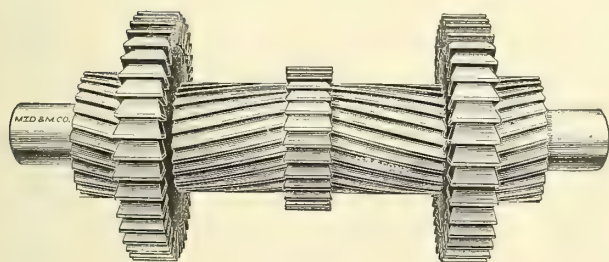
Gang



One with Nicked Teeth



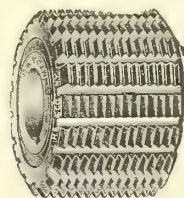
Spiral and Side Cutters
With Inserted Teeth



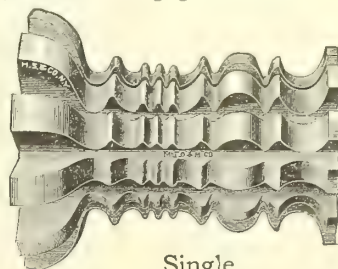
Spiral and Side Cutters

Formed

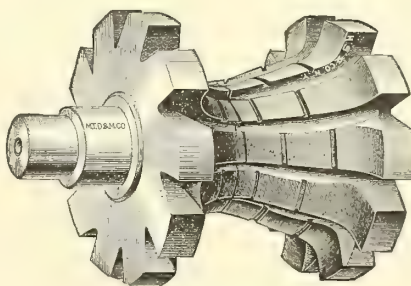
These Cutters can be sharpened without changing their form



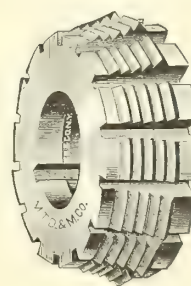
Single



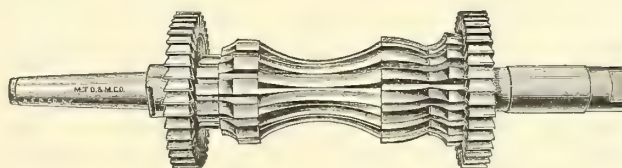
Single



Single



Single



Gang

Table of Cutting Speeds

Diameter Inches	Feet Per Minute									
	5	10	15	20	25	30	35	40	45	50
	Revolutions Per Minute									
1/2	38.2	76.4	114.6	152.9	191.1	229.3	267.5	305.7	344.0	382.2
5/8	30.6	61.2	91.8	122.5	153.1	183.7	214.3	244.9	275.5	306.1
3/4	25.4	50.8	76.3	101.7	127.1	152.5	178.0	203.4	228.8	254.2
7/8	21.8	43.6	65.5	87.3	109.1	130.9	152.7	174.5	196.3	218.9
1	19.1	38.2	57.3	76.4	95.5	114.6	133.8	152.9	172.0	191.1
1 1/8	17.0	34.0	51.0	68.0	85.0	102.0	119.0	136.0	153.0	170.0
1 1/4	15.3	30.6	45.8	61.2	76.3	91.8	106.9	122.5	137.4	153.1
1 3/8	13.9	27.8	41.7	55.6	69.5	83.3	97.2	111.1	125.0	138.9
1 1/2	12.7	25.4	38.2	50.8	63.7	76.3	89.2	101.7	114.6	127.1
1 5/8	11.8	23.5	35.0	47.0	58.8	70.5	82.2	93.9	105.7	117.4
1 3/4	10.9	21.8	32.7	43.6	54.5	65.5	76.4	87.3	98.2	109.1
1 7/8	10.2	20.4	30.6	40.7	50.9	61.1	71.3	81.5	91.9	101.9
2	9.6	19.1	28.7	38.2	47.8	57.3	66.9	76.4	86.0	95.5
2 1/4	8.5	17.0	25.4	34.0	42.4	51.0	59.4	68.0	76.2	85.0
2 1/2	7.6	15.3	22.9	30.6	38.2	45.8	53.5	61.2	68.8	76.3
2 3/4	6.9	13.9	20.8	27.8	34.7	41.7	48.6	55.6	62.5	69.5
3	6.4	12.7	19.1	25.5	31.8	38.2	44.6	51.0	57.3	63.7
3 1/2	5.5	10.9	16.4	21.8	27.3	32.7	38.2	43.6	49.1	54.5
4	4.8	9.6	14.3	19.1	23.9	28.7	33.4	38.2	43.0	47.8
4 1/2	4.2	8.5	12.7	16.9	21.2	25.4	29.6	34.0	38.1	42.4
5	3.8	7.6	11.5	15.3	19.1	22.9	26.7	30.6	34.4	38.2
5 1/2	3.5	6.9	10.4	13.9	17.4	20.8	24.3	27.8	31.3	34.7
6	3.2	6.4	9.6	12.7	15.9	19.1	22.3	25.5	28.7	31.8
7	2.7	5.5	8.1	10.9	13.6	16.4	19.1	21.8	24.6	27.3

The above table will be convenient for finding the number of revolutions per minute required to give a periphery speed from 5 to 50 feet per minute of diameters from 1/2 to 30 inches.

Examples: A mill 2 inches in diameter to have a periphery speed of 35 feet per minute, should make about 67 revolutions, while a 1 1/4-inch mill should make 120 revolutions to have the same periphery speed. If a 3/4-inch mill makes 250 revolutions per minute, the periphery speed is about 50 feet.

For Standard Keyways and suggestions see Index.

Diameter Inches	Feet Per Minute									
	5	10	15	20	25	30	35	40	45	50
	Revolutions Per Minute									
8	2.4	4.8	7.2	9.6	11.9	14.3	16.7	19.1	21.1	23.9
9	2.1	4.2	6.4	8.5	10.6	12.7	14.9	17.0	19.1	21.2
10	1.9	3.8	5.7	7.6	9.6	11.5	13.4	15.3	17.2	19.1
11	1.7	3.5	5.2	6.9	8.7	10.4	12.2	13.9	15.6	17.4
12	1.6	3.2	4.8	6.4	8.0	9.6	11.1	12.7	14.3	15.9
13	1.5	2.9	4.4	5.9	7.3	8.8	10.3	11.8	13.2	14.7
14	1.4	2.7	4.1	5.5	6.8	8.1	9.6	10.9	12.3	13.6
15	1.3	2.5	3.8	5.1	6.4	7.6	8.9	10.2	11.5	12.7
16	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.7	11.9
17	1.1	2.2	3.4	4.5	5.6	6.7	7.9	9.0	10.1	11.2
18	1.1	2.1	3.2	4.2	5.3	6.4	7.4	8.5	9.6	10.6
19	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.1	10.1
20	1.0	1.9	2.9	3.8	4.8	5.7	6.7	7.6	8.6	9.6
21	.9	1.8	2.7	3.6	4.5	5.5	6.4	7.3	8.1	9.1
22	.9	1.7	2.6	3.5	4.3	5.2	6.1	6.9	7.8	8.7
23	.8	1.7	2.5	3.3	4.1	5.0	5.8	6.6	7.5	8.3
24	.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0
25	.8	1.5	2.3	3.1	3.8	4.6	5.3	6.1	6.9	7.6
26	.7	1.5	2.2	2.9	3.7	4.4	5.1	5.9	6.6	7.3
27	.7	1.4	2.1	2.8	3.5	4.2	5.0	5.7	6.4	7.1
28	.7	1.4	2.0	2.7	3.4	4.1	4.8	5.5	6.1	6.8
29	.7	1.3	2.0	2.6	3.3	4.0	4.6	5.3	5.9	6.6
30	.6	1.3	1.9	2.5	3.2	3.8	4.5	5.1	5.7	6.4

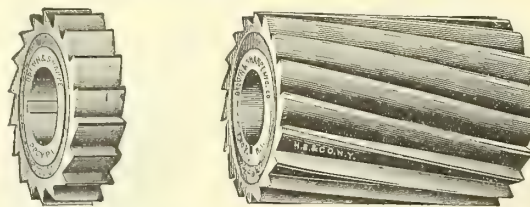
Milling Cutters with coarse teeth, specially adapted for heavy work, made to order at special prices.

Gang or Formed Milling Cutters can be supplied in any combination or shape desired. Prices furnished on receipt of sketch, templet or sample of piece to be milled. Always give diameter of hole and direction in which cutter is to revolve. Above illustrations are suggestive and show specials that have been made.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Milling Cutters



Cutters of $\frac{3}{4}$ inch face and over have teeth of a spiral form. Cutters varying from the following list are made to order of any required size
Brown & Sharpe Nos. M-9 to M-162, Morse Style No. 126

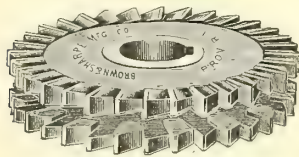
Number	Diameter Inches	Width of Face, Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each	Number	Diameter Inches	Width of Face, Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
M-9	2 $\frac{1}{4}$	$\frac{3}{16}$	$\frac{7}{8}$	\$1.30	\$2.05	M-75	3	1 $\frac{3}{4}$	1 $\frac{1}{4}$	\$4.50	\$8.45
M-10	2 $\frac{1}{4}$	$\frac{1}{2}$	$\frac{7}{8}$	1.75	2.85	M-76	3	2	1 $\frac{1}{4}$	4.70	9.00
M-11	2 $\frac{1}{4}$	1	$\frac{7}{8}$	2.50	4.55	M-77	3	2 $\frac{1}{2}$	1 $\frac{1}{4}$	5.20	10.35
M-12	2 $\frac{1}{4}$	1 $\frac{3}{4}$	$\frac{7}{8}$	3.30	5.80	M-78	3	3	1 $\frac{1}{4}$	5.40	11.20
M-14	2 $\frac{1}{2}$	$\frac{3}{16}$	1	1.30	2.10	M-79	3	3 $\frac{1}{2}$	1 $\frac{1}{4}$	5.90	12.50
M-15	2 $\frac{1}{2}$	$\frac{1}{4}$	1	1.40	2.30	M-80	3	4	1 $\frac{1}{4}$	6.40	13.80
M-16	2 $\frac{1}{2}$	$\frac{5}{16}$	1	1.50	2.55	M-81	3	5	1 $\frac{1}{4}$	7.80	16.90
M-17	2 $\frac{1}{2}$	$\frac{3}{8}$	1	1.60	2.65	M-82	3	6	1 $\frac{1}{4}$	10.80	22.15
M-18	2 $\frac{1}{2}$	$\frac{7}{16}$	1	1.70	2.80	M-83	3 $\frac{1}{2}$	$\frac{3}{16}$	1	1.45	2.65
M-19	2 $\frac{1}{2}$	$\frac{1}{2}$	1	1.80	3.00	M-84	3 $\frac{1}{2}$	$\frac{1}{4}$	1	1.70	3.10
M-20	2 $\frac{1}{2}$	$\frac{5}{8}$	1	1.90	3.20	M-85	3 $\frac{1}{2}$	$\frac{3}{8}$	1	2.05	3.65
M-21	2 $\frac{1}{2}$	$\frac{3}{4}$	1	2.00	3.45	M-86	3 $\frac{1}{2}$	$\frac{1}{2}$	1	2.40	4.25
M-22	2 $\frac{1}{2}$	1	1	2.10	3.55	M-87	3 $\frac{1}{2}$	$\frac{7}{16}$	1	2.75	4.40
M-23	2 $\frac{1}{2}$	1 $\frac{1}{4}$	1	2.20	3.80	M-88	3 $\frac{1}{2}$	$\frac{1}{2}$	1 $\frac{1}{4}$	3.15	5.45
M-24	2 $\frac{1}{2}$	1 $\frac{3}{8}$	1	2.30	4.00	M-89	3 $\frac{1}{2}$	$\frac{3}{4}$	1 $\frac{1}{4}$	3.30	5.75
M-25	2 $\frac{1}{2}$	1 $\frac{1}{2}$	1	2.40	4.15	M-90	3 $\frac{1}{2}$	$\frac{1}{2}$	1 $\frac{1}{4}$	3.45	6.05
M-26	2 $\frac{1}{2}$	1 $\frac{3}{4}$	1	2.60	4.55	M-91	3 $\frac{1}{2}$	$\frac{1}{2}$	1 $\frac{1}{4}$	3.65	6.45
M-27	2 $\frac{1}{2}$	1 $\frac{7}{8}$	1	2.75	4.85	M-92	3 $\frac{1}{2}$	$\frac{3}{4}$	1 $\frac{1}{4}$	3.85	6.80
M-28	2 $\frac{1}{2}$	1 $\frac{1}{2}$	1	2.90	5.15	M-93	3 $\frac{1}{2}$	$\frac{7}{8}$	1 $\frac{1}{4}$	4.35	7.70
M-29	2 $\frac{1}{2}$	1 $\frac{3}{4}$	1	3.10	5.65	M-94	3 $\frac{1}{2}$	1	1 $\frac{1}{4}$	4.75	8.25
M-30	2 $\frac{1}{2}$	1 $\frac{1}{2}$	1	3.40	6.30	M-95	3 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	5.15	9.10
M-31	2 $\frac{1}{2}$	2	1	3.70	6.90	M-96	3 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	5.60	10.00
M-32	2 $\frac{1}{2}$	2 $\frac{1}{4}$	1	3.90	7.35	M-97	3 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{1}{4}$	6.00	11.30
M-33	2 $\frac{1}{2}$	2 $\frac{1}{2}$	1	4.10	7.85	M-98	3 $\frac{1}{2}$	2	1 $\frac{1}{4}$	6.40	12.30
M-34	2 $\frac{1}{2}$	2 $\frac{3}{4}$	1	4.25	8.20	M-99	3 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{4}$	6.90	13.80
M-35	2 $\frac{1}{2}$	3	1	4.50	8.80	M-100	3 $\frac{1}{2}$	3	1 $\frac{1}{4}$	7.40	15.35
M-36	2 $\frac{1}{2}$	3 $\frac{1}{2}$	1	5.00	9.90	M-101	3 $\frac{1}{2}$	3 $\frac{1}{2}$	1 $\frac{1}{4}$	8.15	16.70
M-37	2 $\frac{1}{2}$	4	1	5.50	11.00	M-102	3 $\frac{1}{2}$	4	1 $\frac{1}{4}$	9.15	19.30
M-38	2 $\frac{3}{4}$	$\frac{3}{16}$	1	1.30	2.20	M-103	3 $\frac{1}{2}$	5	1 $\frac{1}{4}$	10.40	22.20
M-39	2 $\frac{3}{4}$	$\frac{1}{4}$	1	1.50	2.50	M-104	3 $\frac{1}{2}$	6	1 $\frac{1}{4}$	11.90	26.30
M-40	2 $\frac{3}{4}$	$\frac{5}{16}$	1	1.60	2.70	M-104A	4	$\frac{1}{4}$	1	2.00	3.80
M-41	2 $\frac{3}{4}$	$\frac{3}{8}$	1	1.80	2.90	M-104B	4	$\frac{5}{16}$	1	2.50	4.55
M-42	2 $\frac{3}{4}$	$\frac{1}{2}$	1	1.85	3.20	M-104C	4	$\frac{3}{8}$	1	3.00	5.35
M-43	2 $\frac{3}{4}$	$\frac{1}{2}$	1	1.90	3.30	M-105	4	$\frac{1}{4}$	1 $\frac{1}{4}$	2.00	3.80
M-44	2 $\frac{3}{4}$	$\frac{5}{16}$	1	2.00	3.55	M-106	4	$\frac{5}{16}$	1 $\frac{1}{4}$	2.50	4.55
M-45	2 $\frac{3}{4}$	$\frac{3}{8}$	1	2.10	3.90	M-107	4	$\frac{3}{8}$	1 $\frac{1}{4}$	3.00	5.35
M-45A	2 $\frac{3}{4}$	$\frac{1}{2}$	1	2.30	4.05	M-108	4	$\frac{7}{16}$	1 $\frac{1}{4}$	3.50	6.15
M-45B	2 $\frac{3}{4}$	$\frac{3}{4}$	1	2.50	4.35	M-109	4	$\frac{1}{2}$	1 $\frac{1}{4}$	3.90	6.85
M-45C	2 $\frac{3}{4}$	$\frac{7}{8}$	1	2.85	4.95	M-110	4	$\frac{1}{2}$	1 $\frac{1}{2}$	3.90	6.85
M-46	2 $\frac{3}{4}$	1	1	3.10	5.35	M-111	4	$\frac{9}{16}$	1 $\frac{1}{4}$	4.10	7.25
M-47	2 $\frac{3}{4}$	1 $\frac{1}{8}$	1	3.25	5.50	M-112	4	$\frac{5}{8}$	1 $\frac{1}{4}$	4.30	7.65
M-48	2 $\frac{3}{4}$	1 $\frac{1}{4}$	1	3.40	6.10	M-113	4	$\frac{1}{2}$	1 $\frac{1}{4}$	4.50	8.05
M-49	2 $\frac{3}{4}$	1 $\frac{1}{2}$	1	3.75	6.80	M-114	4	$\frac{3}{4}$	1 $\frac{1}{4}$	4.70	8.45
M-50	2 $\frac{3}{4}$	1 $\frac{3}{4}$	1	4.00	7.40	M-115	4	$\frac{3}{4}$	1 $\frac{1}{2}$	4.70	8.45
M-51	2 $\frac{3}{4}$	2	1	4.20	7.95	M-116	4	$\frac{7}{8}$	1 $\frac{1}{4}$	5.15	9.30
M-52	2 $\frac{3}{4}$	2 $\frac{1}{2}$	1	4.60	9.00	M-117	4	1	1 $\frac{1}{4}$	5.65	10.25
M-53	2 $\frac{3}{4}$	3	1	5.00	10.00	M-118	4	1	1 $\frac{1}{2}$	5.65	10.25
M-54	2 $\frac{3}{4}$	3 $\frac{1}{2}$	1	5.50	11.20	M-119	4	1 $\frac{1}{4}$	1 $\frac{1}{4}$	6.25	11.60
M-55	2 $\frac{3}{4}$	4	1 $\frac{1}{4}$	6.00	12.65	M-120	4	1 $\frac{1}{4}$	1 $\frac{1}{2}$	6.25	11.60
M-56	2 $\frac{3}{4}$	5	1 $\frac{1}{4}$	7.40	15.30	M-121	4	1 $\frac{1}{2}$	1 $\frac{1}{4}$	6.65	12.70
M-57	2 $\frac{3}{4}$	6	1 $\frac{1}{4}$	10.00	19.80	M-122	4	1 $\frac{1}{2}$	1 $\frac{1}{2}$	6.65	12.70
M-61	3	$\frac{3}{16}$	1	1.35	2.35	M-123	4	1 $\frac{3}{4}$	1 $\frac{1}{4}$	7.05	13.70
M-62	3	$\frac{1}{4}$	1	1.60	2.75	M-124	4	1 $\frac{3}{4}$	1 $\frac{1}{2}$	7.05	13.70
M-63	3	$\frac{5}{16}$	1	1.85	3.20	M-125	4	2	1 $\frac{1}{4}$	7.45	14.85
M-64	3	$\frac{3}{8}$	1 $\frac{1}{4}$	2.10	3.55	M-126	4	2	1 $\frac{1}{2}$	7.45	14.85
M-65	3	$\frac{1}{2}$	1 $\frac{1}{4}$	2.25	3.85	M-127	4	2 $\frac{1}{2}$	1 $\frac{1}{4}$	8.40	17.20
M-66	3	$\frac{1}{2}$	1 $\frac{1}{4}$	2.40	4.10	M-128	4	3	1 $\frac{1}{4}$	9.00	19.10
M-67	3	$\frac{9}{16}$	1 $\frac{1}{4}$	2.55	4.40	M-128A	4	3	1 $\frac{1}{2}$	9.00	19.10
M-68	3	$\frac{5}{8}$	1 $\frac{1}{4}$	2.70	4.70	M-129	4	3 $\frac{1}{2}$	1 $\frac{1}{4}$	10.00	21.55
M-69	3	$\frac{11}{16}$	1 $\frac{1}{4}$	2.85	4.95	M-130	4	4	1 $\frac{1}{4}$	11.00	23.95
M-70	3	$\frac{3}{4}$	1 $\frac{1}{4}$	3.00	5.20	M-131	4	4	1 $\frac{1}{2}$	11.00	23.95
M-71	3	$\frac{7}{8}$	1 $\frac{1}{4}$	3.30	5.75	M-132	4	5	1 $\frac{1}{4}$	13.50	28.95
M-72	3	1	1 $\frac{1}{4}$	3.60	6.35	M-133	4	5	1 $\frac{1}{2}$	13.50	28.95
M-73	3	1 $\frac{1}{4}$	1 $\frac{1}{4}$	4.00	7.20	M-134	4	6	1 $\frac{1}{4}$	15.50	34.45
M-74	3	1 $\frac{1}{2}$	1 $\frac{1}{4}$	4.30	7.85						

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In ordering state diameter, width of face, and size of hole desired. For Standard Keyways and suggestions see Index.

Milling Cutters

Interlocking Side



These Cutters are made in pairs and can be adjusted easily for maintaining a standard width of slot.

Brown & Sharpe Nos. S-200 to S-226, Morse Style No. 126 G

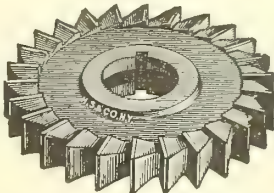
Number	Diameter Inches	Total Width of Face, Inches	Hole Inches	Carbon Steel Pair	High Speed Steel Pair
S-200	2	3/8	1/2	\$3.70	\$6.10
S-201	2	1/2	1/2	4.00	6.50
S-202	2	3/4	1/2	4.40	7.10
S-203	2	5/8	5/8	3.70	6.10
S-204	2	1/2	5/8	4.00	6.50
S-205	2	3/4	5/8	4.40	7.10
S-206	2 1/2	1/2	7/8	4.40	6.60
S-207	2 1/2	3/4	7/8	4.90	7.40
S-208	2 1/2	1	7/8	5.30	8.20
S-209	2 3/4	1 1/2	7/8	4.60	7.10
S-210	2 3/4	3/4	7/8	5.30	8.00
S-211	2 3/4	1	7/8	5.60	8.90
S-212	3	1 1/2	1	4.90	7.70
S-213	3	3/4	1	6.00	9.50
S-214	3	1	1	6.70	10.80
S-215	3 1/2	1 1/8	1	9.10	15.30
S-216	3 1/2	1 1/4	1	9.10	15.30
S-217	4	1 1/4	1	11.10	18.90
S-218	4	1 1/4	7/8	11.10	18.90
S-219	4	1 1/2	1	12.00	20.80
S-220	5	1 1/2	1	12.70	24.90
S-221	5	1 3/4	1	13.80	27.20
S-222	6	1 7/8	1 1/4	17.30	37.10
S-223	6	1 7/8	1 1/2	17.30	37.10
S-224	7	2 1/4	1 1/4	34.50	63.10
S-225	8	2 3/4	1 1/4	46.00	93.30
S-226	8	2 3/4	1 1/2	46.00	93.30

Milling Cutters

Brown & Sharpe Nos. M-9 to M-162, Morse Style No. 126
(Continued from preceding page)

Number	Diameter Inches	Width of Face, Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
M-136	4	6	1 1/2	\$15.50	\$34.45
M-137	4 1/2	3/8	1 3/4	3.35	6.20
M-138	4 1/2	3/8	2	3.35	6.20
M-139	4 1/2	7/16	1 3/4	3.75	6.90
M-140	4 1/2	1/2	2	3.75	6.90
M-141	4 1/2	1/2	1 3/4	4.10	7.50
M-142	4 1/2	1/2	2	4.10	7.50
M-143	4 1/2	9/16	1 3/4	4.40	8.15
M-144	4 1/2	5/8	2	4.40	8.15
M-145	4 1/2	5/8	1 3/4	4.60	8.60
M-146	4 1/2	5/8	2	4.60	8.60
M-147	4 1/2	11/16	1 3/4	4.85	9.10
M-148	4 1/2	11/16	2	4.85	9.10
M-149	4 1/2	3/4	1 3/4	5.10	9.60
M-150	4 1/2	3/4	2	5.10	9.60
M-151	4 1/2	7/8	1 3/4	5.50	10.50
M-152	4 1/2	7/8	2	5.50	10.50
M-153	4 1/2	1	1 3/4	6.00	11.55
M-154	4 1/2	1	2	6.00	11.55
M-155	4 1/2	1 1/4	1 3/4	6.60	13.00
M-156	4 1/2	1 1/4	2	6.60	13.00
M-157	4 1/2	1 1/2	1 3/4	7.25	14.60
M-158	4 1/2	1 1/2	2	7.25	14.60
M-159	4 1/2	1 3/4	1 3/4	8.00	16.30
M-160	4 1/2	1 3/4	2	8.00	16.30
M-161	4 1/2	2	1 3/4	8.75	18.00
M-162	4 1/2	2	2	8.75	18.00

Side



These Cutters are often used in pairs for sizing nuts, bolt heads, etc., and are then called "Straddle Mills." They have teeth upon both sides and edges. Other sizes made to order.

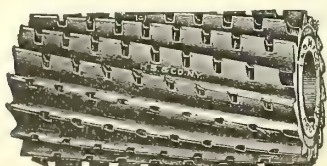
Brown & Sharpe Nos. S-10 to S-54, Morse Style No. 126 B

Number	Diameter Inches	Width of Face Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
S-10	2	3/16	1/2	\$1.85	\$3.05
S-11	2	1/4	1/2	2.00	3.25
S-12	2	3/8	1/2	2.20	3.55
S-13	2	1/2	5/8	1.85	3.05
S-14	2	5/8	5/8	2.00	3.25
S-15	2	3/8	5/8	2.20	3.55
S-16	2 1/2	1/4	7/8	2.20	3.30
S-17	2 1/2	5/16	7/8	2.30	3.60
S-18	2 1/2	3/8	7/8	2.45	3.70
S-19	2 1/2	7/16	7/8	2.55	3.85
S-20	2 1/2	1/2	7/8	2.65	4.10
S-21	2 3/4	1/4	7/8	2.30	3.55
S-22	2 3/4	5/16	7/8	2.50	3.80
S-23	2 3/4	3/8	7/8	2.65	4.00
S-24	2 3/4	1/2	7/8	2.75	4.35
S-25	2 3/4	1/2	7/8	2.80	4.45
S-26	3	1/4	1	2.45	3.85
S-27	3	5/16	1	2.75	4.35
S-28	3	3/8	1	3.00	4.75
S-29	3	7/16	1	3.20	5.10
S-30	3	1/2	1	3.35	5.40
S-31	3 1/2	7/16	1	3.75	5.75
S-32	3 1/2	1/2	1	4.20	6.95
S-33	3 1/2	9/16	1	4.55	7.65
S-34	3 1/2	5/8	1	4.55	7.65
S-35	4	1/2	1	5.10	8.55
S-35A	4	1/2	1 1/4	5.10	8.55
S-36	4	5/8	1	5.55	9.45
S-37	4	5/8	7/8	5.55	9.45
S-38	4	5/8	1 1/4	5.55	9.45
S-39	4	3/4	1	6.00	10.40
S-39A	4	3/4	1 1/4	6.00	10.40
S-40	4	7/8	1	6.50	11.35
S-40A	4	7/8	1 1/4	6.50	11.35
S-41	5	3/4	1	6.35	12.45
S-42	5	3/4	1 1/4	6.35	12.45
S-43	5	7/8	1	6.90	13.65
S-43A	5	7/8	1 1/4	6.90	13.65
S-44	5	1	1	7.80	15.05
S-44A	5	1	1 1/4	7.80	15.05
S-45	6	3/4	1	7.60	15.35
S-45A	6	3/4	1 1/4	7.60	15.35
S-46	6	15/16	1 1/4	8.65	18.55
S-47	6	15/16	1 1/2	8.65	18.55
S-47A	6	1	1	8.65	18.55
S-47B	6	1	1 1/4	8.65	18.55
S-48	7	1	1 1/4	16.10	28.95
S-49	7	1 1/8	1 1/4	17.25	31.55
S-50	8	1	1 1/4	19.55	37.30
S-51	8	1 3/8	1 1/4	23.00	46.65
S-52	8	1 3/8	1 1/2	23.00	46.65
S-53	8	1 3/8	1 3/4	23.00	46.65
S-54	8	1 3/8	2	23.00	46.65

In ordering state diameter, width of face, and size of hole desired. For Standard Keyways and suggestions see index.

Milling Cutters

With Nicked Teeth



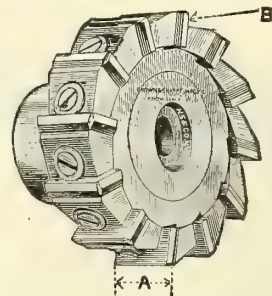
Cutters of this form are especially adapted for the heavier class of milling. The teeth being nicked, the chip is broken up, thus enabling a heavier cut to be taken than would be possible with the ordinary milling cutter

Brown & Sharpe Nos. M-200 to M-239, Morse Style No. 126 L

Number	Diameter Inches	Width of Face Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
M-200	2½	2½	1	\$4.90	\$8.95
M-201	2½	3	1	5.40	10.00
M-202	2½	3½	1	6.00	11.25
M-203	2½	4	1	6.60	12.45
M-204	3	2½	1¼	6.25	11.10
M-205	3	3	1¼	6.50	12.05
M-206	3	3½	1¼	7.10	13.50
M-207	3	4	1¼	7.70	14.90
M-208	3	5	1¼	9.40	17.80
M-209	3	6	1¼	13.00	25.10
M-210	3½	2½	1¼	8.25	15.60
M-211	3½	3	1¼	8.90	17.30
M-212	3½	3½	1¼	9.80	18.90
M-213	3½	4	1¼	11.00	21.55
M-214	3½	5	1¼	12.50	25.00
M-215	3½	6	1¼	14.25	29.45
M-216	4	2½	1¼	10.00	19.35
M-217	4	2½	1½	10.00	19.35
M-218	4	3	1¼	10.80	21.50
M-219	4	3	1½	10.80	21.50
M-220	4	3½	1¼	12.00	24.20
M-221	4	3½	1½	12.00	24.20
M-222	4	4	1¼	13.20	26.90
M-223	4	4	1½	13.20	26.90
M-224	4	5	1¼	16.20	32.55
M-225	4	5	1½	16.20	32.55
M-226	4	6	1¼	18.00	38.45
M-227	4	6	1½	18.60	38.45
M-228	4½	2½	1¾	11.50	22.90
M-229	4½	2½	2	11.50	22.90
M-230	4½	3	1¾	12.75	25.95
M-231	4½	3	2	12.75	25.95
M-232	4½	3½	1¾	14.25	29.00
M-233	4½	3½	2	14.25	29.00
M-234	4½	4	1¾	15.75	34.45
M-235	4½	4	2	15.75	34.45
M-236	4½	5	1¾	18.75	39.45
M-237	4½	5	2	18.75	39.45
M-238	4½	6	1¾	22.25	46.85
M-239	4½	6	2	22.25	46.85

Face Milling Cutters

With Inserted Teeth



Left Hand Cutter

Brown & Sharpe Nos. 1 to 8, Morse Style No. 126 Y

The cut shows a form of Cutter specially adapted for all classes of face milling. The body is of machinery steel provided with a taper hole and keyway and is held firmly in place on the arbor by a screw.

The teeth are of either carbon tool steel, hardened, or of high speed steel; but unless otherwise ordered, are furnished of high speed steel. They are held in place by taper bushings and screws and can thus be easily adjusted or removed. The bushings, screws and teeth are interchangeable.

Number of Mill	Size Inches	Face A	Face B	Number of Taper Hole	Number of Arbor on which Cutter can be used	Carbon Steel Each	High Speed Steel Each
1	5½	2¼	1⅛	10	79 or 80	\$15.00	\$15.00
2	5½	2¼	1⅛	12	81, 82, 84, 85 or 87	15.00	15.00
3	6½	2¼	1⅛	10	79 or 80	17.50	17.50
4	6½	2¼	1⅛	12	81, 82, 83, 84, 85 or 87	17.50	17.50
6	7½	2¼	1⅛	12	81, 82, 83, 84, 85 or 87	20.00	20.00
7	8½	2¼	1⅛	12	81, 82, 83, 84, 85 or 87	22.50	22.50
8	9½	2¼	1⅛	12	81, 82, 83, 84, 85 or 87	25.00	25.00

In ordering, state whether Right or Left Hand cutters are wanted. Other sizes made to order.

In ordering teeth, state whether for Right or Left Hand Cutters.

In ordering give diameter, face of Cutter, size of hole and keyway required. Prices on application.

With Inserted Teeth and Threaded Holes

These Cutters are the same in design as shown above, except that they are provided with threaded holes, and are used directly upon the spindle of the machine.

Brown & Sharpe Nos. 10 to 26

Number	Hole Diameter Inches	Hole Thread	Cutter Diameter Inches	Cutter Face A Inches	Cutter Face B Inches	Carbon Steel Each	High Speed Steel Each
10	2½	4, L. H.	5½	2¼	1⅛	\$17.50	\$17.50
12	2½	4, L. H.	6½	2¼	1⅛	20.00	20.00
16	2½	4, L. H.	7½	2¼	1⅛	22.50	22.50
15	3¼	3½, L. H.	6½	2¼	1⅛	20.00	20.00
18	3¼	3½, L. H.	7½	2¼	1⅛	22.50	22.50
21	3¼	3½, L. H.	8½	2¼	1⅛	25.00	25.00
24	3¼	3½, L. H.	9½	2¼	1⅛	27.50	27.50
19	4	3, L. H.	7½	2¼	1⅛	22.50	22.50
22	4	3, L. H.	8½	2¼	1⅛	25.00	25.00
25	4	3, L. H.	9½	2¼	1⅛	27.50	27.50
22A	4½	2¾, L. H.	8½	2¼	1⅛	25.00	25.00
23	4½	2¾, L. H.	9½	2¼	1⅛	27.50	27.50

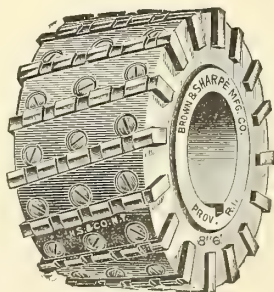
To determine what machines and attachments these Cutters are used on measure outside diameter of thread on end of spindle.

Milling and Side Milling Cutters

With Inserted Teeth



Side Milling



Milling

We recommend that Milling Cutters and Side Milling Cutters more than 8 inches in diameter be made with inserted teeth. With following exceptions, these cutters are made to order. Prices for all sizes not listed on application.

The teeth of the cutters are inserted in the periphery of the machinery steel body. They are made of either carbon tool steel or of high speed steel, but unless otherwise ordered, are furnished of high speed steel. The bushings, screws and teeth are interchangeable, thus allowing the teeth to be easily adjusted or removed.

Brown & Sharpe Nos. S-100 to S-104, Morse Style No. 126 J

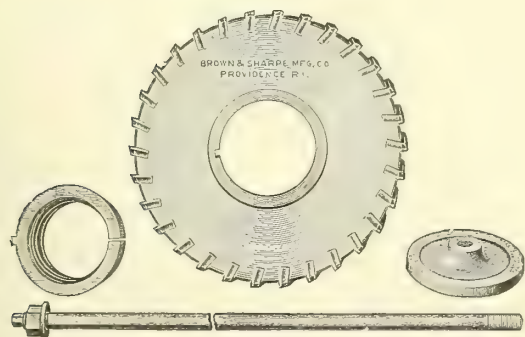
Side Milling

Number	Diameter Inches	Width of Face Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
S-100	6	2	1¼	\$21.25	\$21.25
S-101	7	2	1¼	25.00	25.00
S-102	8	2	1½	27.50	27.50
S-103	9	2	1½	30.00	30.00
S-104	10	2	1½	32.50	32.50

In ordering give diameter, face of Cutter, size of hole and keyway required. For Standard Keyways and suggestions see Index.

Face Milling Cutters

With Inserted Teeth



Means are provided for quickly releasing the Cutters from the spindle and provision is made whereby the same Cutter may be used on machines of different sizes of spindles by employing special sleeves.

The Cutter is made with a taper hole to fit a split sleeve of steel that is screwed on the spindle. It is keyed to the sleeve and is drawn on to the taper of the sleeve by a drawing-in bolt. As the drawing-in bolt is tightened the sleeve is contracted and closely grips the spindle, thus furnishing the full efficiency of the drive to the Cutter at all times. It will be noted in the section that the Cutter is held close to the spindle shoulder, thus increasing the working space.

The body of the Cutter is of machinery steel, while the blades are of high speed steel.

Brown & Sharpe Nos. 50 to 61

Number	Diameter Inches	Face A Inches	Face B Inch	Small Diam. of Taper Hole Inches	Used with Sleeve Number	Each
50	7	3	15/16	3	1	\$30.00
51	8	3	15/16	3	1	34.00
52	8	3 1/4	15/16	3 3/4	2 and 5	36.00
53	9	3 1/4	15/16	3 3/4	2 and 5	40.00
54	9	3 1/2	15/16	4 1/2	6 and 8	42.00
55	9	3 3/4	15/16	5	7, 9 and 10	44.00
56	10	3 1/4	15/16	3 3/4	2 and 5	46.00
57	10	3 1/2	15/16	4 1/2	6 and 8	48.00
58	10	3 3/4	15/16	5	7, 9 and 10	50.00
59	12	3 1/2	15/16	4 1/2	6 and 8	57.00
60	12	3 3/4	15/16	5	7, 9 and 10	60.00
61	15	3 3/4	15/16	5	7, 9 and 10	75.00

The drawing-in bolts for use with the cutters are furnished on short notice. When ordering, the diameter of the spindle hole and the length of the spindle over all must be given.

Bolts and Nuts, \$1.50

For Standard Keyways and suggestions see Index

End Mills

With B. & S. Taper Shanks



Cut shows Left Hand. In ordering, state whether Right or Left Hand Mills are wanted.

Brown & Sharpe Nos. E-10 to E-49, Morse Style Nos. 126 1/2 F

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-10	1 1/4	4	1 1/8	2 7/16	\$1.00	\$1.40
E-11	1 1/2	5	1 1/8	3	1.15	1.70
E-12	1 5/8	4	1 1/8	2 1/2	1.00	1.40
E-13	1 3/4	5	1 1/8	3 1/8	1.15	1.70
E-14	1 7/8	4	1 1/8	2 1/2	1.10	1.55
E-15	2	5	1 1/8	3 1/8	1.20	1.75
E-16	1 1/8	4	1 1/8	2 9/16	1.10	1.55
E-17	1 1/4	5	1 1/8	3 1/8	1.25	1.80
E-18	1 1/2	5	1 1/8	3 3/8	1.30	1.90
E-19	1 5/8	7	1 1/8	5 1/8	1.45	2.40
E-20	1 3/4	5	1 1/8	3 1/4	1.35	2.00
E-21	1 7/8	7	1 1/8	5 1/4	1.50	2.50
E-22	5/8	5	1 1/4	3 7/16	1.45	2.20
E-23	5/8	7	1 1/2	5 1/2	1.70	2.80
E-24	1 1/16	7	1 1/2	5 1/2	1.75	2.85
E-25	1 1/16	9	1 1/2	6 3/4	1.90	3.75
E-26	3/4	7	1 5/8	5 5/8	1.80	2.95
E-27	3/4	9	1 5/8	6 7/8	1.95	3.85
E-28	1 1/16	7	1 5/8	5 5/8	1.90	3.35
E-29	1 1/16	9	1 5/8	6 7/8	2.00	4.05
E-30	7/8	7	1 3/4	5 3/4	2.10	3.55
E-31	7/8	9	1 3/4	7	2.25	4.25
E-32	1 5/16	7	1 3/4	5 3/4	2.10	3.70
E-33	1 5/16	9	1 3/4	7	2.25	4.25
E-34	1	7	1 7/8	5 7/8	2.15	3.80
E-35	1	9	1 7/8	7 1/8	2.30	4.35
E-36	1 1/16	7	1 7/8	5 7/8	2.15	3.95
E-37	1 1/16	9	1 7/8	7 1/8	2.35	4.40
E-38	1 1/8	7	2	6	2.25	4.20
E-39	1 1/8	9	2	7 1/4	2.40	4.60
E-40	1 1/16	7	2	6	2.25	4.30
E-41	1 1/16	9	2	7 1/4	2.50	4.90
E-42	1 1/4	7	2	6	2.25	4.45
E-43	1 1/4	9	2	7 1/4	2.55	5.10
E-44	1 5/16	9	2 1/8	7 3/8	2.75	5.75
E-45	1 3/8	9	2 1/8	7 3/8	2.75	6.25
E-46	1 1/16	9	2 1/4	7 1/2	3.00	6.50
E-47	1 1/2	9	2 1/4	7 1/2	3.00	6.85
E-48	1 5/8	9	2 3/8	7 5/8	3.25	7.45
E-49	1 3/4	9	2 1/2	7 3/4	3.50	8.30

For other End Mills, see next page

Parts for Face Milling Cutters

Clamping Plates

Brown & Sharpe Nos. 1 to 5

Number	Used with Cutter	Diameter of Tapped Hole Inch	Each
1	50 and 51	5/8	\$1.00
2	52, 53 and 56	5/8	1.00
3	52, 53 and 56	1 1/16	1.00
4	54, 57 and 59	1 1/16	1.00
5	55, 58, 60 and 61	1 1/16	1.00

Sleeves

Brown & Sharpe Nos. 1 to 10

Number	Outside Diameter of Small End Inches	Length Inches	Taper per Foot in Diameter Inches	Bore Diameter Inches	Bore Threads per Inch, Left Hand, U. S. S.	Each
1	3	2	3 1/2	2 1/2	4	\$ 7.50
2	3 3/4	2 1/4	3 1/2	2 1/2	4	8.50
5	3 3/4	2 1/4	3 1/2	3 1/4	3 1/2	9.50
6	4 1/2	2 1/2	3 1/2	3 1/4	3 1/2	10.50
7	5	2 3/4	3 1/2	3 1/4	3 1/2	11.50
8	4 1/2	2 1/2	3 1/2	4	3	11.50
9	5	2 3/4	3 1/2	4	3	12.50
10	5	2 3/4	3 1/2	4 1/2	2 3/4	13.50

SINCE
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HAMMACHER SCHLEMMER & CO. NEW YORK

End Mills

With Morse Taper Shanks



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand. Brown and Sharpe Nos. E-300 to E-338, Morse Style No. 126F

Number	Diameter Inch	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each	Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-300	$\frac{1}{4}$	1	$\frac{13}{16}$	$3\frac{11}{16}$	\$1.15	\$1.70	E-320	1	3	$1\frac{7}{8}$	$6\frac{1}{4}$	\$2.30	\$4.00
E-301	$\frac{5}{16}$	1	$\frac{7}{8}$	$3\frac{3}{4}$	1.15	1.70	E-321	$1\frac{1}{16}$	2	$1\frac{7}{8}$	$5\frac{3}{8}$	2.15	3.75
E-302	$\frac{3}{8}$	1	$\frac{7}{8}$	$3\frac{3}{4}$	1.20	1.75	E-322	$1\frac{1}{8}$	3	$1\frac{7}{8}$	$6\frac{1}{4}$	2.30	4.05
E-303	$\frac{7}{16}$	1	$\frac{15}{16}$	$3\frac{13}{16}$	1.25	1.85	E-323	$1\frac{1}{4}$	3	2	$6\frac{3}{8}$	2.35	4.25
E-304	$\frac{1}{2}$	2	1	$4\frac{1}{2}$	1.40	2.25	E-324	$1\frac{3}{8}$	3	2	$6\frac{3}{8}$	2.40	4.45
E-305	$\frac{9}{16}$	1	1	$3\frac{7}{8}$	1.30	1.90	E-325	$1\frac{1}{2}$	3	2	$6\frac{3}{8}$	2.45	4.65
E-306	$\frac{5}{8}$	2	$1\frac{1}{8}$	$4\frac{5}{8}$	1.45	2.30	E-326	$1\frac{3}{4}$	4	2	$7\frac{3}{8}$	2.55	5.00
E-307	$\frac{11}{16}$	1	$1\frac{1}{8}$	$3\frac{15}{16}$	1.35	2.00	E-327	$1\frac{5}{8}$	3	$2\frac{1}{8}$	$6\frac{1}{2}$	2.65	5.10
E-308	$\frac{3}{4}$	2	$1\frac{1}{4}$	$4\frac{3}{4}$	1.50	2.40	E-328	$1\frac{5}{16}$	4	$2\frac{1}{8}$	$7\frac{1}{2}$	2.75	5.40
E-309	$\frac{7}{8}$	2	$1\frac{1}{2}$	5	1.55	2.50	E-329	$1\frac{3}{4}$	3	$2\frac{1}{8}$	$6\frac{1}{2}$	2.65	5.20
E-310	$\frac{15}{16}$	2	$1\frac{1}{2}$	5	1.75	2.75	E-330	$1\frac{7}{8}$	4	$2\frac{1}{8}$	$7\frac{1}{2}$	2.75	5.60
E-311	$\frac{1}{2}$	2	$1\frac{5}{8}$	$5\frac{1}{8}$	1.80	2.85	E-331	$1\frac{7}{16}$	3	$2\frac{1}{4}$	$6\frac{3}{8}$	2.75	5.50
E-312	$\frac{3}{4}$	3	$1\frac{5}{8}$	6	1.95	3.45	E-332	$1\frac{7}{8}$	4	$2\frac{1}{4}$	$7\frac{3}{8}$	3.00	6.10
E-313	$\frac{13}{16}$	2	$1\frac{5}{8}$	$5\frac{1}{8}$	1.90	3.05	E-333	$1\frac{1}{2}$	3	$2\frac{1}{4}$	$6\frac{3}{8}$	2.75	5.65
E-314	$\frac{13}{16}$	3	$1\frac{5}{8}$	6	2.00	3.50	E-334	$1\frac{1}{2}$	4	$2\frac{1}{4}$	$7\frac{3}{8}$	3.00	6.25
E-315	$\frac{7}{8}$	2	$1\frac{3}{4}$	$5\frac{1}{4}$	2.10	3.40	E-335	$1\frac{5}{8}$	4	$2\frac{3}{8}$	$7\frac{3}{4}$	3.25	7.05
E-316	$\frac{7}{8}$	3	$1\frac{3}{4}$	$6\frac{1}{8}$	2.25	3.85	E-336	$1\frac{3}{4}$	4	$2\frac{3}{8}$	$7\frac{3}{4}$	3.50	7.80
E-317	$\frac{15}{16}$	2	$1\frac{3}{4}$	$5\frac{1}{4}$	2.10	3.45	E-337	$1\frac{7}{8}$	4	$2\frac{1}{2}$	$7\frac{3}{8}$	3.75	8.55
E-318	$\frac{15}{16}$	3	$1\frac{3}{4}$	$6\frac{1}{8}$	2.25	3.85	E-338	2	4	$2\frac{1}{2}$	$7\frac{3}{8}$	4.00	9.35
E-319	1	2	$1\frac{7}{8}$	$5\frac{3}{8}$	2.15	3.40							

Spiral, with B. & S. Taper Shanks



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand. Brown and Sharpe Nos. E-100 to E-139, Morse Style No. 126½ H

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-100	$\frac{1}{4}$	4	$\frac{13}{16}$	$2\frac{7}{16}$	\$1.00	\$1.40
E-101	$\frac{1}{4}$	5	$\frac{13}{16}$	3	1.15	1.70
E-102	$\frac{5}{16}$	4	$2\frac{1}{2}$	$1\frac{1}{2}$	1.00	1.40
E-103	$\frac{5}{16}$	5	$\frac{7}{8}$	$3\frac{1}{16}$	1.15	1.70
E-104	$\frac{3}{8}$	4	$\frac{7}{8}$	$2\frac{1}{2}$	1.10	1.55
E-105	$\frac{3}{8}$	5	$\frac{7}{8}$	$3\frac{1}{16}$	1.20	1.75
E-106	$\frac{7}{16}$	4	$\frac{15}{16}$	$2\frac{9}{16}$	1.10	1.55
E-107	$\frac{7}{16}$	5	$\frac{15}{16}$	$3\frac{1}{8}$	1.25	1.80
E-108	$\frac{1}{2}$	5	1	$3\frac{3}{16}$	1.30	1.90
E-109	$\frac{1}{2}$	7	$1\frac{1}{8}$	$5\frac{1}{8}$	1.45	2.40
E-110	$\frac{9}{16}$	5	$1\frac{1}{4}$	$3\frac{1}{4}$	1.35	2.00
E-111	$\frac{9}{16}$	7	$1\frac{1}{4}$	$5\frac{1}{4}$	1.50	2.50
E-112	$\frac{5}{8}$	5	$1\frac{1}{4}$	$3\frac{7}{16}$	1.45	2.20
E-113	$\frac{5}{8}$	7	$1\frac{1}{2}$	$5\frac{1}{2}$	1.70	2.80
E-114	$\frac{11}{16}$	7	$1\frac{1}{2}$	$5\frac{1}{2}$	1.75	2.85
E-115	$\frac{11}{16}$	9	$1\frac{1}{2}$	$6\frac{3}{4}$	1.90	3.75
E-116	$\frac{3}{4}$	7	$1\frac{5}{8}$	$5\frac{5}{8}$	1.80	2.95
E-117	$\frac{3}{4}$	9	$1\frac{5}{8}$	$6\frac{7}{8}$	1.95	3.85
E-118	$\frac{13}{16}$	7	$1\frac{5}{8}$	$5\frac{5}{8}$	1.90	3.35
E-119	$\frac{13}{16}$	9	$1\frac{5}{8}$	$6\frac{7}{8}$	2.00	4.05
E-120	$\frac{7}{8}$	7	$1\frac{3}{4}$	$5\frac{3}{4}$	2.10	3.55
E-121	$\frac{7}{8}$	9	$1\frac{3}{4}$	7	2.25	4.25
E-122	$\frac{15}{16}$	7	$1\frac{3}{4}$	$5\frac{3}{4}$	2.10	3.70
E-123	$\frac{15}{16}$	9	$1\frac{3}{4}$	7	2.25	4.25
E-124	1	7	$1\frac{7}{8}$	$5\frac{7}{8}$	2.15	3.80
E-125	1	9	$1\frac{7}{8}$	$7\frac{1}{8}$	2.30	4.35
E-126	$1\frac{1}{16}$	7	$1\frac{7}{8}$	$5\frac{7}{8}$	2.15	3.95
E-127	$1\frac{1}{16}$	9	$1\frac{7}{8}$	$7\frac{1}{8}$	2.35	4.40
E-128	$1\frac{1}{8}$	7	2	6	2.25	4.20
E-129	$1\frac{1}{8}$	9	2	$7\frac{1}{4}$	2.40	4.60
E-130	$1\frac{3}{16}$	7	2	6	2.25	4.30
E-131	$1\frac{3}{16}$	9	2	$7\frac{1}{4}$	2.50	4.90
E-132	$1\frac{1}{4}$	7	2	6	2.25	4.45
E-133	$1\frac{1}{4}$	9	2	$7\frac{1}{4}$	2.55	5.10
E-134	$1\frac{5}{8}$	9	$2\frac{1}{8}$	$7\frac{3}{8}$	2.75	5.75
E-135	$1\frac{5}{8}$	9	$2\frac{1}{8}$	$7\frac{3}{8}$	2.75	6.25
E-136	$1\frac{7}{8}$	9	$2\frac{1}{4}$	$7\frac{1}{2}$	3.00	6.50
E-137	$1\frac{1}{2}$	9	$2\frac{1}{4}$	$7\frac{1}{2}$	3.00	6.85
E-138	$1\frac{5}{8}$	9	$2\frac{3}{8}$	$7\frac{5}{8}$	3.25	7.45
E-139	$1\frac{3}{4}$	9	$2\frac{1}{2}$	$7\frac{3}{4}$	3.50	8.30

Spiral, with Morse Taper Shanks



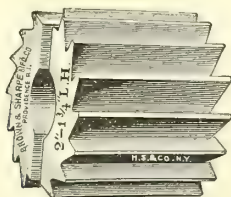
In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand. Brown and Sharpe Nos. E-395 to E-433, Morse Style No. 126½ G

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-395	$\frac{1}{4}$	1	$\frac{13}{16}$	$3\frac{11}{16}$	\$1.15	\$1.70
E-396	$\frac{5}{16}$	1	$\frac{7}{8}$	$3\frac{3}{4}$	1.15	1.70
E-397	$\frac{3}{8}$	1	$\frac{7}{8}$	$3\frac{3}{4}$	1.20	1.75
E-398	$\frac{7}{16}$	1	$\frac{15}{16}$	$3\frac{13}{16}$	1.25	1.85
E-399	$\frac{1}{2}$	2	1	$4\frac{1}{2}$	1.40	2.25
E-400	$\frac{9}{16}$	1	1	$3\frac{7}{8}$	1.30	1.90
E-401	$\frac{5}{8}$	2	$1\frac{1}{8}$	$4\frac{5}{8}$	1.45	2.30
E-402	$\frac{11}{16}$	1	$1\frac{1}{8}$	$3\frac{15}{16}$	1.35	2.00
E-403	$\frac{3}{4}$	2	$1\frac{1}{4}$	$4\frac{3}{4}$	1.50	2.40
E-404	$\frac{7}{8}$	2	$1\frac{1}{2}$	5	1.55	2.50
E-405	$\frac{15}{16}$	2	$1\frac{1}{2}$	5	1.75	2.75
E-406	$\frac{1}{2}$	2	$1\frac{5}{8}$	$5\frac{1}{8}$	1.80	2.85
E-407	$\frac{3}{4}$	3	$1\frac{5}{8}$	6	1.95	3.45
E-408	$\frac{13}{16}$	2	$1\frac{5}{8}$	$5\frac{1}{8}$	1.90	3.05
E-409	$\frac{13}{16}$	3	$1\frac{5}{8}$	6	2.00	3.50
E-410	$\frac{7}{8}$	2	$1\frac{3}{4}$	$5\frac{1}{4}$	2.10	3.40
E-411	$\frac{7}{8}$	3	$1\frac{3}{4}$	$6\frac{1}{8}$	2.25	3.85
E-412	$\frac{15}{16}$	2	$1\frac{3}{4}$	$5\frac{1}{4}$	2.10	3.45
E-413	$\frac{15}{16}$	3	$1\frac{3}{4}$	$6\frac{1}{8}$	2.25	3.85
E-414	1	2	$1\frac{7}{8}$	$5\frac{3}{8}$	2.15	3.40
E-415	1	3	$1\frac{7}{8}$	$6\frac{1}{4}$	2.30	4.00
E-416	$1\frac{1}{16}$	2	$1\frac{7}{8}$	$5\frac{3}{8}$	2.15	3.75
E-417	$1\frac{1}{16}$	3	$1\frac{7}{8}$	$6\frac{1}{4}$	2.30	4.05
E-418	$1\frac{1}{8}$	3	2	$6\frac{3}{8}$	2.35	4.25
E-419	$1\frac{3}{16}$	3	2	$6\frac{3}{8}$	2.40	4.45
E-420	$1\frac{1}{4}$	3	2	$6\frac{3}{8}$	2.45	4.65
E-421	$1\frac{1}{4}$	4	2	$7\frac{3}{8}$	2.55	5.00
E-422	$1\frac{5}{16}$	3	$2\frac{1}{8}$	$6\frac{1}{2}$	2.65	5.10
E-423	$1\frac{5}{16}$	4	$2\frac{1}{8}$	$7\frac{1}{2}$	2.75	5.40
E-424	$1\frac{3}{8}$	3	$2\frac{1}{8}$	$6\frac{1}{2}$	2.65	5.20
E-425	$1\frac{3}{8}$	4	$2\frac{1}{8}$	$7\frac{1}{2}$	2.75	5.60
E-426	$1\frac{7}{16}$	3	$2\frac{1}{4}$	$6\frac{5}{8}$	2.75	5.50
E-427	$1\frac{7}{16}$	4	$2\frac{1}{4}$	$7\frac{5}{8}$	3.00	6.10
E-428	$1\frac{1}{2}$	3	$2\frac{1}{4}$	$6\frac{5}{8}$	2.75	5.65
E-429	$1\frac{1}{2}$	4	$2\frac{1}{4}$	$7\frac{5}{8}$	3.00	6.25
E-430	$1\frac{5}{8}$	4	$2\frac{3}{8}$	$7\frac{3}{4}$	3.25	7.05
E-431	$1\frac{3}{4}$	4	$2\frac{3}{8}$	$7\frac{3}{4}$	3.50	7.80
E-432	$1\frac{7}{8}$	4	$2\frac{1}{2}$	$7\frac{7}{8}$	3.75	8.55
E-433	2	4	$2\frac{1}{2}$	$7\frac{7}{8}$	4.00	9.35

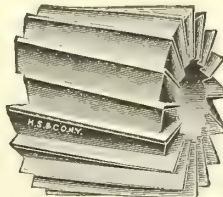
For Standard Keyways and suggestions see Index. For Collets see Index. For list of Tapers see Index

Shell End Mills

Straight



Spiral



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.
Brown and Sharpe Nos. F-10 to F-38, Morse Style No. 126 P

In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.
Brown and Sharpe Nos. F-100 to F-128, Morse Style No. 126 1/2 P

Number	Diameter Inches	Length of Cut Inches	Number of Arbor on which Cutter can be used	Hole Inch	Carbon Steel Each	High Speed Steel Each
F-10	1 1/4	1 1/4	89	1/2	\$2.80	\$4.50
F-11	1 5/8	1 1/4		1/2	2.90	4.65
F-12	1 3/8	1 1/4		1/2	3.00	4.80
F-13	1 1/8	1 1/4		1/2	3.10	4.95
F-14	1 1/2	1 1/4	92	1/2	3.20	5.10
F-15	1 9/16	1 3/4	90	3/4	3.90	5.50
F-16	1 5/8	1 3/4		3/4	3.95	5.70
F-17	1 11/16	1 3/4		3/4	4.00	5.90
F-18	1 3/4	1 3/4		3/4	4.05	6.10
F-19	1 13/16	1 3/4	94	3/4	4.10	6.30
F-20	1 7/8	1 3/4		3/4	4.15	6.50
F-21	1 15/16	1 3/4		3/4	4.20	6.70
F-22	2	1 3/4		3/4	4.30	6.90
F-23	2 1/16	1 3/4	101	3/4	4.35	7.10
F-24	2 1/8	1 3/4		3/4	4.40	7.30
F-25	2 3/16	1 3/4		3/4	4.50	7.50
F-26	2 1/4	2 1/4		1	4.90	8.00
F-27	2 5/16	2 1/4	91	1	4.95	8.25
F-28	2 3/8	2 1/4		1	5.00	8.55
F-29	2 7/16	2 1/4		1	5.05	8.85
F-30	2 1/2	2 1/4		1	5.10	9.15
F-31	2 9/16	2 1/4	98	1	5.20	9.45
F-32	2 5/8	2 1/4		1	5.35	9.75
F-33	2 11/16	2 1/4		1	5.50	10.05
F-34	2 3/4	2 1/4		1	5.65	10.40
F-35	2 13/16	2 1/4	100	1	5.80	10.70
F-36	2 7/8	2 1/4		1	5.95	11.05
F-37	2 15/16	2 1/4		1	6.10	11.40
F-38	3	2 1/4		1	6.30	11.75

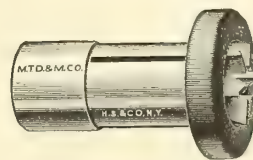
Number	Diameter Inches	Length of Cut Inches	Number of Arbor on which Cutter can be used	Hole Inch	Carbon Steel Each	High Speed Steel Each
F-100	1 1/4	1 1/4	89	1/2	\$2.80	\$4.50
F-101	1 5/8	1 1/4		1/2	2.90	4.65
F-102	1 3/8	1 1/4		1/2	3.00	4.80
F-103	1 1/8	1 1/4		1/2	3.10	4.95
F-104	1 1/2	1 1/4	92	1/2	3.20	5.10
F-105	1 9/16	1 3/4	90	3/4	3.90	5.50
F-106	1 5/8	1 3/4		3/4	3.95	5.70
F-107	1 11/16	1 3/4		3/4	4.00	5.90
F-108	1 3/4	1 3/4		3/4	4.05	6.10
F-109	1 13/16	1 3/4	94	3/4	4.10	6.30
F-110	1 7/8	1 3/4		3/4	4.15	6.50
F-111	1 15/16	1 3/4		3/4	4.20	6.70
F-112	2	1 3/4		3/4	4.30	6.90
F-113	2 1/16	1 3/4	97	3/4	4.35	7.10
F-114	2 1/8	1 3/4		3/4	4.40	7.30
F-115	2 3/16	1 3/4		3/4	4.50	7.50
F-116	2 1/4	2 1/4		1	4.90	8.00
F-117	2 5/16	2 1/4	91	1	4.95	8.25
F-118	2 3/8	2 1/4		1	5.00	8.55
F-119	2 7/16	2 1/4		1	5.05	8.85
F-120	2 1/2	2 1/4		1	5.10	9.15
F-121	2 9/16	2 1/4	98	1	5.20	9.45
F-122	2 5/8	2 1/4		1	5.35	9.75
F-123	2 11/16	2 1/4		1	5.50	10.05
F-124	2 3/4	2 1/4		1	5.65	10.40
F-125	2 13/16	2 1/4	100	1	5.80	10.70
F-126	2 7/8	2 1/4		1	5.95	11.05
F-127	2 15/16	2 1/4		1	6.10	11.40
F-128	3	2 1/4		1	6.30	11.75

Hollow Mills

Adjustable



Morse No. 126 1/2 E



Morse No. 126 E

Diameter of Hole Inch	Each	Outside Diameter Inch	Whole Length Inches	Diameter of Hole Inch	Each	Outside Diameter Inches	Whole Length Inches	Diameter of Hole Inch	Each	Diameter of Shank Inch	Whole Length Inches	Diameter of Hole Inch	Each	Diameter of Shank Inches	Whole Length Inches
3/32	\$1.00	5/8	1 1/2	3/8	\$2.00	1	1 3/4	1/32	\$1.60	5/8	1 1/2	1/16	\$2.00	3/4	2
1/8	1.00	5/8	1 1/2	7/16	2.00	1	1 3/4	1/16	1.60	5/8	1 1/2	1/8	2.20	1	2 1/4
3/16	1.00	5/8	1 1/2	1/2	2.00	1	1 3/4	3/32	1.60	5/8	1 1/2	3/16	2.40	1	2 1/4
1/4	1.00	5/8	1 1/2	9/16	2.00	1 1/4	2	1/8	1.60	5/8	1 1/2	1/4	2.60	1	2 1/4
5/16	1.00	5/8	1 1/2	5/8	2.00	1 1/4	2	1/4	1.60	5/8	1 1/2	3/8	2.80	1 1/4	2 1/2
3/8	1.00	5/8	1 1/2	11/16	2.50	1 1/2	2	1/2	1.60	5/8	1 1/2	1/2	3.00	1 1/4	2 1/2
1/2	1.00	5/8	1 1/2	3/4	2.50	1 1/2	2	3/4	1.80	3/4	2	13/16	3.20	1 1/4	2 1/2
5/8	1.50	3/4	1 1/2	7/8	2.50	1 3/4	2 1/4	15/16	1.80	3/4	2	7/8	3.40	1 1/2	2 3/4
3/4	1.50	3/4	1 1/2	1	2.50	1 3/4	2 1/4	1	1.80	3/4	2	1	3.60	1 1/2	2 3/4
7/8	1.50	3/4	1 1/2					3/8	2.00	3/4	2		3.80	1 1/2	2 3/4

The holes in these Mills are carefully ground to size, and have a proper relief. Forcing the Ring on the Mill will correct any slight wear

For Standard Keyways and suggestions, see Index

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

End Mills With Center Cut

These End Mills are useful where it is desired to cut into the work with the end of the mill and then move along, as in cams, grooves, etc., as the teeth are sharp on the inside, and thus cut a path out from the first entering point. They are also useful in taking heavy cuts, especially in cast iron

With B. & S. Taper Shanks



With Morse Taper Shanks



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.

Brown & Sharpe Nos. E-200 to E-229, Morse Style No. 126½ J

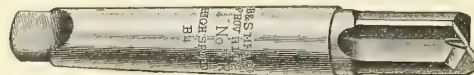
In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.

Brown & Sharpe Nos. E-500 to E-529, Morse Style No. 126½ I

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-200	1/2	5	1	3 3/16	\$1.50	\$2.10
E-201	1/2	7	1 1/8	5 1/8	1.80	2.90
E-202	1/2	5	1 1/16	3 1/4	1.70	2.45
E-203	9/16	7	1 1/4	5 1/4	1.85	2.95
E-204	5/8	5	1 1/4	3 7/16	1.80	2.65
E-205	5/8	7	1 1/2	5 1/2	2.10	3.35
E-206	11/16	7	1 1/2	5 1/2	2.15	3.40
E-207	11/16	9	1 1/2	6 3/4	2.35	4.40
E-208	3/4	7	1 5/8	5 5/8	2.25	3.55
E-209	3/4	9	1 5/8	6 7/8	2.45	4.55
E-210	13/16	7	1 5/8	5 5/8	2.35	3.80
E-211	13/16	9	1 5/8	6 7/8	2.50	4.65
E-212	7/8	7	1 3/4	5 3/4	2.60	4.20
E-213	7/8	9	1 3/4	7	2.80	4.85
E-214	15/16	7	1 3/4	5 3/4	2.60	4.35
E-215	15/16	9	1 3/4	7	2.80	5.05
E-216	1	7	1 7/8	5 7/8	2.70	4.65
E-217	1	9	1 7/8	7 1/8	2.85	5.15
E-218	1 1/16	7	1 7/8	5 7/8	2.70	4.70
E-219	1 1/16	9	1 7/8	7 1/8	2.95	5.25
E-220	1 1/8	7	2	6	2.80	4.95
E-221	1 1/8	9	2	7 1/4	3.00	5.50
E-222	1 1/8	7	2	6	2.80	5.15
E-223	1 3/16	9	2	7 1/4	3.10	5.80
E-224	1 1/4	7	2	6	2.80	5.25
E-225	1 1/4	9	2	7 1/4	3.20	6.10
E-226	1 5/16	9	2 1/8	7 3/8	3.45	6.70
E-227	1 3/8	9	2 1/8	7 3/8	3.45	6.85
E-228	1 7/16	9	2 1/4	7 1/2	3.75	7.45
E-229	1 1/2	9	2 1/4	7 1/2	3.75	7.65

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-500	1/2	1	1	3 7/8	\$1.50	\$2.10
E-501	1/2	2	1 1/8	4 5/8	1.80	2.90
E-502	9/16	1	1 1/16	3 15/16	1.70	2.45
E-503	5/8	2	1 1/4	4 3/4	1.85	3.00
E-504	5/8	2	1 1/2	5	2.10	3.25
E-505	11/16	2	1 1/2	5	2.15	3.40
E-506	3/4	2	1 5/8	5 1/8	2.25	3.55
E-507	3/4	3	1 5/8	6	2.45	4.55
E-508	13/16	2	1 5/8	5 1/8	2.35	3.80
E-509	13/16	3	1 5/8	6	2.50	4.65
E-510	7/8	2	1 3/4	5 1/4	2.60	4.20
E-511	7/8	3	1 3/4	6 1/8	2.80	4.95
E-512	15/16	2	1 3/4	5 1/4	2.60	4.35
E-513	15/16	3	1 3/4	6 1/8	2.80	5.05
E-514	1	2	1 7/8	5 3/8	2.70	4.65
E-515	1	3	1 7/8	6 1/4	2.85	5.15
E-516	1 1/16	2	1 7/8	5 3/8	2.70	4.75
E-517	1 1/16	3	1 7/8	6 1/4	2.95	5.25
E-518	1 1/8	3	2	6 3/8	3.00	5.50
E-519	1 1/8	3	2	6 3/8	3.10	5.80
E-520	1 1/4	3	2	6 3/8	3.20	6.10
E-521	1 1/4	4	2	7 3/8	3.30	6.50
E-522	1 5/16	3	2 1/8	6 1/2	3.45	6.70
E-523	1 5/16	4	2 1/8	7 1/2	3.55	7.10
E-524	1 3/8	3	2 1/8	6 1/2	3.45	6.85
E-525	1 3/8	4	2 1/8	7 1/2	3.55	7.25
E-526	1 7/16	3	2 1/4	6 5/8	3.75	7.45
E-527	1 7/16	4	2 1/4	7 5/8	4.00	7.85
E-528	1 1/2	3	2 1/4	6 5/8	3.75	7.65
E-529	1 1/2	4	2 1/4	7 5/8	4.00	8.00

Slotting "Two Lipped," with B. & S. Taper Shanks



Brown & Sharpe

These End Mills are new in design and are found especially adaptable to rapidly milling slots in steel and iron from the solid, where previously it was necessary to drill a series of holes and make several cuts in milling the slot. The best results are obtained by maintaining a high surface speed. A depth of cut equal to one half the diameter of the mill, can usually be taken from solid stock. In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Right Hand

Number	Diameter Inch	Number of Taper Shank	Length of Cut Inches	Whole Length Inches	High Speed Steel Each
E-600	1/4	7	3/8	4 3/8	\$2.00
E-601	5/16	7	13/32	4 1/2	2.10
E-602	3/8	7	15/32	4 9/16	2.15
E-603	7/16	7	1 1/32	4 3/4	2.25
E-604	1/2	7	1 1/16	4 7/8	2.40
E-605	9/16	7	1 1/8	4 27/32	2.50
E-606	5/8	7	1 1/4	4 15/16	2.80
E-607	11/16	7	1 1/2	5 1/2	2.85
E-608	3/4	7	1 1/2	5 1/2	2.95
E-609	3/4	9	1 1/2	6 3/8	3.85
E-610	13/16	7	1 3/4	5 7/8	3.35
E-611	13/16	9	1 3/4	6 1/2	4.05

Number	Diameter Inches	Number of Taper Shank	Length of Cut Inches	Whole Length Inches	High Speed Steel Each
E-612	7/8	7	1 5/16	5 5/16	\$3.55
E-613	7/8	9	1 1/8	6 1/8	4.25
E-614	15/16	9	1 3/16	6 21/32	4.25
E-615	1	9	1 1/2	6 3/4	4.35
E-616	1 1/16	9	1 3/8	6 5/8	4.40
E-617	1 1/16	9	1 3/8	6 15/16	4.60
E-618	1 1/8	9	1 3/4	7 1/8	4.90
E-619	1 1/4	9	1 7/8	7 1/8	5.10
E-620	1 5/16	9	1 3/2	7 7/8	5.75
E-621	1 3/8	9	2 1/16	7 15/16	6.25
E-622	1 7/16	9	2 3/32	7 13/16	6.50
E-623	1 1/2	9	2 1/4	7 1/2	6.85

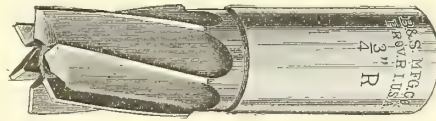
For Standard Keyways and suggestions see Index

End Mills

With Center Cut

These End Mills are useful where it is desired to cut into the work with the end of the mill and then move along, as in cams, grooves, etc., as the teeth are sharp on the inside, and thus cut a path out from the first entering point. They are also useful in taking heavy cuts, especially in cast iron.

With Straight Shanks



To be used with Spring Collets

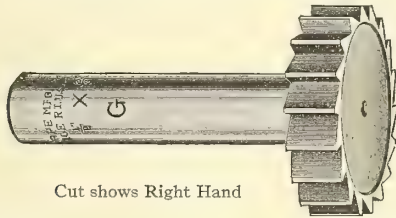
Brown & Sharpe

In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Right Hand

Diameter Inch	Length of Cut Inch	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
1/8	5/16	1 1/4	\$.35	\$.50
5/32	5/16	1 1/4	.40	.60
3/16	9/16	1 1/2	.45	.70
7/32	9/16	1 1/2	.50	.80
1/4	3/4	1 7/8	.55	.90
9/32	3/4	1 7/8	.60	1.00
5/16	13/16	1 5/8	.70	1.10
11/32	13/16	1 5/8	.75	1.20
3/8	1 1/2	2	.80	1.30
13/32	1 1/2	2	.85	1.40

Diameter Inch	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
7/16	7/8	2 1/8	\$1.00	\$1.50
1/2	15/16	2 1/4	1.25	1.70
9/16	15/16	2 5/8	1.35	1.90
5/8	1	2 3/4	1.50	2.10
11/16	1	2 3/8	1.60	2.30
3/4	1 1/8	2 15/16	1.70	2.50
13/16	1 1/8	2 15/16	1.80	2.75
7/8	1 5/8	3 3/16	1.90	3.00
15/16	1 15/16	3 15/16	2.00	3.25
1	1 3/8	3 7/16	2.05	3.50

Woodruff Keyway Cutters



Cut shows Right Hand

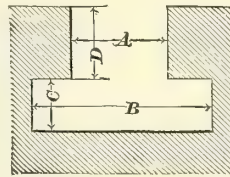
Brown and Sharpe. Right Hand Cutters are furnished unless otherwise ordered

Number	Diameter Inches	Thickness Inch	Shank Inch	Carbon Steel Each	High Speed Steel Each
*1	1/2	1/16	1/2	\$.95	
*2	1/2	3/32	1/2	.95	
3	1/2	1/8	1/2	.95	\$1.20
4	5/8	3/32	1/2	1.10	1.40
5	5/8	1/8	1/2	1.10	1.40
6	5/8	3/32	1/2	1.10	1.40
7	3/4	1/8	1/2	1.20	1.60
8	3/4	3/32	1/2	1.20	1.60
9	3/4	1/8	1/2	1.20	1.60
10	7/8	3/32	1/2	1.40	1.95
11	7/8	3/16	1/2	1.40	1.95
12	7/8	7/32	1/2	1.40	1.95
A	7/8	1/4	1/2	1.40	1.95
13	1	3/16	1/2	1.55	2.35
14	1	7/32	1/2	1.55	2.35
15	1	1/4	1/2	1.55	2.35
B	1	5/16	1/2	1.55	2.35
16	1 1/8	3/16	1/2	1.75	2.75
17	1 1/8	7/32	1/2	1.75	2.75
18	1 1/8	1/4	1/2	1.75	2.75
C	1 1/8	1/2	1/2	1.75	2.75
19	1 1/4	3/16	1/2	1.90	3.20
20	1 1/4	3/32	1/2	1.90	3.20
21	1 1/4	1/4	1/2	1.90	3.20
D	1 1/4	5/16	1/2	1.90	3.20
E	1 1/4	3/8	1/2	1.90	3.20
22	1 3/8	1/4	1/2	2.15	3.80
23	1 3/8	5/16	1/2	2.15	3.80
F	1 3/8	3/8	1/2	2.15	3.80
24	1 1/2	1/4	1/2	2.15	3.95
25	1 1/2	5/16	1/2	2.15	3.95
G	1 1/2	3/8	1/2	2.15	3.95

*1 and 2 not made from High Speed Steel

Standard T-Slot Cutters

With B. & S. Taper Shanks



In ordering, state whether Right or Left Hand Cutters are wanted. Cuts show Left Hand.

Brown and Sharpe Nos. 4 to 43, Morse Style No. 126W

Number	Width of Slot A Inch	Diam. of Neck of Cutter B Inch	Width of Slot C Inches	Depth D Inch	Extreme Limit Inches	Number of Taper	Carbon Steel Each	High Speed Steel Each
4	1/4	3/32	1/2	3/32	5/16	4	\$1.50	\$2.10
7	1/4	3/32	1/2	3/32	5/16	5	1.60	2.25
10	5/16	9/32	5/8	3/32	3/8	5	1.80	2.60
13	5/16	3/32	5/8	3/32	3/8	7	2.10	3.25
16	3/8	11/32	1 1/8	3/32	7/16	5	2.00	2.90
19	3/8	11/32	1 1/8	3/32	7/16	7	2.20	3.35
22	7/8	1 1/8	1 1/8	3/32	7/16	7	2.35	3.65
25	7/8	1 1/8	1 1/8	3/32	7/16	9	2.50	4.25
28	1 1/2	1 1/8	1 1/8	3/32	7/16	7	2.60	4.15
31	1 1/2	1 1/8	1 1/8	3/32	7/16	9	2.80	4.80
34	5/8	1 1/8	1 1/8	3/32	7/16	9	3.10	5.55
37	3/4	1 1/8	1 1/8	3/32	7/16	9	3.45	6.35
40	3/4	1 1/8	1 1/8	3/32	7/16	9	3.75	7.75
43	1	1 1/8	1 1/8	3/32	7/16	9	4.00	8.95

These Cutters are made 1/32 inch larger in diameter and 1/64 inch greater in thickness than the figures given, to allow for sharpening

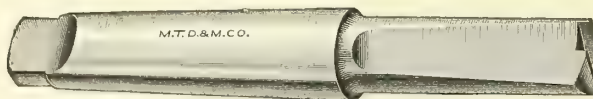
With Morse Taper Shanks. Morse No. 126 V

Diameter Inches	Thickness Inch	Diameter of Neck Inch	Whole Length Inches	Length of Neck Inches	Number of Shank	Carbon Steel Each	High Speed Steel Each
1/2	3/32	3/32	3 1/16	1/4	1	\$1.65	\$2.25
5/8	5/32	3/32	3 1/8	5/16	1	1.95	2.60
11/16	7/32	3/32	3 7/8	3/8	2	2.15	2.90
13/16	9/32	3/32	3 15/16	7/16	2	2.50	3.65
15/16	11/32	3/32	4 1/16	1/2	2	2.75	4.15
1 1/16	13/32	3/32	4 3/8	5/8	3	3.25	5.55
1 1/8	15/32	3/32	4 11/16	15/16	3	3.60	6.35
1 1/4	17/32	3/32	5 1/8	1 1/16	4	3.90	7.75
1 1/2	19/32	3/32	5 3/4	1 1/8	4	4.15	8.95

For Standard Keyways and suggestions see Index

Milling Cutters

Cotter Mills



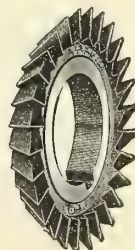
Morse No. 126½ L
With Morse Taper Shanks

Diameter Inch	Each	Whole Length Inches	Length of Body Inches	Shank	Diameter Inch	Each	Whole Length Inches	Length of Body Inches	Shank
¼	\$2.60	3½	1¼	No. 1	½	\$3.35	6	2½	No. 3
⅝	2.70	4½	1½		⅞	3.45	6½	2½	
⅜	2.80	4¼	1½		⅝	3.55	6¾	2½	
⅞	2.90	4¾	1¾		¾	3.65	6¾	2½	
⅜	2.95	4½	1½	No. 2	¾	3.80	6¾	2½	No. 3
⅞	3.05	5	1¾		⅞	3.95	6¾	2½	
1½	3.15	5¼	2½		1	4.10	6¾	2½	
⅞	3.25	5½	2½		1½	4.25	6¾	2½	
5/8	3.35	5½	2½		1	4.40	6¾	2½	

Morse No. 126½ M
With Brown & Sharpe Taper Shanks

Diameter Inch	Each	Whole Length Inches	Length of Body Inches	Shank	Diameter Inch	Each	Whole Length Inches	Length of Body Inches	Shank
¼	\$2.60	3½	1¼	No. 5	½	\$3.35	6½	2½	No. 9
⅝	2.70	3¾	1½		⅞	3.45	7½	2½	
⅜	2.80	3½	1½		⅝	3.55	7½	2½	
⅞	2.90	3¾	1¾		¾	3.65	7½	2½	
⅜	2.95	5¾	1½	No. 7	¾	3.80	7½	2½	No. 9
⅞	3.05	5½	1¾		⅞	3.95	7½	2½	
1½	3.15	5½	2½		1	4.10	7½	2½	
⅞	3.25	6	2½		1½	4.25	7½	2½	
5/8	3.35	6½	2½		1	4.40	7½	2½	

Angular Cutters



These Angular Cutters, of 45, 50, 60, 70 or 80 degree angle, both Right and Left Hand, are suitable for cutting the teeth of cutters and mills. Cut shows Right Hand. Brown & Sharpe Nos. J-10 to J-13, Morse Style No. 126 R

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
J-10	2½	½	⅞	\$2.65	\$4.10
J-11	2¾	½	1	2.80	4.45
J-12	3	½	1¼	3.35	5.40
J-13	3¼	½	1½	3.75	6.15



With Side Ground Concave

These Cutters have the side ground concave, and are made with 45, 50, 60, 70 and 80 degree angle, both Right and Left Hand. In ordering, state whether Right or Left Hand is wanted. Brown & Sharpe Nos. J-50 to J-53, Morse Style No. 126 A.

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
J-50	2½	½	⅞	\$2.65	\$4.10
J-51	2¾	½	1	2.80	4.45
J-52	3	½	1¼	3.35	5.40
J-53	3¼	½	1½	3.75	6.15

With Threaded Hole

These Cutters have an angle of 60 degree and are made both Right and Left Hand. Brown & Sharpe Nos. J-25 and J-26

Number	Diameter Inches	Thickness Inch	Hole Inch	Thread	Carbon Steel Each	High Speed Steel Each
J-25	1¼	⅞	⅜	20, L	\$2.25	\$3.15
J-26	1⅝	⅞	½	16, L	2.50	3.50



Double Angle Cutters

These Cutters are carried in stock with 45, 60 or 90 degree included angle. V-shaped Cutters of any angle made to order. Brown & Sharpe Nos. J-100 to J-102, Morse Style No. 126-S.

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
J-100	2½	½	⅞	\$2.65	\$4.10
J-101	2¾	½	1	2.80	4.45
J-102	3	½	1¼	3.35	5.40

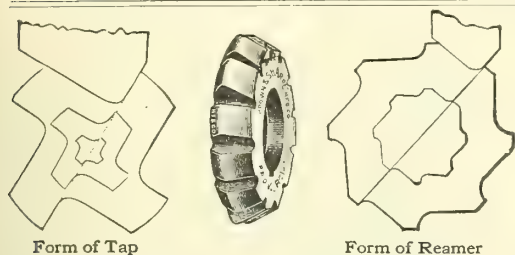
Formed Cutters with Double Angle

Are of the same dimensions as Cutters listed above. They are made to order and can be sharpened by grinding without changing their form. Prices furnished on application

For Standard Keyways and suggestions see page 139

Milling Cutters

For Grooving Taps and Reamers



Number	Diameter of Tap Inches	Number of Teeth in Tap	Diameter of Reamer Inches	Number of Teeth in Reamer	Diameter of Cutter Inches	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-10	0 to $\frac{1}{8}$	4	$\frac{1}{8}$ to $\frac{1}{4}$	6	2	1	\$2.00	\$2.85
L-11	$\frac{5}{32}$ to $\frac{1}{4}$	4	$\frac{3}{8}$ to $\frac{1}{2}$	6	2	1	2.10	3.00
L-12	$\frac{9}{32}$ to $\frac{3}{8}$	4	$\frac{1}{2}$ to $\frac{5}{8}$	6	$2\frac{1}{8}$	1	2.20	3.20
L-13	$\frac{7}{16}$ to $\frac{5}{8}$	4	$\frac{3}{4}$ to $1\frac{1}{8}$	6 to 8	$2\frac{3}{4}$	1	2.40	3.60
L-14	$\frac{11}{16}$ to $\frac{7}{8}$	4	$1\frac{5}{8}$ to $1\frac{3}{4}$	8 to 10	$2\frac{3}{8}$	1	2.40	3.70
L-15	$\frac{13}{16}$ to $1\frac{1}{4}$	4	$1\frac{7}{8}$ to 2	10	$2\frac{1}{2}$	1	2.70	4.30
L-16	$1\frac{5}{16}$ to $1\frac{5}{8}$	4	.....	.....	$2\frac{5}{8}$	1	2.70	4.55
L-17	$1\frac{11}{16}$ to 2	4	.....	.....	$2\frac{7}{8}$	1	3.00	5.30

Brown & Sharpe Nos. L-10 to L-17. Morse Style No. 126 H-B for Taps, Style No. 126 H-C for Reamers.

Are adapted for fluting reamers, for which purpose it is necessary only to cut one or more grooves of a less depth in order to flute unevenly.

Can be sharpened by grinding without changing their form. In ordering give number of cutter, or diameter and number of teeth of tap or reamer as by above lists.

For Grooving Taps



Brown and Sharpe Nos. L-50 to L-59, Morse Style No. 126H

Number	Diameter of Tap Inches	Diameter of Cutter Inches	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-50	0 to $\frac{1}{8}$	2	1	\$2.00	\$2.85
L-51	$\frac{5}{32}$ to $\frac{1}{4}$	2	1	2.10	3.00
L-52	$\frac{9}{32}$ to $\frac{3}{8}$	$2\frac{1}{8}$	1	2.20	3.15
L-53	$\frac{7}{16}$ to $\frac{5}{8}$	$2\frac{1}{4}$	1	2.40	3.55
L-54	$\frac{11}{16}$ to $\frac{7}{8}$	$2\frac{3}{8}$	1	2.40	3.70
L-55	$\frac{13}{16}$ to $1\frac{1}{4}$	$2\frac{1}{2}$	1	2.70	4.30
L-56	$1\frac{5}{16}$ to $1\frac{5}{8}$	$2\frac{5}{8}$	1	2.70	4.45
L-57	$1\frac{11}{16}$ to 2	$2\frac{7}{8}$	1	3.00	5.25
L-58	$2\frac{1}{16}$ to $2\frac{1}{8}$	$3\frac{1}{8}$	1	3.40	5.50
L-59	$2\frac{1}{2}$ to 3	$3\frac{3}{8}$	1	3.80	6.00

This style of Cutter is adapted to grooving taps only. These Cutters do not make so deep a groove in proportion to the width as the tap and reamer cutters. They are not suitable for fluting reamers. They can be sharpened by grinding without changing their form.

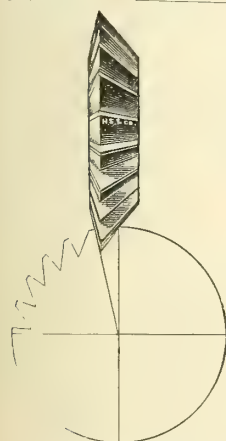
For Spiral Mills

These Cutters are especially adapted to the cutting of spiral mills, either 40, 48 or 53 degree angle on one side and 12 degree on the other.

The cut illustrates a Right Hand Cutter at work, in the position required in cutting the teeth of a spiral cutter.

In ordering specify Right or Left Hand.

Brown and Sharpe Nos. J-150 to J-153, Morse Style No. 126 D.



Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
J-150	$2\frac{1}{2}$	$\frac{1}{2}$	$\frac{7}{8}$	\$2.65	\$4.10
J-151	$2\frac{3}{4}$	$\frac{1}{2}$	1	2.80	4.45
J-152	3	$\frac{1}{2}$	$1\frac{1}{4}$	3.35	5.40
*J-153	$3\frac{1}{4}$	$\frac{1}{2}$	$1\frac{1}{2}$	3.75	6.15

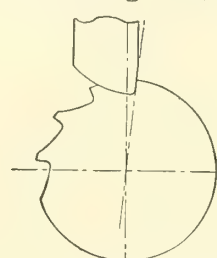
*Can be furnished 40 degree on one side and 12 degree on the other, or 53 degree on one side and 12 degree on the other.

Angular Cutters and Cutters for Spiral Mills

Formed Cutter

These Cutters are of the same dimensions as Cutters for spiral mills listed above. They are made to order and can be sharpened by grinding without changing their form. Prices furnished on application.

For Fluting Reamers



The cut shows a form of Cutter that makes a tooth that allows the chips to be removed more readily and has greater strength than the form made by the Cutters for grooving taps and reamers.

Brown & Sharpe Nos. L-75 to L-84, Morse Style No. 126H-A

Number	Diameter of Reamer Inches	Number of Teeth	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-75	$\frac{1}{8}$ to $\frac{3}{16}$	6	1	\$2.00	\$3.10
L-76	$\frac{1}{4}$ to $\frac{5}{16}$	6	1	2.10	3.10
L-77	$\frac{3}{8}$ to $\frac{7}{16}$	6	1	2.20	3.30
L-78	$\frac{1}{2}$ to $\frac{11}{16}$	6 to 8	1	2.40	3.60
L-79	$\frac{3}{4}$ to 1	8	1	2.40	3.75
L-80	$1\frac{1}{16}$ to $1\frac{1}{2}$	10	1	2.70	4.15
L-81	$1\frac{9}{16}$ to $2\frac{1}{8}$	12	1	2.70	4.30
L-82	$2\frac{1}{4}$ to 3	14	1	3.00	4.75
L-83	$3\frac{1}{16}$ to $3\frac{1}{2}$	14	1	3.30	5.20
L-84	$3\frac{9}{16}$ to 5	14 to 16	1	3.70	5.70

For Making Twist Drills

In ordering give number of Cutter or size of drill by the following list.

These Cutters can be sharpened by grinding without changing their form.

Brown and Sharpe Nos. L-110 to L-116.



Number	Diameter of Drill Inches	Diameter of Circle made by Cutter Inch	Diameter of Cutter Inches	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-100	$\frac{1}{16}$	.06	2	1	\$1.50	\$2.15
L-101	$\frac{1}{8}$	.08	2	1	1.70	2.40
L-102	$\frac{3}{16}$	.11	2	1	1.90	2.70
L-103	$\frac{1}{4}$	.15	2	1	2.10	3.00
L-104	$\frac{5}{16}$	.19	$2\frac{1}{4}$	1	2.30	3.35
L-105	$\frac{3}{8}$	.23	$2\frac{1}{4}$	1	2.40	3.50
L-106	$\frac{7}{16}$	.27	$2\frac{1}{4}$	1	2.60	3.80
L-107	$\frac{1}{2}$	.31	$2\frac{1}{4}$	1	2.80	4.10
L-108	$\frac{9}{16}$	.35	$2\frac{3}{8}$	1	3.00	4.45
L-109	$\frac{5}{8}$	.39	$2\frac{3}{8}$	1	3.20	4.75
L-110	$\frac{11}{16}$	.44	$2\frac{3}{8}$	1	3.40	5.05
L-111	$\frac{3}{4}$	.50	$2\frac{1}{2}$	1	3.60	5.40
L-112	$\frac{13}{16}$	.56	$2\frac{1}{2}$	1	3.80	5.70
L-113	$\frac{7}{8}$	.62	$2\frac{3}{4}$	1	4.00	6.20
L-114	$\frac{15}{16}$	.70	$2\frac{3}{4}$	1	4.20	6.55
L-115	1	.77	3	1	4.50	7.20
L-116	$1\frac{1}{8}$	.85	3	1	5.00	8.20

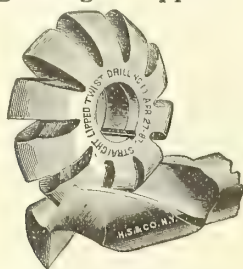
For Standard Keyways and suggestions see page 139

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Milling Cutters

For Making Straight Lipped Twist Drills



Brown & Sharpe

Number	Diameter of Drill Inches	Diameter of Cutter Inches	Hole in Cutter Inches	Carbon Steel Each	High Speed Steel Each
L-200	$\frac{1}{16}$	2	1	\$1.50	\$2.20
L-201	$\frac{1}{8}$	2	1	1.70	2.50
L-202	$\frac{3}{16}$	2	1	1.90	2.80
L-203	$\frac{1}{4}$	2	1	2.10	3.10
L-204	$\frac{5}{16}$	2 1/4	1	2.30	3.40
L-205	$\frac{3}{8}$	2 1/4	1	2.40	3.60
L-206	$\frac{7}{16}$	2 1/4	1	2.60	3.90
L-207	$\frac{1}{2}$	2 1/4	1	2.80	4.20
L-208	$\frac{5}{8}$	2 5/8	1	3.00	4.40
L-209	$\frac{3}{4}$	2 5/8	1	3.20	4.95
L-210	$\frac{7}{8}$	2 5/8	1	3.40	5.25
L-211	$\frac{1}{2}$	2 5/8	1	3.60	5.55
L-212	$\frac{13}{16}$	2 7/8	1	3.80	6.00
L-213	$\frac{7}{8}$	2 7/8	1	4.00	6.35
L-214	$\frac{15}{16}$	2 7/8	1	4.20	6.65
L-215	1	3	1	4.50	7.30
L-216	$\frac{11}{8}$	3	1	5.00	8.10
L-217	$\frac{11}{4}$	3 1/4	1	5.50	9.15
L-218	$\frac{11}{2}$	3 3/4	1 1/4	6.25	11.15
L-219	$\frac{13}{4}$	3 3/4	1 1/4	7.00	12.55
L-220	2	4	1 1/4	7.75	14.55
L-221	2 1/4	4 1/4	1 1/4	8.50	16.50
L-222	2 1/2	4 1/2	1 1/4	9.25	18.60

These Cutters can be sharpened by grinding without changing their form



Convex and Interlocking Concave

These Cutters have plain or milling cutter teeth

Brown & Sharpe

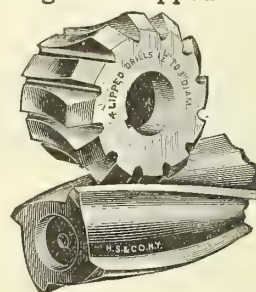
Convex

Number	Diameter of Circle Inches	Diameter of Cutter Inches	Size of Hole Inch	Carbon Steel Each	High Speed Steel Each
C-50	$\frac{3}{8}$	2 1/4	$\frac{7}{8}$	\$3.10	\$7.25
C-51	$\frac{1}{2}$	2 1/4	$\frac{7}{8}$	3.60	8.00
C-52	$\frac{5}{8}$	2 3/4	1	4.00	9.15
C-53	$\frac{3}{4}$	3	1	4.40	9.85
C-54	$\frac{7}{8}$	3 1/4	1	4.80	11.25
C-55	1	3 1/4	1	5.25	11.95
C-56	$\frac{11}{8}$	3 1/2	1	5.75	13.40
C-57	$\frac{11}{4}$	3 1/2	1	6.25	14.50
C-58	$\frac{13}{8}$	3 3/4	1	7.00	16.05
C-59	$\frac{11}{2}$	3 3/4	1	7.75	17.25

Interlocking Concave

Number	Diameter of Circle Inches	Diameter of Cutter Inches	Size of Hole Inch	Carbon Steel Each	High Speed Steel Each
C-50A	$\frac{3}{8}$	2 1/4	$\frac{7}{8}$	\$5.25	\$10.20
C-51A	$\frac{1}{2}$	2 1/4	$\frac{7}{8}$	6.10	11.00
C-52A	$\frac{5}{8}$	2 3/4	1	6.80	12.40
C-53A	$\frac{3}{4}$	3	1	7.50	14.00
C-54A	$\frac{7}{8}$	3 1/4	1	8.15	15.40
C-55A	1	3 1/4	1	8.90	15.75
C-56A	$\frac{11}{8}$	3 1/2	1	9.75	18.75
C-57A	$\frac{11}{4}$	3 1/2	1	10.60	20.40
C-58A	$\frac{13}{8}$	3 3/4	1	11.90	22.30
C-59A	$\frac{11}{2}$	3 3/4	1	13.15	24.65

For Making Four-Lipped Twist Drills



Brown & Sharpe

A form of Cutter especially adapted to cutting Four-lipped Twist Drills that are used in screw and chucking machines for roughing out holes previous to reaming. These drills are made, when possible, as shell drills to be used on an arbor and should have a spiral or "twist" of 15 degrees.

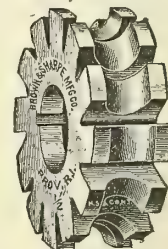
In ordering, give number of Cutter or size of drill by the following list. Can be sharpened by grinding without changing their form.

Number	Diameter of Drill Inches	Diameter of Cutter Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
L-250	To 1 1/2	2 3/4	1	\$6.00	\$ 9.55
L-251	1 1/2 to 3	3	1	7.00	12.40

Convex and Concave, for Milling Half Circles



Convex



Concave

These Cutters can be sharpened by grinding without changing their outline. In ordering state whether Convex or Concave. Brown & Sharpe Nos. C-10 to C-24A, Morse Style No. 126-C.

Convex

Number	Diameter of Circle Inches	Diameter of Cutter Inches	Size of Hole Inches	Carbon Steel Each	High Speed Steel Each
C-10	$\frac{1}{8}$	2	$\frac{7}{8}$	\$2.00	\$2.85
C-11	$\frac{3}{16}$	2	$\frac{7}{8}$	2.25	2.90
C-12	$\frac{1}{4}$	2	$\frac{7}{8}$	2.50	3.20
C-13	$\frac{5}{16}$	2 1/4	$\frac{7}{8}$	2.80	4.10
C-14	$\frac{3}{8}$	2 1/4	$\frac{7}{8}$	3.10	4.55
C-15	$\frac{7}{16}$	2 1/4	$\frac{7}{8}$	3.35	4.95
C-16	$\frac{1}{2}$	2 1/4	$\frac{7}{8}$	3.60	5.35
C-17	$\frac{5}{8}$	2 3/4	1	4.00	5.95
C-18	$\frac{3}{4}$	3	1	4.40	7.10
C-19	$\frac{7}{8}$	3 1/4	1	4.80	8.00
C-20	1	3 1/4	1	5.25	8.80
C-21	$\frac{11}{8}$	4	1 1/4	5.75	9.90
C-22	$\frac{11}{4}$	4	1 1/4	6.25	10.80
C-23	$\frac{13}{8}$	4 1/4	1 1/4	7.00	12.20
C-24	$\frac{11}{2}$	4 1/4	1 1/4	7.75	13.90

Concave

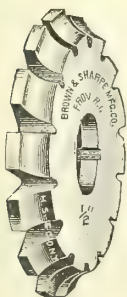
Number	Diameter of Circle Inches	Diameter of Cutter Inches	Size of Hole Inches	Carbon Steel Each	High Speed Steel Each
C-10A	$\frac{1}{8}$	2	$\frac{7}{8}$	\$2.40	\$3.50
C-11A	$\frac{3}{16}$	2	$\frac{7}{8}$	2.70	3.95
C-12A	$\frac{1}{4}$	2	$\frac{7}{8}$	3.00	4.40
C-13A	$\frac{5}{16}$	2 1/4	$\frac{7}{8}$	3.35	5.00
C-14A	$\frac{3}{8}$	2 1/4	$\frac{7}{8}$	3.70	5.55
C-15A	$\frac{7}{16}$	2 1/4	$\frac{7}{8}$	4.00	6.00
C-16A	$\frac{1}{2}$	2 1/4	$\frac{7}{8}$	4.30	6.50
C-17A	$\frac{5}{8}$	2 3/4	1	4.80	7.85
C-18A	$\frac{3}{4}$	3	1	5.25	8.75
C-19A	$\frac{7}{8}$	3 1/4	1	5.75	10.00
C-20A	1	3 1/4	1	6.30	11.00
C-21A	$\frac{11}{8}$	4	1 1/4	6.90	12.50
C-22A	$\frac{11}{4}$	4	1 1/4	7.50	13.60
C-23A	$\frac{13}{8}$	4 1/4	1 1/4	8.40	15.70
C-24A	$\frac{11}{2}$	4 1/4	1 1/4	9.30	17.25

For Standard Keyways and suggestions see page 139

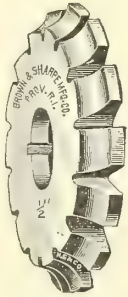
Corner Rounding Cutters

Metal Slitting Saws

Single



Left Hand



Right Hand

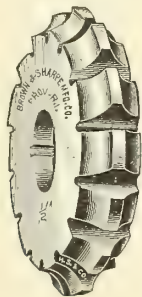
These Cutters have side as well as radial clearance and can be ground without changing their outline.

In ordering single Cutters, state whether Right or Left Hand is wanted

Brown & Sharpe Nos. C-100 to C-114, Morse Style No. 126 N

Number	Radius of Circle Inch	Diameter Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
C-100	$\frac{1}{16}$	2	$\frac{7}{8}$	\$2.00	\$2.90
C-101	$\frac{3}{32}$	2	$\frac{7}{8}$	2.25	3.30
C-102	$\frac{1}{8}$	2	$\frac{7}{8}$	2.50	3.65
C-103	$\frac{5}{32}$	$2\frac{1}{4}$	$\frac{7}{8}$	2.70	4.05
C-104	$\frac{3}{16}$	$2\frac{1}{4}$	$\frac{7}{8}$	2.90	4.35
C-105	$\frac{7}{32}$	$2\frac{1}{4}$	$\frac{7}{8}$	3.10	4.65
C-106	$\frac{1}{4}$	$2\frac{1}{4}$	$\frac{7}{8}$	3.30	4.95
C-107	$\frac{5}{16}$	$2\frac{3}{4}$	1	3.50	5.70
C-108	$\frac{3}{8}$	3	1	3.70	5.90
C-109	$\frac{7}{16}$	$3\frac{1}{4}$	1	3.90	6.35
C-110	$\frac{1}{2}$	$3\frac{1}{4}$	1	4.20	6.80
C-111	$\frac{9}{16}$	$3\frac{1}{2}$	1	4.50	8.10
C-112	$\frac{5}{8}$	$3\frac{1}{2}$	1	5.00	9.00
C-113	$\frac{11}{16}$	$3\frac{3}{4}$	1	5.75	10.40
C-114	$\frac{3}{4}$	$3\frac{3}{4}$	1	6.50	11.80

Double



Number	Radius of Circle Inch	Diameter Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
C-100	$\frac{1}{16}$	2	$\frac{7}{8}$	\$2.40	\$3.50
C-101	$\frac{3}{32}$	2	$\frac{7}{8}$	2.70	3.95
C-102	$\frac{1}{8}$	2	$\frac{7}{8}$	3.00	4.40
C-103	$\frac{5}{32}$	$2\frac{1}{4}$	$\frac{7}{8}$	3.35	4.95
C-104	$\frac{3}{16}$	$2\frac{1}{4}$	$\frac{7}{8}$	3.70	5.50
C-105	$\frac{7}{32}$	$2\frac{1}{4}$	$\frac{7}{8}$	4.00	6.00
C-106	$\frac{1}{4}$	$2\frac{1}{4}$	$\frac{7}{8}$	4.30	6.45
C-107	$\frac{5}{16}$	$2\frac{3}{4}$	1	4.80	7.65
C-108	$\frac{3}{8}$	3	1	5.25	8.65
C-109	$\frac{7}{16}$	$3\frac{1}{4}$	1	5.75	9.75
C-110	$\frac{1}{2}$	$3\frac{1}{4}$	1	6.30	11.00
C-111	$\frac{9}{16}$	$3\frac{1}{2}$	1	6.90	12.45
C-112	$\frac{5}{8}$	$3\frac{1}{2}$	1	7.50	13.50
C-113	$\frac{11}{16}$	$3\frac{3}{4}$	1	8.40	15.40
C-114	$\frac{3}{4}$	$3\frac{3}{4}$	1	9.30	17.00



These are thin Milling Cutters. They are ground on the sides so as to be a little thicker at the outer edge than near the center in order to give a proper clearance in cutting deep slots.

In ordering special saws please state for what purpose they are required.

Brown & Sharpe Nos. G-50 to G-84, Morse Style No. 132

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
G-50	$2\frac{1}{2}$	$\frac{1}{32}$	$\frac{7}{8}$	\$1.00	\$2.50
G-51	$2\frac{1}{2}$	$\frac{3}{64}$	$\frac{7}{8}$	.95	2.40
G-52	$2\frac{1}{2}$	$\frac{1}{16}$	$\frac{7}{8}$	.90	2.35
G-53	$2\frac{1}{2}$	$\frac{3}{32}$	$\frac{7}{8}$	.90	2.35
G-54	$2\frac{1}{2}$	$\frac{1}{8}$	$\frac{7}{8}$	.90	2.35
G-55	$2\frac{1}{2}$	$\frac{5}{32}$	$\frac{7}{8}$	1.10	2.60
G-56	3	$\frac{1}{32}$	1	1.25	2.95
G-57	3	$\frac{3}{64}$	1	1.10	2.60
G-58	3	$\frac{1}{16}$	1	1.00	2.50
G-59	3	$\frac{3}{32}$	1	1.00	2.50
G-60	3	$\frac{1}{8}$	1	1.00	2.50
G-61	3	$\frac{5}{32}$	1	1.15	2.85
G-62	4	$\frac{1}{32}$	1	2.25	4.60
G-63	4	$\frac{3}{64}$	1	1.45	3.15
G-64	4	$\frac{1}{16}$	1	1.25	2.95
G-65	4	$\frac{3}{32}$	1	1.20	2.85
G-66	4	$\frac{1}{8}$	1	1.20	2.85
G-67	4	$\frac{5}{32}$	1	1.40	3.45
G-68	4	$\frac{3}{16}$	1	1.60	3.45
G-69	5	$\frac{1}{16}$	1	1.80	3.85
G-70	5	$\frac{3}{32}$	1	1.50	3.35
G-71	5	$\frac{1}{8}$	1	1.50	3.35
G-72	5	$\frac{1}{8}$	$1\frac{1}{4}$	1.50	3.35
G-73	5	$\frac{1}{8}$	$1\frac{1}{2}$	1.50	3.35
G-74	5	$\frac{5}{32}$	1	1.90	4.30
G-75	5	$\frac{3}{16}$	1	2.30	4.30
G-76	6	$\frac{1}{16}$	1	4.00	7.50
G-77	6	$\frac{3}{32}$	1	3.00	5.85
G-78	6	$\frac{1}{8}$	1	2.70	5.35
G-79	6	$\frac{3}{16}$	$1\frac{1}{2}$	3.50	6.45
G-79A	6	$\frac{3}{16}$	$1\frac{3}{4}$	3.50	6.45
G-80	6	$\frac{3}{16}$	1	3.50	6.45
G-81	7	$\frac{1}{16}$	1	7.50	11.00
G-82	7	$\frac{3}{32}$	1	4.50	8.35
G-83	7	$\frac{1}{8}$	1	3.80	7.20
G-84	8	$\frac{1}{8}$	1	5.75	12.00

For Standard Keyways and suggestions see page 139

Screw Slotting Cutters



These Cutters have a fine pitch of teeth especially adapted for the slotting of screw heads and similar work. They are not ground on the sides
Brown & Sharpe, Nos. H-10 to H-66, Morse Style No. 131

Number	Diameter of Screw Head to be Slotted Inches	Gauge No. American Standard	Thickness of Cutter Decimals	Diam- eter of Cutter Inches	Size of Hole Inch	Carbon Steel Each	Number	Diameter of Screw Head to be Slotted Inches	Gauge No. American Standard	Thickness of Cutter Decimals	Diam- eter of Cutter Inches	Size of Hole Inch	Carbon Steel Each
H-10	1 5/16	5	.182	2 3/4	1	\$.70	H-36H	.....	17	.045	2 1/4	5/8	\$.15
H-11	1 1/8	6	.162	2 3/4	1	.60	H-36I	.....	18	.040	2 1/4	5/8	.15
H-12	1	7	.144	2 3/4	1	.50	H-36J	.....	19	.035	2 1/4	5/8	.15
H-13	7/8	8	.128	2 3/4	3/4, 1	.45	H-37	.....	20	.032	2 1/4	1/2, 5/8, 3/4	.15
H-14	3/4 - 1 1/8	9	.114	2 3/4	3/4, 1	.40	H-38	.....	21	.028	2 1/4	1/2, 5/8, 3/4	.15
H-15	5/8	10	.102	2 3/4	3/4, 1	.35	H-39	.....	22	.025	2 1/4	1/2, 5/8, 3/4	.15
H-16	.....	11	.091	2 3/4	3/4, 1	.30	H-40	.....	23	.023	2 1/4	1/2, 5/8, 3/4	.15
H-17	1/2 - 9/16	12	.081	2 3/4	3/4, 1	.25	H-41	.....	24	.020	2 1/4	1/2, 5/8, 3/4	.15
H-18	.....	13	.072	2 3/4	3/4, 1	.20	H-42	.....	25	.018	2 1/4	1/2, 5/8, 3/4	.15
H-19	3/8 - 7/16	14	.064	2 3/4	1/2, 5/8, 3/4, 1	.20	H-43	.....	26	.016	2 1/4	1/2, 5/8, 3/4	.15
H-20	11/32	15	.057	2 3/4	1/2, 5/8, 3/4, 1	.15	H-44	.....	27	.014	2 1/4	1/2, 5/8, 3/4	.15
H-21	5/16	16	.051	2 3/4	1/2, 5/8, 3/4, 1	.15	H-45	.....	28	.012	2 1/4	1/2, 5/8, 3/4	.15
H-22	.....	17	.045	2 3/4	1/2, 5/8, 3/4, 1	.15	H-46	.....	30	.010	2 1/4	1/2, 5/8, 3/4	.15
H-23	1/4 - 9/32	18	.040	2 3/4	1/2, 5/8, 3/4, 1	.15	H-47	.....	32	.008	2 1/4	1/2, 5/8, 3/4	.15
H-24	3/16 - 7/32	19	.035	2 3/4	1/2, 5/8, 3/4, 1	.15	H-48	.....	34	.006	2 1/4	1/2, 5/8, 3/4	.15
H-25	.....	20	.032	2 3/4	1/2, 5/8, 3/4, 1	.15	H-49	.....	14	.064	1 3/4	5/8	.15
H-26	1/8	21	.028	2 3/4	1/2, 5/8, 3/4, 1	.15	H-50	.....	15	.057	1 3/4	5/8	.15
H-27	1/8	22	.025	2 3/4	1/2, 5/8, 3/4, 1	.15	H-51	.....	16	.051	1 3/4	5/8	.15
H-28	.....	23	.023	2 3/4	1/2, 5/8, 3/4, 1	.15	H-52	.....	17	.045	1 3/4	5/8	.15
H-29	.....	24	.020	2 3/4	1/2, 5/8, 3/4, 1	.15	H-53	.....	18	.040	1 3/4	5/8	.15
H-30	.....	25	.018	2 3/4	1/2, 5/8, 3/4, 1	.15	H-54	.....	19	.035	1 3/4	5/8	.15
H-31	.....	26	.016	2 3/4	1/2, 5/8, 3/4, 1	.15	H-55	.....	20	.032	1 3/4	5/8	.15
H-32	.....	27	.014	2 3/4	1/2, 5/8, 3/4, 1	.15	H-56	.....	21	.028	1 3/4	5/8	.15
H-33	.....	28	.012	2 3/4	1/2, 5/8, 3/4, 1	.15	H-57	.....	22	.025	1 3/4	5/8	.15
H-34	.....	30	.010	2 3/4	1/2, 5/8, 3/4, 1	.15	H-58	.....	23	.023	1 3/4	5/8	.15
H-35	.....	32	.008	2 3/4	1/2, 5/8, 3/4, 1	.15	H-59	.....	24	.020	1 3/4	5/8	.12
H-36	.....	34	.006	2 3/4	1/2, 5/8, 3/4, 1	.15	H-60	.....	25	.018	1 3/4	3/8, 1/2, 5/8	.12
H-36A	.....	10	.102	2 1/4	5/8	.30	H-61	.....	26	.016	1 3/4	3/8, 1/2, 5/8	.12
H-36B	.....	11	.091	2 1/4	5/8	.25	H-62	.....	27	.014	1 3/4	3/8, 1/2, 5/8	.12
H-36C	.....	12	.081	2 1/4	5/8	.20	H-63	.....	28	.012	1 3/4	3/8, 1/2, 5/8	.12
H-36D	.....	13	.072	2 1/4	5/8	.15	H-64	.....	30	.010	1 3/4	3/8, 1/2, 5/8	.12
H-36E	.....	14	.064	2 1/4	5/8	.15	H-65	.....	32	.008	1 3/4	3/8, 1/2, 5/8	.12
H-36F	.....	15	.057	2 1/4	5/8	.15	H-66	.....	34	.006	1 3/4	3/8, 1/2, 5/8	.12
H-36G	.....	16	.051	2 1/4	5/8	.15							

See Index for Screw Slotting Cutter Arbors

Formed Saws for Slitting Copper

Brown & Sharpe Style



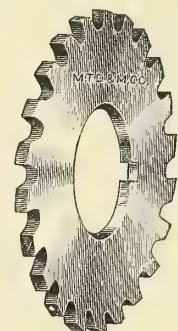
Each alternate tooth is V shaped and as the others are flat, the chip is split and forced out sidewise, having less tendency to clog than where the ordinary saw is employed.

These Saws are designed especially for the slitting or sawing of metals that are of a soft or tenacious character and are superior to the ordinary saw usually employed for this purpose. The teeth are formed and backed off the same as in all formed milling cutters, and are sharpened by grinding the face, thus retaining the outline of the saw. The sides of the Saw are ground concave for clearance.

These Saws are made to order.

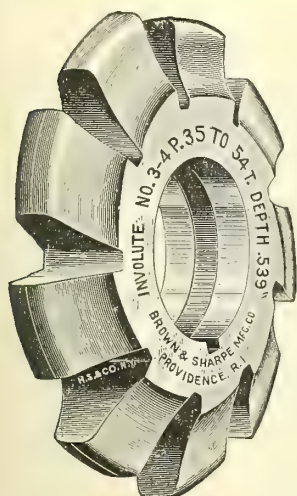
Prices on application.

Morse Style



Morse No. 132A

For Standard Keyways and suggestions see page 139



Involute Cutters

For Teeth of Gear Wheels

Which can be Sharpened by Grinding without changing their Form

Cutters for the teeth of Gear Wheels, from their peculiar construction, can be sharpened by grinding the faces of the teeth. This operation can be repeated without altering the form of the tooth which the Cutter makes, thereby rendering them much more valuable than cutters of ordinary form.

Orders should be given by annexed tables, stating the number of cutter and the diametral pitch required. By diametral pitch is meant the number of teeth to the inch in diameter on pitch circle of any wheel. In ordering Cutters for worm wheels, give the number of teeth in wheel, the diameter of worm and number of threads to the inch.

Center Line on Gear Cutters

We call attention to the center line on our Gear Cutters, which is convenient in setting Cutters central with the work spindle.

Directions for Using

The Cutters should be kept perfectly sharp by grinding the face of the teeth on the side of a solid emery or vulcanite wheel, which has its edge beveled on one side so as to reach to the bottom of the teeth. This wheel should be put on an arbor with a shoulder and nut, so that the flat side will run true, and at a velocity of from 2,000 to 3,000 revolutions per minute. Speeds and feeds of Cutters cannot be governed by any set rule. When using High Speed Steel Cutters a periphery speed of 80 feet per minute in cast iron and steel is offered as a suggestion to base speeds for any particular work when using Carbon Steel Cutters. This base will be too high, and will have to be modified to suit special

conditions. If used in a common hand lathe the top of the rest should be made square or vertical to the face of the wheel, or what is better, use a small platform in the place of the rest. Then by laying the Cutter on the rest or platform, the face of the teeth can be ground square, which is very important. The Cutters should not be crowded too hard, especially when cutting through at the end of the tooth. The depth of the space made by these Cutters affords ample clearance, as it exceeds the working depth of the tooth by an amount equal to one-tenth of the thickness of the tooth on the pitch line. For wrought iron or steel use plenty of good lard oil as a lubricant.

To Set Central

A frequent source of trouble in cutting accurate gears is found in the failure of the operator to set the Cutter central. The indicator furnished with the machine provides a satisfactory means for practically all varieties of work, but many times a very accurate and quiet running gear is required. In order to attain this, it is absolutely essential that the Cutter be central.

The best method of setting the Cutter central is first to turn a blank identical in diameter with the gear to be cut, and after centering it as nearly as possible, take a single cut through the blank. Without changing the position of the Cutter, remove the blank from the work arbor and turn it end for end. Permit the blank to remain loose on

the arbor and feed the Cutter into the slot already cut. Then revolve the Cutter by pulling the belt so as to mark its position in relation to the slot produced at the first cut.

If the Cutter is exactly central, the second cut will follow the outline of the first; but if out of center the Cutter at its second passage will cut some stock from the top of the space on one side and from the bottom on the other side. In the latter case the Cutter should be moved laterally away from the side of the tooth from which the stock was taken at the deepest part of cut and another cut taken in another part of the blank, and the above operations repeated until the Cutter is properly centered.

Eight Cutters are made for each pitch, as follows:

- No. 1 will cut wheels from 135 teeth to a rack
- No. 2 will cut wheels from 55 teeth to 134 teeth
- No. 3 will cut wheels from 35 teeth to 54 teeth
- No. 4 will cut wheels from 26 teeth to 34 teeth
- No. 5 will cut wheels from 21 teeth to 25 teeth
- No. 6 will cut wheels from 17 teeth to 20 teeth
- No. 7 will cut wheels from 14 teeth to 16 teeth
- No. 8 will cut wheels from 12 teeth to 13 teeth

We are prepared to furnish to order Gear Cutters from 2 to 8 pitch inclusive of half numbers, for the accommodation of those who require a finer division of the number of teeth to be cut with each Cutter than can be cut with the regular numbers as listed above.

The half numbers are as follows:

No. of Cutter	Range	No. of Cutter	Range
1½	80 to 134 teeth	5½	19 to 20 teeth
2½	42 to 54 teeth	6½	15 to 16 teeth
3½	30 to 34 teeth	7½	13 teeth
4½	23 to 25 teeth		

Table Showing Depth of Space and Thickness of Tooth in Spur Wheels when Cut with these Cutters

Diametral Pitch	Depth to be Cut in Gear Inches	Thickness of Tooth at Pitch Line Inches	Diametral Pitch	Depth to be Cut in Gear Inch	Thickness of Tooth at Pitch Line Inch
1¼	1.726	1.257	11	.196	.143
1½	1.438	1.047	12	.180	.131
1¾	1.233	.898	14	.154	.112
2	1.078	.785	16	.135	.098
2¼	.958	.697	18	.120	.087
2½	.863	.628	20	.108	.079
2¾	.784	.570	22	.098	.071
3	.719	.523	24	.090	.065
3½	.616	.448	26	.083	.060
4	.539	.393	28	.077	.056
5	.431	.314	30	.072	.052
6	.359	.262	32	.067	.049
7	.308	.224	36	.060	.044
8	.270	.196	40	.054	.039
9	.240	.175	48	.045	.033
10	.216	.157			

For Standard Keyways and suggestions, see page 139

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe or Morse

Brown & Sharpe or Morse

Large Diameters

If Morse is desired order Style No. 131B

All gears of same pitch cut with these Cutters are interchangeable

If Morse is desired order Style No. 131H

All gears of same pitch cut with these Cutters are interchangeable

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
*1	8 1/2	8 1/2	2	\$45.00	\$85.00
*1 1/4	7 3/4	7 3/4	2	38.00	70.00
*1 1/2	7	7	1 3/4	32.00	55.00
1 3/4	6 1/2	6 1/2	1 3/4	24.00	45.00
2	5 3/4	5 3/4	1 1/2	16.00	35.00
*2 1/4	5 3/4	5 3/4	1 1/2	13.00	28.00
2 1/2	5 1/2	5 3/4	1 1/2	11.00	23.00
*2 3/4	5 1/8	5 1/2	1 1/2	10.00	20.00
3	4 3/8	4 3/4	1 1/4	8.00	18.00
*3 1/4	4 1/4	4 5/8	1 1/4	7.00	16.00
*3 1/2	4 1/8	4 1/2	1 1/4	6.75	14.00
*3 3/4	4	4 3/8	1 1/4	6.50	13.00
4	3 7/8	4 1/4	1 1/4	6.00	12.00
*4 1/2	3 3/4	4	1 1/4	5.50	11.00
5	3 3/8	3 3/4	1 1/4	5.00	10.00
*5 1/2	3 5/8	3 3/4	1 1/4	5.00	9.00
6	3	3 1/8	1	4.30	8.00
7	2 7/8	2 7/8	1	4.10	7.00
8	2 7/8	2 7/8	1	3.90	6.00
9	2 3/4	2 3/4	1	3.70	5.50
10	2 1/4	2 3/8	7/8	3.50	5.00
11	2 1/4	2 3/8	7/8	3.30	4.50
12	2 1/8	2 1/4	7/8	3.10	4.25
*13	2 1/8	2 1/4	7/8	2.90	4.00
14	2	2 1/8	7/8	2.70	3.75
*15	2	2 1/8	7/8	2.60	3.60
16	2	2 1/8	7/8	2.50	3.50
18	1 7/8	2	7/8	2.40	3.40
20	1 7/8	2	7/8	2.30	3.30
22	1 7/8	2	7/8	2.20	3.20
24	1 3/4	1 3/4	7/8	2.10	3.10
26	1 3/4	1 3/4	7/8	2.00	3.00
28	1 3/4	1 3/4	7/8	1.80	3.00
30	1 3/4	1 3/4	7/8	1.80	3.00
32	1 3/4	1 3/4	7/8	1.80	3.00
*34	1 3/4	1 3/4	7/8	1.80	3.00
36	1 3/4	1 3/4	7/8	1.80	3.00
*38	1 3/4	1 3/4	7/8	1.80	3.00
40	1 3/4	1 3/4	7/8	1.80	3.00
*44	1 3/4	1 3/4	7/8	1.80	3.00
48	1 3/4	1 3/4	7/8	1.80	3.00
*50	1 3/4	1 3/4	7/8	1.80	3.00
*56	1 3/4	1 3/4	7/8	1.80	3.00
*60	1 3/4	1 3/4	7/8	1.80	3.00
*64	1 3/4	1 3/4	7/8	1.80	3.00
*70	1 3/4	1 3/4	7/8	1.80	3.00
*80	1 3/4	1 3/4	7/8	1.80	3.00
*120	1 3/4	1 3/4	7/8	1.80	3.00

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
1	8 1/2	8 1/2	1 1/2 or 2	\$45.00	\$85.00
1 1/4	7 3/4	7 3/4	1 1/2 or 2	38.00	70.00
1 1/2	7 1/4	7 1/4	1 1/2 or 2	33.00	60.00
1 3/4	6 3/4	6 3/4	1 1/2 or 2	25.00	54.00
2	6 1/4	6 1/4	1 1/2 or 2	16.50	38.50
2 1/4	6 1/4	6 1/4	1 1/2 or 2	13.50	30.80
2 1/2	6 1/4	6 1/4	1 1/2 or 2	12.00	26.50
2 3/4	5 3/4	6 1/4	1 1/2 or 2	10.50	25.00
3	5 1/4	5 1/4	1 1/2 or 2	9.50	19.00
4	5 1/4	5 1/4	1 1/2 or 2	8.00	15.85
5	5 1/4	5 1/4	1 1/2 or 2	7.00	14.20
6	4 1/4	4 1/4	1 1/2 or 2	5.80	10.40
7	4 1/4	4 1/4	1 1/2 or 2	5.60	9.10
8	4 1/4	4 1/4	1 1/2 or 2	5.40	8.60
10	4 1/4	4 1/4	1 1/2 or 2	5.20	7.80
12	4 1/4	4 1/4	1 1/2 or 2	4.35	6.65
14	4 1/4	4 1/4	1 1/2 or 2	4.00	6.00
16	4 1/4	4 1/4	1 1/2 or 2	4.00	6.00

For above Cutters with 1 1/2-inch hole the Keyways are 3/8 inch wide and 3/16 inch deep; with 2-inch hole the Keyways are 1/2 inch wide and 1/8 inch deep.

Brown & Sharpe or Morse

If Morse is desired order Style No. 131K

For use on No. 4 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3	4 3/8	4 3/4	1 1/4	\$8.00	\$18.00
*3 1/4	4 1/4	4 5/8	1 1/4	7.00	16.00
*3 1/2	4 1/8	4 1/2	1 1/4	6.75	14.00
*3 3/4	4	4 3/8	1 1/4	6.50	13.00
4	3 7/8	4 1/4	1 1/4	6.00	12.00
*4 1/2	3 3/4	4	1 1/4	5.50	11.00
5	3 5/8	3 3/4	1 1/4	5.00	10.00
*5 1/2	3 5/8	3 3/4	1 1/4	5.00	9.00
6	3 1/2	3 1/2	1 1/4	4.80	8.40
7	3 3/8	3 3/8	1 1/4	4.60	8.00
8	3 1/4	3 1/4	1 1/4	4.40	7.30
9	3 1/8	3 1/8	1 1/4	4.20	6.65
10	3	3	1 1/4	4.00	6.00
11	2 7/8	2 7/8	1 1/4	3.80	5.40
12	2 7/8	2 7/8	1 1/4	3.60	5.10
*13	2 7/8	2 7/8	1 1/4	3.40	4.80
*14	2 7/8	2 7/8	1 1/4	3.20	4.50
*15	2 7/8	2 7/8	1 1/4	3.10	4.35
*16	2 7/8	2 7/8	1 1/4	3.00	4.20
*18	2 7/8	2 7/8	1 1/4	2.90	4.10
*20	2 3/4	2 3/4	1 1/4	2.80	4.00

Brown & Sharpe or Morse

If Morse is desired order Style No. 131J. For use on No. 3 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
4	3 1/2	3 5/8	1	\$5.50	\$12.00
*4 1/2	3 3/8	3 1/2	1	5.00	11.00
5	3 1/4	3 3/8	1	4.75	10.00
*5 1/2	3 1/8	3 1/4	1	4.50	9.00
6	3	3 1/8	1	4.30	8.00
7	2 7/8	2 7/8	1	4.10	7.00
8	2 7/8	2 7/8	1	3.90	6.00
9	2 3/4	2 3/4	1	3.70	5.50
10	2 3/4	2 3/4	1	3.60	5.30
11	2 5/8	2 5/8	1	3.50	4.95
12	2 5/8	2 5/8	1	3.35	4.70
*13	2 5/8	2 5/8	1	3.15	4.40
14	2 1/2	2 1/2	1	2.95	4.15
*15	2 1/2	2 1/2	1	2.85	4.00
16	2 1/2	2 1/2	1	\$2.75	\$3.85
18	2 3/8	2 3/8	1	2.65	3.75
20	2 3/8	2 3/8	1	2.55	3.65
22	2 1/4	2 1/4	1	2.45	3.55
24	2 1/4	2 1/4	1	2.35	3.45
*26	2 1/4	2 1/4	1	2.25	3.30
*28	2 1/4	2 1/4	1	2.05	3.30
*30	2 1/4	2 1/4	1	2.05	3.30
*32	2 1/4	2 1/4	1	2.05	3.30
*34	2 1/4	2 1/4	1	2.05	3.30
*36	2 1/4	2 1/4	1	2.05	3.30
*38	2 1/4	2 1/4	1	2.05	3.30
*40	2 1/4	2 1/4	1	2.05	3.30
*44	2 1/4	2 1/4	1	2.05	3.30
*48	2 1/4	2 1/4	1	2.05	3.30

Cutters marked * are made to order only. In ordering give the number of Cutter and diametral pitch required. Eight Cutters made for each pitch, see page 131. 3 pitch and coarser in cast iron and 4 pitch and coarser in steel, require 2 cuts to insure accuracy. For Standard Keyways and suggestions see page 139. Keep Cutters sharp.

Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe or Morse

If Morse is desired order Style No. 131L
For use on No. 5 Automatic Gear Cutting Machines

Brown & Sharpe or Morse

If Morse is desired order Style No. 131M
For use on No. 6 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each	Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
2	5 ³ / ₄	5 ³ / ₄	1 ¹ / ₂	\$16.00	\$35.00	1 ³ / ₄	6 ¹ / ₂	6 ¹ / ₂	1 ³ / ₄	\$24.00	\$45.00
*2 ¹ / ₄	5 ³ / ₄	5 ³ / ₄	1 ¹ / ₂	13.00	28.00	2	6 ¹ / ₂	6 ¹ / ₂	1 ³ / ₄	17.00	42.00
2 ¹ / ₂	5 ¹ / ₂	5 ³ / ₄	1 ¹ / ₂	11.00	23.00	*2 ¹ / ₄	6 ¹ / ₂	6 ¹ / ₂	1 ³ / ₄	13.50	33.60
*2 ³ / ₄	5 ¹ / ₈	5 ¹ / ₂	1 ¹ / ₂	10.00	20.00	2 ¹ / ₂	5 ⁷ / ₈	6 ¹ / ₈	1 ³ / ₄	11.50	26.00
3	5	5 ¹ / ₄	1 ¹ / ₂	9.00	19.00	*2 ³ / ₄	5 ⁵ / ₈	5 ⁷ / ₈	1 ³ / ₄	10.50	23.00
*3 ¹ / ₄	4 ³ / ₄	5	1 ¹ / ₂	8.00	17.80	3	5 ³ / ₈	5 ⁵ / ₈	1 ³ / ₄	9.50	22.00
*3 ¹ / ₂	4 ⁵ / ₈	4 ⁷ / ₈	1 ¹ / ₂	7.50	15.40	*3 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₂	1 ³ / ₄	8.50	20.00
*3 ³ / ₄	4 ³ / ₈	4 ⁵ / ₈	1 ¹ / ₂	7.00	14.30	*3 ¹ / ₂	5	5 ¹ / ₄	1 ³ / ₄	7.75	16.80
4	4 ¹ / ₄	4 ¹ / ₂	1 ¹ / ₂	6.50	13.20	*3 ³ / ₄	4 ³ / ₄	5	1 ³ / ₄	7.50	15.60
*4 ¹ / ₂	4 ¹ / ₈	4 ³ / ₈	1 ¹ / ₂	6.00	12.10	4	4 ⁵ / ₈	4 ³ / ₄	1 ³ / ₄	7.00	14.40
5	4	4 ¹ / ₄	1 ¹ / ₂	5.50	11.00	*4 ¹ / ₂	4 ¹ / ₂	4 ⁵ / ₈	1 ³ / ₄	6.50	13.20
*5 ¹ / ₂	3 ⁷ / ₈	4 ¹ / ₈	1 ¹ / ₂	5.50	10.00	5	4 ³ / ₈	4 ³ / ₈	1 ³ / ₄	6.00	12.00
6	3 ³ / ₄	3 ⁷ / ₈	1 ¹ / ₂	5.30	9.00	*5 ¹ / ₂	4 ³ / ₈	4 ³ / ₈	1 ³ / ₄	6.00	10.80
7	3 ⁵ / ₈	3 ⁵ / ₈	1 ¹ / ₂	5.10	8.25	6	4 ¹ / ₄	4 ¹ / ₄	1 ³ / ₄	5.80	10.40
8	3 ¹ / ₂	3 ¹ / ₂	1 ¹ / ₂	4.90	7.50	*7	4 ¹ / ₈	4 ¹ / ₈	1 ³ / ₄	5.60	9.10
*9	3 ¹ / ₂	3 ¹ / ₂	1 ¹ / ₂	4.70	7.00	*8	4	4	1 ³ / ₄	5.40	7.80
*10	3 ¹ / ₂	3 ¹ / ₂	1 ¹ / ₂	4.70	6.50						

Cutters marked * are made to order only. In ordering give the number of Cutter and diametral pitch required. Eight Cutters made for each pitch, see page 131. 3 pitch and coarser in cast iron and 4 pitch and coarser in steel, require 2 cuts to insure accuracy. For Standard Keyways and suggestions see page 139. Keep Cutters sharp.

Metric Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe

We are prepared to furnish, at short notice, Cutters for cutting the teeth of gear wheels according to the metric system. Module is the pitch diameter in mm. divided by the number of teeth in the gear. Pitch diameter in mm. is the module multiplied by the number of teeth in the gear. M = Module. N = Number of teeth in gear. D' = Pitch Diameter in mm. D' = M x N. For example: M = 3.50 mm.; N = 100; D' = 3.50 x 100 = 350 mm. For further explanation see formulas next page.

For use on No. 3 Automatic Gear Cutting Machines

Module MM.	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each	Module MM.	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each
1/2	1 3/4	1 3/4	7/8 or 22	\$2.30	\$3.00	3/4	2 1/4	2 1/4	1 or 27	\$2.55	\$3.30
3/4	1 3/4	1 3/4	7/8 or 22	2.30	3.00	1	2 1/4	2 1/4	1 or 27	2.85	3.45
1	1 3/4	1 3/4	7/8 or 22	2.60	3.10	1 1/4	2 3/8	2 3/8	1 or 27	3.05	3.65
1 1/4	1 7/8	2	7/8 or 22	2.80	3.30	1 1/2	2 1/2	2 1/2	1 or 27	3.25	3.85
1 1/2	2	2 1/8	7/8 or 22	3.00	3.50	1 3/4	2 1/2	2 1/2	1 or 27	3.45	4.15
1 3/4	2	2 1/8	7/8 or 22	3.20	3.75	2	2 5/8	2 5/8	1 or 27	3.85	4.70
2	2 1/8	2 1/4	7/8 or 22	3.60	4.25	2 1/4	2 5/8	2 5/8	1 or 27	4.00	4.95
2 1/4	2 1/4	2 3/8	7/8 or 22	3.80	4.50	2 1/2	2 3/4	2 3/4	1 or 27	4.10	5.30
2 1/2	2 1/4	2 3/8	7/8 or 22	4.00	5.00						
2 3/4	2 3/4	2 3/4	1 or 27	4.20	5.50	3	2 7/8	2 7/8	1 or 27	4.40	6.00
3	2 7/8	2 7/8	1 or 27	4.40	6.00	3 1/2	2 7/8	2 7/8	1 or 27	4.60	7.00
3 1/4	2 7/8	2 7/8	1 or 27	4.40	6.00	4	3	3 1/8	1 or 27	4.80	8.00
3 1/2	2 7/8	2 7/8	1 or 27	4.60	7.00	4 1/2	3 1/8	3 1/4	1 or 27	5.00	9.00
3 3/4	2 7/8	2 7/8	1 or 27	4.60	7.00	5	3 1/4	3 3/8	1 or 27	5.25	10.00
4	3	3 1/8	1 or 27	4.80	8.00	5 1/2	3 3/8	3 1/2	1 or 27	5.50	11.00
4 1/4	3	3 1/8	1 or 27	4.80	8.00	6	3 1/2	3 5/8	1 or 27	6.00	12.00
4 1/2	3 5/8	3 3/4	1 1/4 or 32	5.50	9.00						
4 3/4	3 5/8	3 3/4	1 1/4 or 32	5.50	9.00						
5	3 5/8	3 3/4	1 1/4 or 32	5.50	10.00						
5 1/4	3 5/8	3 3/4	1 1/4 or 32	5.50	10.00						
5 1/2	3 3/4	4	1 1/4 or 32	6.00	11.00						
5 3/4	3 3/4	4	1 1/4 or 32	6.00	11.00						
6	3 7/8	4 1/4	1 1/4 or 32	6.50	12.00						
7	4 1/8	4 1/2	1 1/4 or 32	7.25	14.00						
8	4 3/8	4 3/4	1 1/4 or 32	8.50	18.00						
9	5 1/8	5 1/2	1 1/2 or 40	10.50	20.00						
10	5 1/2	5 3/4	1 1/2 or 40	11.50	23.00						
11	5 3/4	5 3/4	1 1/2 or 40	13.50	28.00						
12	5 3/4	5 3/4	1 1/2 or 40	16.50	35.00						

Eight Cutters made for each pitch, page 131. For Standard Keyways and suggestions see page 139. Keep Cutters sharp

Metric Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe

(Continued from lower part of preceding page, which see for explanation and data)

For use on No. 5 Automatic Gear Cutting Machines

For use on No. 6 Automatic Gear Cutting Machines

Module MM.	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each	Module MM.	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each
2½	3½	3½	1½ or 40	\$5.20	\$6.50	3	4	4	1¾ or 45	\$5.90	\$7.80
3	3½	3½	1½ or 40	5.40	7.50	3½	4½	4½	1¾ or 45	6.10	9.10
3½	3½	3½	1½ or 40	5.60	8.25	4	4½	4½	1¾ or 45	6.30	10.40
4	3¾	3¾	1½ or 40	5.80	9.00	4½	4¾	4¾	1¾ or 45	6.50	10.80
4½	3¾	3¾	1½ or 40	6.00	10.00	5	4¾	4¾	1¾ or 45	6.50	12.00
5	4	4	1½ or 40	6.00	11.00	5½	4½	4½	1¾ or 45	7.00	13.20
5½	4½	4½	1½ or 40	6.50	12.10	6	4¾	4¾	1¾ or 45	7.50	14.40
6	4½	4½	1½ or 40	7.00	13.20	7	5	5	1¾ or 45	8.25	16.80
7	4¾	4¾	1½ or 40	8.00	15.40	8	5¾	5¾	1¾ or 45	10.00	22.00
8	5	5	1½ or 40	9.50	19.00	9	5¾	5¾	1¾ or 45	11.00	23.00
9	5½	5½	1½ or 40	10.50	20.00	10	5¾	5¾	1¾ or 45	12.00	26.00
10	5½	5½	1½ or 40	11.50	23.00	11	6¼	6¼	1¾ or 45	14.00	33.60
11	5¾	5¾	1½ or 40	13.50	28.00	12	6½	6½	1¾ or 45	17.50	42.00
12	5¾	5¾	1½ or 40	16.50	35.00						

Formulas for Determining the Dimensions of Gears by Metric Pitch

Module is the pitch diameter in mm. divided by the number of teeth in the gear.

Pitch diameter in mm. is the module multiplied by the number of teeth in the gear.

M = Module.

D' = The pitch diameter of gear in mm.

D = The whole diameter of gear in mm.

N = The number of teeth in gear.

D'' = The working depth of teeth.

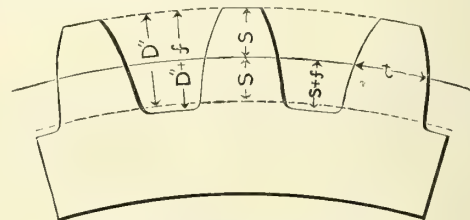
t = Thickness of teeth on pitch line.

f = Amount added to depth for clearance.

$$\begin{aligned} \text{Then} \\ D' &= \frac{D}{N} \text{ or } \frac{D}{N+2} \\ D' &= N M. \\ D &= (N+2) M. \\ N &= \frac{D'}{M} \text{ or } \frac{D}{M} - 2 \\ D'' &= 2 M. \\ t &= M 1.5708. \\ f &= \frac{M 1.5708}{10} = .157 M. \end{aligned}$$

The Module is equal to the part marked "S" in cut, measured in mm. and parts of mm.

Eight Cutters made for each pitch, page 131. For Standard Keyways and suggestions see page 139. Keep Cutters sharp.



Pitches Commonly Used
Module in Millimeters

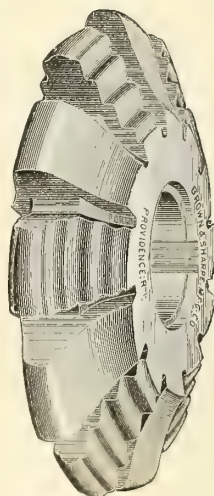
Module MM.	Corresponding English Diametral Pitch	Module MM.	Corresponding English Diametral Pitch
½	50.800	5	5.080
¾	33.867	5.5	4.618
1	25.400	6	4.233
1.25	20.320	7	3.628
1.5	16.933	8	3.175
1.75	14.514	9	2.822
2	12.700	10	2.540
2.25	11.288	11	2.309
2.5	10.160	12	2.117
2.75	9.236	13	1.954
3	8.466	14	1.814
3.5	7.257	15	1.693
4	6.350	16	1.587
4.5	5.644		

Improved Stocking Cutters

For Involute Gears

Brown & Sharpe

By the use of these Cutters, heavy cuts at fast speeds and coarse feeds can be taken because of the easier cutting action produced. The greater part of the cutting is performed by the plain teeth, the stepped teeth projecting beyond the outline of the plain teeth only enough to break up the chips. Because of the smooth and easy cutting action a minimum amount of power is consumed in driving the machine.



For other Stocking Cutters, see following page

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
*1	8½	8½	2	\$45.00	\$85.00
*1¼	7¾	7¾	2	38.00	70.00
*1½	7	7	1¾	32.00	55.00
1¾	6½	6½	1¾	24.00	45.00
2	5¾	5¾	1½	16.00	35.00
*2¼	5¾	5¾	1½	13.00	28.00
2½	5½	5½	1½	11.00	23.00
*2¾	5½	5½	1½	10.00	20.00
3	4¾	4¾	1¼	8.00	18.00
*3¼	4¼	4¼	1¼	7.00	16.00
*3½	4¼	4¼	1¼	6.75	14.00
*3¾	4	4	1¼	6.50	13.00
4	3¾	3¾	1¼	6.00	12.00
*4½	3¾	3¾	1¼	5.50	11.00
5	3½	3½	1¼	5.00	10.00
*5½	3½	3½	1¼	5.00	9.00
6	3	3	1	4.30	8.00
7	2¾	2¾	1	4.10	7.00
8	2¾	2¾	1	3.90	6.00

Cutters marked * are made to order only

Improved Stocking Cutters

For Involute Gears—Brown & Sharpe

By the use of these Cutters, heavy cuts at fast speeds and coarse feeds can be taken because of the easier cutting action produced. The greater part of the cutting is performed by the plain teeth, the stepped teeth projecting beyond the outline of the plain teeth only enough to break up the chips. Because of the smooth and easy cutting action a minimum amount of power is consumed in driving the machine

For use on No. 3 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
4	3 1/2	3 5/8	1	\$5.50	\$12.00
*4 1/2	3 3/8	3 1/2	1	5.00	11.00
5	3 1/4	3 3/8	1	4.75	10.00
*5 1/2	3 1/8	3 1/4	1	4.50	9.00
6	3	3 1/8	1	4.30	8.00
7	2 7/8	2 7/8	1	4.10	7.00
8	2 7/8	2 7/8	1	3.90	6.00

For use on No. 4 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3	4 3/8	4 3/4	1 1/4	\$8.00	\$18.00
*3 1/2	4 1/8	4 1/2	1 1/4	6.75	14.00
4	3 7/8	4 1/4	1 1/4	6.00	12.00
*4 1/2	3 3/4	4	1 1/4	5.50	11.00
5	3 5/8	3 3/4	1 1/4	5.00	10.00
*5 1/2	3 5/8	3 3/4	1 1/4	5.00	9.00
6	3 1/2	3 1/2	1 1/4	4.80	8.40
7	3 3/8	3 3/8	1 1/4	4.60	8.00
8	3 1/4	3 1/4	1 1/4	4.40	7.30

For use on No. 5 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
2	5 3/4	5 3/4	1 1/2	\$16.00	\$35.00
*2 1/4	5 3/4	5 3/4	1 1/2	13.00	28.00
2 1/2	5 1/2	5 1/2	1 1/2	11.00	23.00
*2 3/4	5 1/8	5 1/2	1 1/2	10.00	20.00
3	5	5 1/4	1 1/2	9.00	19.00
*3 1/4	4 3/4	5	1 1/2	8.00	17.80
*3 1/2	4 5/8	4 7/8	1 1/2	7.50	15.40
*3 3/4	4 3/8	4 5/8	1 1/2	7.00	14.30
4	4 1/4	4 1/2	1 1/2	6.50	13.20
*4 1/2	4 1/8	4 3/8	1 1/2	6.00	12.10
5	4	4 1/4	1 1/2	5.50	11.00
*5 1/2	3 7/8	4 1/8	1 1/2	5.50	10.00
6	3 3/4	3 7/8	1 1/2	5.30	9.00
7	3 5/8	3 5/8	1 1/2	5.10	8.25
8	3 1/2	3 1/2	1 1/2	4.90	7.50

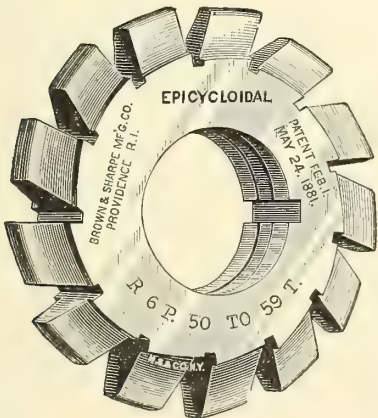
For use on No. 6 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
1 3/4	6 1/2	6 1/2	1 3/4	\$24.00	\$45.00
2	6 1/2	6 1/2	1 3/4	17.00	42.00
*2 1/4	6 1/4	6 1/2	1 3/4	13.50	33.60
2 1/2	5 7/8	6 1/8	1 3/4	11.50	26.00
*2 3/4	5 5/8	5 7/8	1 3/4	10.50	23.00
3	5 3/8	5 5/8	1 3/4	9.50	22.00
*3 1/4	5 1/4	5 1/2	1 3/4	8.50	20.00
*3 1/2	5	5 1/4	1 3/4	7.75	16.80
*3 3/4	4 3/4	5	1 3/4	7.50	15.60
4	4 5/8	4 3/4	1 3/4	7.00	14.40
*4 1/2	4 1/2	4 5/8	1 3/4	6.50	13.20
5	4 3/8	4 3/8	1 3/4	6.00	12.00
*5 1/2	4 3/8	4 3/8	1 3/4	6.00	10.80
6	4 1/4	4 1/4	1 3/4	5.80	10.40
*7	4 1/8	4 1/8	1 3/4	5.60	9.10
*8	4	4	1 3/4	5.40	7.80

Cutters marked * are made to order only

Patent Epicycloidal Cutters

For Teeth of Gear Wheels—Brown & Sharpe



We furnish Cutters of epicycloidal form, which are sharpened upon the face the same as the Involute Cutters. As gears of this form of teeth to run well must be cut accurately to the proper depth that the pitch lines may coincide, we make the Cutters with a shoulder (see cut above) which determines the exact depth that the tooth should be cut. Care taken in sizing the blanks obviates the necessity of any measurements in cutting the teeth. The Cutters are made for either diametral or circular pitches and the same rules apply in finding the diameters of blanks as in our system of involute teeth, i. e., 2 pitches added to the diameter at pitch line. See formulas, page 139 and tables showing corresponding circular and diametral pitches, page 138.

These Cutters will cut gears that will interchange.

The white line on edge of the two left hand upper teeth of cut represents a center line on the cutter teeth, which may be a convenience in setting the Cutter central.

All gears of same pitch cut with these Cutters are interchangeable.

They can be sharpened by grinding without changing their form.

Diametral Pitch	Diameter of Cutter Inches	Hole Inches	Carbon Steel Each
*2	5	1 1/4	\$15.50
*2 1/4	4 1/2	1 1/4	14.00
*2 1/2	4 1/4	1 1/4	13.00
*2 3/4	4	1 1/4	11.75
3	3 13/16	1 1/4	10.75
*3 1/2	3 9/16	1 1/4	9.75
4	3 3/8	1 1/4	6.60
5	3 1/16	1 1/4	5.65
6	2 3/4	1 1/16	4.65
*7	2 9/16	1 1/16	4.40
8	2 1/2	1 1/16	3.90
*9	2 3/8	1 1/16	3.65
10	2 1/8	7/8	3.40
*12	2	7/8	3.20
*14	2	7/8	3.00
*16	1 15/16	7/8	2.80

Cutters marked * are made to order only

Cutters are Marked with Letters

24 Cutters in Each Set

Cutter A cuts	12 teeth	Cutter M cuts	27 to 29 teeth
Cutter B cuts	13 teeth	Cutter N cuts	30 to 33 teeth
Cutter C cuts	14 teeth	Cutter O cuts	34 to 37 teeth
Cutter D cuts	15 teeth	Cutter P cuts	38 to 42 teeth
Cutter E cuts	16 teeth	Cutter Q cuts	43 to 49 teeth
Cutter F cuts	17 teeth	Cutter R cuts	50 to 59 teeth
Cutter G cuts	18 teeth	Cutter S cuts	60 to 74 teeth
Cutter H cuts	19 teeth	Cutter T cuts	75 to 99 teeth
Cutter I cuts	20 teeth	Cutter U cuts	100 to 149 teeth
Cutter J cuts	21 to 22 teeth	Cutter V cuts	150 to 249 teeth
Cutter K cuts	23 to 24 teeth	Cutter W cuts	250 or more
Cutter L cuts	25 to 26 teeth	Cutter X cuts	Rack

In ordering, give the letter on Cutter and the pitch required

For Standard Keyways and suggestions see page 139

Involute Gear Cutters

Circular Pitch



We furnish, at short notice, Cutters for cutting the teeth of gear wheels according to circular pitch made either from Carbon Steel or High Speed Steel.

Brown & Sharpe or Morse

If Morse is desired order Style No. 131N

Circular Pitch Inches	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
$\frac{1}{8}$	$1\frac{3}{4}$	$1\frac{3}{4}$	$\frac{7}{8}$	\$2.60	\$3.10
$\frac{3}{16}$	2	$2\frac{1}{8}$	$\frac{7}{8}$	3.00	3.50
$\frac{1}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$\frac{7}{8}$	3.60	4.25
$\frac{5}{16}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$\frac{7}{8}$	4.00	5.00
$\frac{3}{8}$	$2\frac{7}{8}$	$2\frac{7}{8}$	1	4.40	6.00
$\frac{7}{16}$	$2\frac{7}{8}$	$2\frac{7}{8}$	1	4.60	7.00
$\frac{1}{2}$	3	$3\frac{1}{8}$	1	4.80	8.00
$\frac{9}{16}$	$3\frac{5}{8}$	$3\frac{3}{4}$	$1\frac{1}{4}$	5.50	9.00
$\frac{5}{8}$	$3\frac{5}{8}$	$3\frac{3}{4}$	$1\frac{1}{4}$	5.50	10.00
$\frac{11}{16}$	$3\frac{3}{4}$	4	$1\frac{1}{4}$	6.00	11.00
$\frac{3}{4}$	$3\frac{7}{8}$	$4\frac{1}{4}$	$1\frac{1}{4}$	6.50	12.00
$\frac{13}{16}$	4	$4\frac{3}{8}$	$1\frac{1}{4}$	7.00	13.00
$\frac{7}{8}$	$4\frac{1}{8}$	$4\frac{1}{2}$	$1\frac{1}{4}$	7.25	14.00
$\frac{15}{16}$	$4\frac{1}{4}$	$4\frac{5}{8}$	$1\frac{1}{4}$	7.50	16.00
1	$4\frac{3}{8}$	$4\frac{3}{4}$	$1\frac{1}{4}$	8.50	18.00
$1\frac{1}{8}$	$5\frac{1}{8}$	$5\frac{1}{2}$	$1\frac{1}{2}$	10.50	20.00
$1\frac{1}{4}$	$5\frac{1}{2}$	$5\frac{3}{4}$	$1\frac{1}{2}$	11.50	23.00
$1\frac{3}{8}$	$5\frac{3}{4}$	$5\frac{3}{4}$	$1\frac{1}{2}$	13.50	28.00
$1\frac{1}{2}$	$5\frac{3}{4}$	$5\frac{3}{4}$	$1\frac{1}{2}$	16.50	35.00
$1\frac{3}{4}$	$6\frac{1}{2}$	$6\frac{1}{2}$	$1\frac{3}{4}$	24.50	45.00
2	7	7	$1\frac{3}{4}$	32.50	55.00
$2\frac{1}{4}$	$7\frac{1}{2}$	$7\frac{1}{2}$	$1\frac{3}{4}$	35.00	65.00
$2\frac{1}{2}$	$7\frac{3}{4}$	$7\frac{3}{4}$	2	38.50	70.00
$2\frac{3}{4}$	$8\frac{1}{2}$	$8\frac{1}{2}$	2	42.00	80.00
3	$8\frac{1}{2}$	$8\frac{1}{2}$	2	45.50	85.00

Brown & Sharpe or Morse

Morse Style No. 131P

For use on No. 3 Automatic Gear Cutting Machines

Circular Pitch Inch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
$\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{1}{4}$	1	\$2.85	\$3.45
$\frac{3}{16}$	$2\frac{1}{2}$	$2\frac{1}{2}$	1	3.25	3.85
$\frac{1}{4}$	$2\frac{5}{8}$	$2\frac{5}{8}$	1	3.85	4.70
$\frac{5}{16}$	$2\frac{3}{4}$	$2\frac{3}{4}$	1	4.10	5.30
$\frac{3}{8}$	$2\frac{7}{8}$	$2\frac{7}{8}$	1	4.40	6.00
$\frac{7}{16}$	$2\frac{7}{8}$	$2\frac{7}{8}$	1	4.60	7.00
$\frac{1}{2}$	3	$3\frac{1}{8}$	1	4.80	8.00
$\frac{9}{16}$	$3\frac{1}{8}$	$3\frac{1}{4}$	1	5.00	9.00
$\frac{5}{8}$	$3\frac{1}{4}$	$3\frac{3}{8}$	1	5.25	10.00
$\frac{11}{16}$	$3\frac{3}{8}$	$3\frac{1}{2}$	1	5.50	11.00
$\frac{3}{4}$	$3\frac{1}{2}$	$3\frac{5}{8}$	1	6.00	12.00

Brown & Sharpe or Morse

Morse Style No. 131R

For use on No. 4 Automatic Gear Cutting Machines

Circular Pitch Inch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
$\frac{3}{16}$	$2\frac{7}{8}$	$2\frac{7}{8}$	$1\frac{1}{4}$	\$3.50	\$4.20
$\frac{1}{4}$	$2\frac{7}{8}$	$2\frac{7}{8}$	$1\frac{1}{4}$	4.10	5.10
$\frac{5}{16}$	3	3	$1\frac{1}{4}$	4.50	6.00
$\frac{3}{8}$	$3\frac{1}{4}$	$3\frac{1}{4}$	$1\frac{1}{4}$	4.90	7.30
$\frac{7}{16}$	$3\frac{3}{8}$	$3\frac{3}{8}$	$1\frac{1}{4}$	5.10	8.00
$\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{4}$	5.30	8.40
$\frac{9}{16}$	$3\frac{5}{8}$	$3\frac{3}{4}$	$1\frac{1}{4}$	5.50	9.00
$\frac{5}{8}$	$3\frac{5}{8}$	$3\frac{3}{4}$	$1\frac{1}{4}$	5.50	10.00
$\frac{11}{16}$	$3\frac{3}{4}$	4	$1\frac{1}{4}$	6.00	11.00
$\frac{3}{4}$	$3\frac{7}{8}$	$4\frac{1}{4}$	$1\frac{1}{4}$	6.50	12.00
$\frac{13}{16}$	4	$4\frac{3}{8}$	$1\frac{1}{4}$	7.00	13.00
$\frac{7}{8}$	$4\frac{1}{8}$	$4\frac{1}{2}$	$1\frac{1}{4}$	7.25	14.00
$\frac{15}{16}$	$4\frac{1}{4}$	$4\frac{5}{8}$	$1\frac{1}{4}$	7.50	16.00
1	$4\frac{3}{8}$	$4\frac{3}{4}$	$1\frac{1}{4}$	8.50	18.00

Brown & Sharpe or Morse

Morse Style No. 131S

For use on No. 5 Automatic Gear Cutting Machines

Circular Pitch Inches	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
$\frac{5}{16}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{2}$	\$5.20	\$6.50
$\frac{3}{8}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{2}$	5.40	7.50
$\frac{7}{16}$	$3\frac{5}{8}$	$3\frac{5}{8}$	$1\frac{1}{2}$	5.60	8.25
$\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{7}{8}$	$1\frac{1}{2}$	5.80	9.00
$\frac{9}{16}$	$3\frac{7}{8}$	$4\frac{1}{8}$	$1\frac{1}{2}$	6.00	10.00
$\frac{5}{8}$	4	$4\frac{1}{4}$	$1\frac{1}{2}$	6.00	11.00
$\frac{11}{16}$	$4\frac{1}{8}$	$4\frac{3}{8}$	$1\frac{1}{2}$	6.50	12.10
$\frac{3}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$1\frac{1}{2}$	7.00	13.00
$\frac{13}{16}$	$4\frac{3}{8}$	$4\frac{5}{8}$	$1\frac{1}{2}$	7.05	14.30
$\frac{7}{8}$	$4\frac{5}{8}$	$4\frac{7}{8}$	$1\frac{1}{2}$	8.00	15.40
$\frac{15}{16}$	$4\frac{3}{4}$	5	$1\frac{1}{2}$	8.50	17.80
1	5	$5\frac{1}{4}$	$1\frac{1}{2}$	9.50	19.00
$1\frac{1}{8}$	$5\frac{1}{8}$	$5\frac{1}{2}$	$1\frac{1}{2}$	10.50	20.00
$1\frac{1}{4}$	$5\frac{1}{2}$	$5\frac{3}{4}$	$1\frac{1}{2}$	11.50	23.00
$1\frac{3}{8}$	$5\frac{3}{4}$	$5\frac{3}{4}$	$1\frac{1}{2}$	13.50	28.00
$1\frac{1}{2}$	$5\frac{3}{4}$	$5\frac{3}{4}$	$1\frac{1}{2}$	16.50	35.00

Brown & Sharpe or Morse

Morse Style No. 131T

For use on No. 6 Automatic Gear Cutting Machines

Circular Pitch Inches	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
$\frac{3}{8}$	4	4	$1\frac{3}{4}$	\$5.90	\$7.80
$\frac{7}{16}$	$4\frac{1}{8}$	$4\frac{1}{8}$	$1\frac{3}{4}$	6.10	9.10
$\frac{1}{2}$	$4\frac{1}{4}$	$4\frac{1}{4}$	$1\frac{3}{4}$	6.30	10.40
$\frac{9}{16}$	$4\frac{3}{8}$	$4\frac{3}{8}$	$1\frac{3}{4}$	6.50	10.80
$\frac{5}{8}$	$4\frac{3}{8}$	$4\frac{3}{8}$	$1\frac{3}{4}$	6.50	12.00
$\frac{11}{16}$	$4\frac{1}{2}$	$4\frac{5}{8}$	$1\frac{3}{4}$	7.00	13.20
$\frac{3}{4}$	$4\frac{5}{8}$	$4\frac{3}{4}$	$1\frac{3}{4}$	7.50	14.40
$\frac{13}{16}$	$4\frac{3}{4}$	5	$1\frac{3}{4}$	8.00	15.60
$\frac{7}{8}$	5	$5\frac{1}{4}$	$1\frac{3}{4}$	8.25	16.80
$\frac{15}{16}$	$5\frac{1}{4}$	$5\frac{1}{2}$	$1\frac{3}{4}$	9.00	20.00
1	$5\frac{3}{8}$	$5\frac{5}{8}$	$1\frac{3}{4}$	10.00	22.00
$1\frac{1}{8}$	$5\frac{5}{8}$	$5\frac{7}{8}$	$1\frac{3}{4}$	11.00	23.00
$1\frac{1}{4}$	$5\frac{7}{8}$	$6\frac{1}{8}$	$1\frac{3}{4}$	12.00	26.00
$1\frac{3}{8}$	$6\frac{1}{4}$	$6\frac{1}{2}$	$1\frac{3}{4}$	14.00	33.60
$1\frac{1}{2}$	$6\frac{1}{2}$	$6\frac{1}{2}$	$1\frac{3}{4}$	17.50	42.00
$1\frac{5}{8}$	$6\frac{1}{2}$	$6\frac{1}{2}$	$1\frac{3}{4}$	20.00	43.00
$1\frac{3}{4}$	$6\frac{1}{2}$	$6\frac{1}{2}$	$1\frac{3}{4}$	24.50	45.00

For Standard Keyways and suggestions see page 139

Cutters for Mitre and Bevel Gears

These Cutters are thin enough to cut any bevel gear whose tooth face is not longer than one-third the distance from its outer end to the point where the shaft center lines meet. This makes the tooth thickness at the inner end not less than two-thirds that at the outer end.

In ordering Cutters for bevel gears, if the number of teeth in each gear, the pitch and length of face are given, also the angle of the shafts, if different from a right angle, we can select the proper Cutter to send.

When an extra length of face is wanted, requiring an especially thin Cutter, this length should be specified in the order.

Eight Cutters are made for each pitch and numbered from 1 to 8.

As the number of teeth in the bevel gears to be cut with each Cutter will not always agree with the list on page 131, the number of Cutter must be found for each pair of gears to be cut according to the following formula:

Brown & Sharpe or Morse

If Morse is desired order Style No. 131C

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3	4	4	1 1/4	\$7.50	\$15.00
4	3 1/2	3 5/8	1 1/4	5.50	12.00
5	3 1/4	3 3/8	1 1/4	4.75	10.00
6	3	3 1/8	1	4.30	8.00
7	2 7/8	2 7/8	1	4.10	7.00
8	2 7/8	2 7/8	1	3.90	6.00
10	2 3/4	2 3/8	7/8	3.50	5.00
12	2 1/8	2 1/4	7/8	3.10	4.25
14	2	2 1/8	7/8	2.70	3.75
16	2	2 1/8	7/8	2.50	3.50
20	1 7/8	2	7/8	2.30	3.30
24	1 3/4	1 3/4	7/8	2.10	3.10

Brown & Sharpe

For use on No. 13 Automatic Gear Cutting Machines

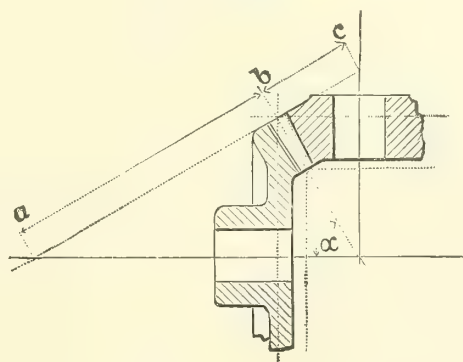
Diametral Pitch	Diameter of Cutter Carbon Steel Inches	High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
4	3 3/8	3 1/2	7/8	\$5.50	\$12.00
5	3 1/8	3 1/4	7/8	4.75	10.00
6	3	3 1/8	7/8	4.30	8.00
7	2 3/4	2 7/8	7/8	4.10	7.00
8	2 3/4	2 7/8	7/8	3.90	6.00
10	2 5/8	2 5/8	7/8	3.60	5.30
12	2 1/2	2 1/2	7/8	3.35	4.70
14	2 3/8	2 3/8	7/8	2.95	4.15
16	2 3/8	2 3/8	7/8	2.75	3.85
20	2 1/4	2 1/4	7/8	2.55	3.65
24	2 1/4	2 1/4	7/8	2.35	3.45

Eight Cutters made for each pitch, see page 131.

3 pitch and coarser in cast iron and 4 pitch and coarser in steel require two cuts to insure accuracy.

Cutters for pitches not given in the above list will be made to order.

Formula



Na = Number of teeth in gear

Nb = Number of teeth in pinion

a = Center angle of gear

Measure the back cone radius $a b$ for the gear, or $b c$ for the pinion. This is equal to the radius of a spur gear, the number of teeth in which would determine the Cutter to use. Hence twice $a b$ times the diametral pitch equals the number of teeth for which the Cutter should be selected for the gear. By referring to upper list on left, the proper number for the Cutter can be found.

Thus, let the back cone radius $a b$ be 4 inches and the diametral pitch be 8. Twice 4 is 8 and 8×8 is 64, from which it can be seen that the Cutter must be of shape No. 2, as 64 is between 55 and 134, the range covered by a No. 2 Cutter.

The number of teeth for which the Cutter should be selected can also be found by the following formula:

$$\text{Tan. } a = \frac{Na}{Nb}$$

$$\text{Number of teeth to select Cutter for gear} = \frac{Na}{\text{Cos. } a}$$

$$\text{Number of teeth to select Cutter for pinion} = \frac{Nb}{\text{Sin. } a}$$

If the gears are mitres or are alike, only one Cutter is needed; if one gear is larger than the other, two may be needed.

High Speed Steel

High Speed Steels vary with almost every manufacturer, but are generally an alloy of iron either with tungsten, tungsten and molybdenum, or molybdenum and chromium. Approximately 1/4 of 1 per cent of vanadium is fused with the alloy by the crucible method.

To secure complete fusion and hardness, a white heat of about 2100 degrees F. is necessary. Rough forged tools are commonly cooled by use of compressed air blast, while oil is usually employed to cool the better finished tools.

As the component parts of High Speed Steel actually produce extreme hardness, it is not necessary to temper tools made therefrom, although they may be tempered if desired.

The better grade of High Speed Steel tools will retain their cutting edges without breaking until a red heat is attained, although naturally it is better to not use them to this excess.

High Speed Steel tools will average from 100 to 250 per cent greater in cutting efficiency than the better grades of Carbon Steel, but to secure the full value of this service, special machines with the necessary driving power will be required.

For Standard Keyways and suggestions see page 139

The Sizing and Cutting of Gear Wheels

Diameter, when applied to gears, is always understood to mean the pitch diameter.

Diametral Pitch is the number of teeth to each inch of the pitch diameter.

Example. If a gear has 40 teeth and the pitch diameter is 4 inches, there are 10 teeth to each inch of the pitch diameter and the diametral pitch is 10, or, in other words, the gear is 10 diametral pitch.

Diametral Pitch required, circular pitch given. Divide 3.1416 by the circular pitch.

Example. If the circular pitch is 2 inches, divide 3.1416 by 2 and the quotient, 1.5708, is the diametral pitch.

Diametral Pitch required, number of teeth and outside diameter given. Add 2 to the number of teeth and divide by the outside diameter.

Example. If the number of teeth is 40, the diameter of the blank is $10\frac{1}{2}$ inches, add 2 to the number of teeth, making 42, and divide by $10\frac{1}{2}$; the quotient, 4, is the diametral pitch.

Circular Pitch is the distance from the center of one tooth to the center of the next, measured along the pitch line.

Example. If the distance from the center of one tooth to the center of the next tooth, measured along the pitch circle is $\frac{1}{2}$ inch, the gear is $\frac{1}{2}$ inch circular pitch.

Circular Pitch required, diametral pitch given. Divide 3.1416 by the diametral pitch.

Example. If the diametral pitch is 4, divide 3.1416 by 4 and the quotient, .7854 inch, is the circular pitch.

Number of Teeth required, pitch diameter and diametral pitch given. Multiply the pitch diameter by the diametral pitch.

Example. If the diameter of the pitch circle is 10 inches and the diametral pitch is 4, multiply 10 by 4 and the product, 40, will be the number of teeth in the gear.

Number of Teeth required, outside diameter and diametral pitch given. Multiply the outside diameter by the diametral pitch and subtract 2.

Example. If the whole diameter is $10\frac{1}{2}$ and the diametral pitch is 4, multiply $10\frac{1}{2}$ by 4 and the product, 42 less 2, or 40, is the number of teeth.

Pitch Diameter required, number of teeth and diametral pitch given. Divide the number of teeth by the diametral pitch.

Example. If the number of teeth is 40 and the diametral pitch is 4, divide 40 by 4 and the quotient, 10, is the pitch diameter.

Outside Diameter or size of gear blank required, number of teeth and diametral pitch given. Add 2 to the number of teeth and divide by the diametral pitch.

Example. If the number of teeth is 40 and the diametral pitch is 4, add 2 to the 40, making 42, and divide by 4; the quotient, $10\frac{1}{2}$, is the whole diameter of the gear or blank.

Thickness of Tooth at Pitch Line required. Divide the circular pitch by 2, or 1.57 by the diametral pitch.

Example. If the circular pitch is 1.047 inch, or the diametral pitch is 3, divide 1.047 by 2, or 1.57 by 3, and the quotient, .523 inch, is the thickness of tooth.

Whole Depth of Tooth required. Divide 2.157 by the diametral pitch.

Example. If the diametral pitch of a gear is 6, the whole depth is 2.157 divided by 6, which equals .3595.

Whole Depth of Tooth is about $\frac{1}{6}$ or exactly .6866 of the circular pitch.

Example. If the circular pitch is 2, the whole depth of tooth is about $\frac{1}{6}$ of 2 inches or $1\frac{1}{3}$ inches nearly.

Distance between Centers of two gears required. Add the number of teeth together and divide one half the sum by the diametral pitch.

Example. If two gears have 50 and 30 teeth, respectively, and are 5 pitch, add 50 and 30, making 80, divide by 2 and then divide the quotient, 40, by the diametral pitch, 5, and the result, 8 inches, is the center distance.

To Facilitate the Measurement of wheels to be sized according to diametral pitch, either of the following steel rules described can be used: No. 377, Style 1, is a 12-inch rule containing four lines of graduations upon each side, one each as follows: 18ths, 20ths, 22ds, 24ths, 26ths, 28ths, 30ths, and 32nds. Each line of graduations is figured the whole length of the rule, 10, 20, 30, etc. Suppose a wheel of 60 teeth of 20 pitch is to be sized, then find 60 on the line of 20ths and that is the pitch diameter of the required wheel; then add two of the divisions to make the outside diameter which is sixty-two tenths. No. 377, Style 2, is also a 12-inch rule having one inch only of graduations on each end as follows: 6ths, 7ths, 8ths, 9ths, 10ths, 11ths, 12ths, 14ths, 16ths, 18ths, 20ths, 22ds, 24ths, 26ths, 28ths, 30ths, 32ds, 34ths, 36ths 38ths. The intermediate ten inches are blank, except that the inch lines are made clear across the rule. Suppose a wheel of 83 teeth of 10 pitch is to be sized, then take 8 of the blank inches and three of the 10th graduations and that gives the pitch diameter of the required wheel, add two of the tenths which gives the outside diameter which is eight and five-tenths inches.

These rules furnish graduations for a large variety of pitches and are the best adapted for the use for which they are designed. For prices on these rules see index.

In addition to the foregoing are made 12 and 24-inch rules with No. 5 graduation, as follows:

1st corner, 11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25.

2nd corner, 16, 32, 64.

3rd corner, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38.

4th corner, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100.

On page 139, formulas and examples are given for all calculations required in connection with size and pitch of wheels.

No. 1 table shows the diametral pitches with the corresponding circular pitches.

No. 2 table shows the circular pitches with the corresponding diametral pitches.

Table No. 1		Table No. 2	
Diametral Pitch	Circular Pitch Inches	Circular Pitch Inches	Diametral Pitch
$1\frac{1}{4}$	2.5133	2	1.571
$1\frac{1}{2}$	2.0944	$1\frac{7}{8}$	1.676
$1\frac{3}{4}$	1.7952	$1\frac{3}{4}$	1.795
2	1.571	$1\frac{5}{8}$	1.933
$2\frac{1}{4}$	1.396	$1\frac{1}{2}$	2.094
$2\frac{1}{2}$	1.257	$1\frac{7}{16}$	2.185
$2\frac{3}{4}$	1.142	$1\frac{3}{8}$	2.285
3	1.047	$1\frac{5}{16}$	2.394
$3\frac{1}{2}$	.898	$1\frac{1}{4}$	2.513
4	.785	$1\frac{3}{16}$	2.646
5	.628	$1\frac{1}{8}$	2.793
6	.524	$1\frac{1}{16}$	2.957
7	.449	1	3.142
8	.393	$\frac{15}{16}$	3.351
9	.349	$\frac{7}{8}$	3.590
10	.314	$\frac{13}{16}$	3.867
11	.286	$\frac{3}{4}$	4.189
12	.262	$\frac{11}{16}$	4.570
14	.224	$\frac{5}{8}$	5.027
16	.196	$\frac{9}{16}$	5.585
18	.175	$\frac{1}{2}$	6.283
20	.157	$\frac{1}{16}$	7.181
22	.143	$\frac{3}{8}$	8.378
24	.131	$\frac{5}{16}$	10.053
26	.121	$\frac{1}{4}$	12.566
28	.112	$\frac{1}{16}$	16.755
30	.105	$\frac{1}{8}$	25.133
32	.098	$\frac{1}{16}$	50.266
36	.087		
40	.079		
48	.065		

According to the system adopted by the Brown & Sharpe Mfg. Co., any wheel of one pitch will gear into any other wheel or into a rack of the same pitch. Eight Cutters are required for each pitch. These eight Cutters are adapted to cut from a pinion of twelve teeth to a rack, and are numbered respectively, 1, 2, 3, etc. The number of teeth and the pitch for which a Cutter is adapted is also marked on each.

- No. 1 will cut wheels from 135 teeth to a rack.
- No. 2 will cut wheels from 55 teeth to 134 teeth.
- No. 3 will cut wheels from 35 teeth to 54 teeth.
- No. 4 will cut wheels from 26 teeth to 34 teeth.
- No. 5 will cut wheels from 21 teeth to 25 teeth.
- No. 6 will cut wheels from 17 teeth to 20 teeth.
- No. 7 will cut wheels from 14 teeth to 16 teeth.
- No. 8 will cut wheels from 12 teeth to 13 teeth.

If a Cutter is wanted for a wheel of 40 teeth of 8 pitch, then the Cutter required would be No. 3 of 8 pitch, inasmuch as a No. 3 Cutter will cut all wheels containing from 35 to 54 teeth inclusive, and 40 occurring between those numbers, that is the one desired. It should be borne in mind that eight different Cutters are required in order to cut all the wheels of any given pitch. See page 131 for directions for use of these Cutters. Special attention is called to the clause in relation to depth of space.

As these Cutters allow of being ground when dull, it is important that they be kept sharp. By paying particular attention to this, cutting will be greatly facilitated, beside being much better done.

It is desirable in applying gearing of any kind, to avoid having wheels or pinions with a small number of teeth. Pinions of twelve teeth will work very well, but a less number of teeth should not be used.

Few mechanics are familiar with the minutiae of gearing and the necessity of exact sizing of wheels, as to diameter, is often overlooked. Special care is required also to know that the distance of the centers of two wheels running together is correct relatively to the diameters.

Formulas

For Determining the Dimensions of Gears by Diametral Pitch

Let P denote the diametral pitch, or the number of teeth to one inch of diameter of pitch circle.
 Let D' denote the diameter of pitch circle.
 Let D denote the whole diameter.
 Let N denote the number of teeth.
 Let V denote the velocity.
 Let d' denote the diameter of pitch circle.
 Let d denote the whole diameter.
 Let n denote the number of teeth.
 Let v denote the velocity.

} Larger Wheel
 } These wheels run together
 } Smaller Wheel

Let a denote the distance between the centers of the two wheels.
 Let b denote the number of teeth in both wheels.
 Let t denote the thickness of tooth or cutter on pitched circle.
 Let D* denote the working depth of tooth.
 Let f denote the amount added to depth of tooth for rounding the corners and for clearance.
 Let D*+f denote the whole depth of tooth.
 Let π denote the constant 3.1416.
 Let P' denote the circular pitch or the distance from the center of one tooth to the center of the next on the pitch circle.

The examples placed opposite the formulas below, are for a single wheel of 12 pitch, 6.166 inches or $6\frac{1}{8}$ inches diameter, etc., and in the case of the two wheels the larger has the same dimensions. The velocities are respectively 1 and 2.

For a Single Wheel

Formulas	Examples
$P = \frac{N+2}{D}$	$\frac{72+2}{6.166}$, or $\frac{72+2}{6\ 2-12} = 12$.
$P = \frac{N}{D'}$	$\frac{72}{6} = 12$.
$D' = \frac{D \times N}{N+2}$	$\frac{6.166 \times 72}{72+2} = 6$.
$D' = \frac{N}{P}$	$\frac{72}{12} = 6$.
$N = P D' = 12 \times 6 = 72$.	
$N = P D - 2 = 12 \times 6.166 - 2$, or $12 \times 6\ 2-12 - 2 = 72$.	
$D = \frac{N+2}{P}$	$\frac{72+2}{12} = 6.166$, or $6\ 2-12$.
$D = D' + \frac{2}{P}$	$6 + \frac{2}{12}$, or $6 + .166 = 6.166$.
$t = \frac{1.57}{P}$	$\frac{1.57}{12} = .130$
$D^* = \frac{2}{P}$	$\frac{2}{12} = .166$, or $2-12$.
$f = \frac{t}{10}$	$\frac{.130}{10} = .013$.
$D^* + f = .166 + .013 = .179$	
$P' = \frac{\pi}{P}$	$\frac{3.1416}{12} = .262$.
$P = \frac{\pi}{P'}$	$\frac{3.1416}{.262} = 12$.

For a Pair of Wheels

Formulas	Examples
$b = 2 a P = 2 \times 4.5 \times 12 = 108$.	15.
$n = \frac{b V}{v + V}$	$\frac{108 \times 1}{3} = 36$. 16.
$N = \frac{n v}{V}$	$\frac{36 \times 2}{1} = 72$. 17.
$n = \frac{N V}{V}$	$\frac{72 \times 1}{1} = 36$. 18.
$N = \frac{b v}{v + V}$	$\frac{108 \times 2}{3} = 72$. 19.
$n = \frac{P D' V}{v}$	$\frac{12 \times 6 \times 1}{2} = 36$. 20.
$V = \frac{n v}{N}$	$\frac{36 \times 2}{72} = 1$. 21.
$v = \frac{n}{N V}$	$\frac{36}{72 \times 1} = 2$. 22.
$v = \frac{P D' V}{n}$	$\frac{12 \times 6 \times 1}{36} = 2$. 23.
$D = \frac{2 a (n+2)}{b}$	$\frac{2 \times 4.5 \times (72+2)}{108} = 6.166$. 24.
$b = \frac{2 a (n+2)}{D}$	$\frac{2 \times 4.5 \times (36+2)}{108} = 3.166$. 25.
$a = \frac{b}{2 P}$	$\frac{108}{2 \times 12} = 4.5$. 26.
$D' = \frac{2 a V}{v + V}$	$\frac{2 \times 4.5 \times 2}{3} = 6$. 27.
$d' = \frac{2 a v}{v + V}$	$\frac{2 \times 4.5 \times 1}{3} = 3$. 28.
$a = \frac{D' + d'}{2}$	$\frac{6 + 3}{2} = 4.5$. 29.

Standard Keyways for Milling Cutters

Diameter (D) of Hole Inches	Width (W) of Keyway Inch	Depth (D) of Keyway Inch	Radius (R) Inch
$\frac{3}{8}$ to $\frac{5}{16}$	$\frac{3}{32}$	$\frac{3}{64}$	.020
$\frac{5}{8}$ to $\frac{7}{8}$	$\frac{1}{8}$	$\frac{1}{16}$	.030
$\frac{1}{16}$ to $\frac{1}{8}$	$\frac{5}{32}$	$\frac{5}{64}$	.035
$1\ \frac{3}{16}$ to $1\ \frac{1}{8}$	$\frac{3}{16}$	$\frac{3}{32}$	.040
$1\ \frac{1}{16}$ to $1\ \frac{3}{8}$ *	$\frac{1}{4}$	$\frac{1}{8}$	.050
$1\ \frac{1}{16}$ to 2^*	$\frac{5}{16}$	$\frac{5}{32}$	.060
$2\ \frac{1}{16}$ to $2\ \frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{16}$	.060
$2\ \frac{9}{16}$ to 3	$\frac{7}{16}$	$\frac{7}{16}$	.060

* $1\frac{1}{2}$, $1\frac{3}{4}$, and 2 inches. For all Gear Cutters of these diameters, use $\frac{1}{8}$, $\frac{3}{8}$ and $\frac{1}{2}$ -inch keys respectively.
 Gear Cutters with $1\frac{1}{2}$ -inch hole can also be furnished with $\frac{3}{8}$ -inch keyway.

Suggestions for Ordering Cutters

REGULAR CUTTERS—Always order by catalogue number, giving diameter, face and size of hole.
 SPECIAL MILLING CUTTERS—Give diameter, face, size of hole and keyway and refer to catalogue number for style. When End Mills, Angular Mills, Facing Mills and T Slot Cutters are desired, be particular to state whether RIGHT OR LEFT HAND.
 FORMED CUTTERS—Sketches showing form and all dimensions, or template showing form together with all dimensions, should be furnished when ordering Formed Cutters. Also state whether Cutter is "coming" or "going" at the bottom. Formed Cutters are adapted for work where uniformity is required, and are sharpened by grinding the faces of the teeth.
 GEAR CUTTERS—Give number of cutter and diametral pitch when ordering. Diametral pitch means the number of teeth to the inch in diameter in pitch circle of any wheel. These cutters are sharpened by grinding the faces of the teeth. To get best results be sure Cutters are KEPT SHARP.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Collets and Arbors

Collets

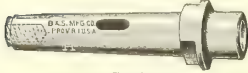
For use on Milling, Grinding, Gear Cutting Machines, Etc.
Brown & Sharpe



Style 1



Style 2



Style 3



Style 4

Style 2A. Similar to Style 2, but no threaded hole
Style 3A. Similar to Style 3, but no threaded hole
Style 4A. Straight hole through; front end 60-degree taper

Mark	Outside Taper	Inside Taper	Style	Collet to Spindle Inches	Diameter of Threaded Hole Inches	Each
LL	6	2	4	$\frac{3}{4}$	.....	\$1.50
A	7	4	1	$1\frac{1}{16}$	.....	2.00
J	7	4	2	$2\frac{1}{16}$	$\frac{3}{8}$, 16, L. H.	2.00
N	7	5	1	$2\frac{1}{16}$	.....	2.00
R	7	5	2	$3\frac{3}{4}$	$\frac{3}{8}$, 16, L. H.	2.00
C	9	5	1	$2\frac{1}{8}$	.....	3.00
D	9	5	1	$\frac{3}{8}$	.....	2.75
K	9	5	2	$\frac{3}{8}$	$\frac{7}{16}$, 14, L. H.	2.75
B	9	7	1	$2\frac{1}{8}$	.....	3.25
EE	10	5	1	$2\frac{1}{8}$	.....	3.50
MM	10	6	4A	$\frac{3}{4}$	.....	3.50

Mark	Outside Taper	Inside Taper	Style	Collet to Spindle Inches	Diameter of Threaded Hole Inch	Each
DD	10	7	1	$2\frac{3}{8}$	.....	\$3.50
E	10	7	1	$1\frac{5}{8}$	.....	3.50
BB	10	7	2	$1\frac{1}{4}$	$\frac{1}{2}$, 14, L. H.	3.50
Z	10	7	2A	$\frac{1}{2}$	.....	4.00
F	10	9	1	1	.....	4.00
FF	10	9	2	$1\frac{1}{4}$	.....	3.50
Q	11	7	1	$1\frac{3}{4}$	.....	4.50
G	11	9	1	$2\frac{3}{8}$	.....	5.00
O	11	9	2	$\frac{1}{4}$	$\frac{3}{4}$, 12, L. H.	5.25
H	11	9	3	$1\frac{5}{8}$	$\frac{3}{4}$, 12, L. H.	6.00
GG	11	10	3A	$\frac{1}{2}$	.....	6.00
SS	12	9	2	$1\frac{1}{16}$	$\frac{3}{4}$, 12, L. H.	6.00
T	12	9	3A	$1\frac{1}{16}$	.....	6.50
V	12	10	2	$\frac{7}{8}$	$\frac{3}{4}$, 12, R. H.	6.50
P	11	10	1	$1\frac{3}{8}$	.....	6.50
PP	12	10	3A	$1\frac{1}{16}$	.....	6.50
VV	12	11	2	$1\frac{1}{8}$	$\frac{3}{4}$, 12, R. H.	6.50
TT	12	11	3A	$1\frac{1}{16}$	.....	6.50
UU	12	9	3	$1\frac{1}{16}$	$\frac{3}{4}$, 12, L. H.	6.75
WW	14	10	2	$\frac{7}{8}$	$\frac{3}{4}$, 12, R. H.	8.00
W	14	11	2	$\frac{7}{8}$	$\frac{3}{4}$, 12, R. H.	8.00
XX	16	11	2	$\frac{7}{8}$	$\frac{7}{8}$, 10, R. H.	10.00
X	16	12	2	$\frac{7}{8}$	$\frac{7}{8}$, 10, R. H.	10.00
YY	18	11	2	$\frac{7}{8}$	1, 10, R. H.	11.50
Y	18	14	2	$\frac{7}{8}$	1, 10, R. H.	13.00

Milling Machine Cutter Arbors

Brown & Sharpe



Style A



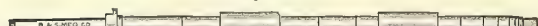
Style B



Style C



Style D



Style E

Number of Arbor	Number of Taper Shank	Diameter of Arbor Inches	Length Shoulder to Nut Inches	Diameter Hardened Sleeve Inches	Style	Each
04	7	$\frac{1}{2}$	1	.....	A	\$3.50
05	7	$\frac{1}{2}$	3	.....	A	4.00
07	9	$\frac{5}{8}$	4	.....	A	4.50
08	9	$\frac{7}{8}$	$5\frac{1}{4}$	.....	A	5.00
09	9	1	$5\frac{1}{4}$	.....	A	5.00
010	9	$\frac{5}{8}$	8	.....	A	6.50
011	9	$\frac{7}{8}$	8	.....	A	6.50
012	9	1	8	.....	A	6.50
1	10	$\frac{5}{8}$	4	.....	A	5.00
6	10	$\frac{7}{8}$	$5\frac{1}{4}$	.....	A	6.00
7	10	1	$5\frac{1}{4}$	.....	A	6.00
8	10	$1\frac{1}{16}$	$5\frac{1}{4}$	.....	A	6.00
9	10	$1\frac{1}{4}$	$5\frac{1}{4}$	.....	A	6.00
10	10	$\frac{7}{8}$	8	.....	A	7.50
11	10	1	8	.....	A	7.50
12	10	$1\frac{1}{16}$	8	.....	A	7.50
13	10	$1\frac{1}{4}$	8	.....	A	7.50
40	10	$\frac{7}{8}$	12	$1\frac{13}{16}$	B	11.50
41	10	1	12	$1\frac{13}{16}$	B	11.50
42	10	$1\frac{1}{16}$	12	$1\frac{13}{16}$	B	11.50
43	10	$1\frac{1}{4}$	12	$1\frac{13}{16}$	B	11.50
44	10	$\frac{7}{8}$	17	$1\frac{13}{16}$	B	12.50
45	10	1	17	$1\frac{13}{16}$	B	12.50
46	10	$1\frac{1}{16}$	17	$1\frac{13}{16}$	B	12.50
47	10	$1\frac{1}{4}$	17	$1\frac{13}{16}$	B	12.50
53	10	1	$14\frac{1}{2}$	$1\frac{13}{16}$	D	13.00
55	10	$1\frac{1}{4}$	$14\frac{1}{2}$	$1\frac{13}{16}$	D	13.00
15	11	$\frac{7}{8}$	$10\frac{1}{4}$	.....	A	9.00
16	11	1	$10\frac{1}{4}$	.....	A	9.00
17	11	$1\frac{1}{16}$	$10\frac{1}{4}$	.....	A	9.00
18	11	$1\frac{1}{4}$	$10\frac{1}{4}$	.....	A	9.00
48	11	$\frac{7}{8}$	$16\frac{1}{4}$	$2\frac{1}{16}$	B	13.50
49	11	1	$17\frac{3}{4}$	$2\frac{1}{16}$	B	13.50
50	11	$1\frac{1}{16}$	$17\frac{3}{4}$	$2\frac{1}{16}$	B	13.50
51	11	$1\frac{1}{4}$	$20\frac{1}{4}$	$2\frac{1}{16}$	B	15.00
52	11	$1\frac{1}{2}$	$20\frac{1}{4}$	$2\frac{1}{16}$	B	15.00

Number of Arbor	Number of Taper Shank	Diameter of Arbor Inches	Length Shoulder to Nut Inches	Diameter of Hardened Sleeve Inches	Style	Each
48-A	11	$\frac{7}{8}$	$16\frac{1}{4}$	$2\frac{1}{16}$	C	\$15.50
49-A	11	1	$17\frac{3}{4}$	$2\frac{1}{16}$	C	15.50
50-A	11	$1\frac{1}{16}$	$17\frac{3}{4}$	$2\frac{1}{16}$	C	15.50
51-A	11	$1\frac{1}{4}$	$20\frac{1}{4}$	$2\frac{1}{16}$	C	17.00
52-A	11	$1\frac{1}{2}$	$20\frac{1}{4}$	$2\frac{1}{16}$	C	17.00
35	11	$\frac{7}{8}$	16	$2\frac{1}{16}$	D	15.00
36	11	1	16	$2\frac{1}{16}$	D	15.00
37	11	$1\frac{1}{16}$	16	$2\frac{1}{16}$	D	15.00
38	11	$1\frac{1}{4}$	$19\frac{1}{2}$	$2\frac{1}{16}$	D	16.00
39	11	$1\frac{1}{2}$	$19\frac{1}{2}$	$2\frac{1}{16}$	D	16.00
35-A	11	$\frac{7}{8}$	16	$2\frac{1}{16}$	E	17.00
36-A	11	1	16	$2\frac{1}{16}$	E	17.00
37-A	11	$1\frac{1}{16}$	16	$2\frac{1}{16}$	E	17.00
38-A	11	$1\frac{1}{4}$	$19\frac{1}{2}$	$2\frac{1}{16}$	E	18.00
39-A	11	$1\frac{1}{2}$	$19\frac{1}{2}$	$2\frac{1}{16}$	E	18.00
65	11	1	22	$2\frac{1}{16}$	D	16.50
66	11	$1\frac{1}{4}$	$26\frac{3}{4}$	$2\frac{1}{16}$	D	17.50
67	11	$1\frac{1}{2}$	$26\frac{3}{4}$	$2\frac{1}{16}$	D	17.50
68	11	$1\frac{3}{4}$	$26\frac{3}{4}$	$2\frac{1}{16}$	D	17.50
19-A	11	$\frac{7}{8}$	20	$2\frac{1}{16}$	E	18.00
20-A	11	1	22	$2\frac{1}{16}$	E	18.50
21-A	11	$1\frac{1}{16}$	22	$2\frac{1}{16}$	E	18.50
22-A	11	$1\frac{1}{4}$	24	$2\frac{1}{16}$	E	19.00
23-A	11	$1\frac{1}{2}$	24	$2\frac{1}{16}$	E	19.00
*19-B	11	$\frac{7}{8}$	20	$2\frac{1}{16}$	E	18.50
*20-B	11	1	22	$2\frac{1}{16}$	E	18.50
*21-B	11	$1\frac{1}{16}$	22	$2\frac{1}{16}$	E	19.00
*22-B	11	$1\frac{1}{4}$	24	$2\frac{1}{16}$	E	19.00
*23-B	11	$1\frac{1}{2}$	24	$2\frac{1}{16}$	E	19.00
65-A	11	1	22	$2\frac{1}{16}$	E	18.50
66-A	11	$1\frac{1}{4}$	$26\frac{3}{4}$	$2\frac{1}{16}$	E	19.50
67-A	11	$1\frac{1}{2}$	$26\frac{3}{4}$	$2\frac{1}{16}$	E	19.50
68-A	11	$1\frac{3}{4}$	$26\frac{3}{4}$	$2\frac{1}{16}$	E	19.50
69	12	1	25	$2\frac{1}{16}$	D	17.00
70	12	$1\frac{1}{4}$	29	$2\frac{1}{16}$	D	18.00
71	12	$1\frac{1}{2}$	29	$2\frac{1}{16}$	D	18.00
71 $\frac{1}{2}$	12	$1\frac{3}{4}$	29	$2\frac{1}{16}$	D	18.00
72	12	2	29	$2\frac{1}{16}$	D	18.00
69-A	12	1	25	$2\frac{1}{16}$	E	19.50
70-A	12	$1\frac{1}{4}$	29	$2\frac{1}{16}$	E	20.50
71-A	12	$1\frac{1}{2}$	29	$2\frac{1}{16}$	E	20.50
71 $\frac{1}{2}$ -A	12	$1\frac{3}{4}$	29	$2\frac{1}{16}$	E	20.50
72-A	12	2	29	$2\frac{1}{16}$	E	20.50
75-A	12	1	30	$2\frac{1}{16}$	E	21.00
76-A	12	$1\frac{1}{4}$	35	$2\frac{1}{16}$	E	22.00
77-A	12	$1\frac{1}{2}$	35	$2\frac{1}{16}$	E	22.00
78-A	12	$1\frac{3}{4}$	35	$2\frac{1}{16}$	E	22.00
79-A	12	2	35	$2\frac{1}{16}$	E	22.00

For Standard Tapers and Taper Holes, see Index

Arbors and Lathe Centers

Arbors for Shell End Mills, with B. & S. Taper Shanks



Style A

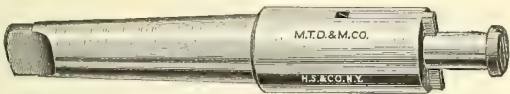


Style B

Brown & Sharpe or Morse
Morse Style No. 125½ B

Number of Arbor	Number of Taper	Diameter of Arbor Inch	Diameter Mills Arbor will take Inches	Style	Each
89	7	1½	1¼ to 1½	A	\$4.50
90	9	¾	1⅙ to 2⅓	A	4.50
91	9	1	2¼ to 3	A	4.75
92	9	1½	1¼ to 1½	B	4.50
93	9	1½	1¼ to 1½	A	4.50
96	9	¾	1⅙ to 2⅓	B	4.50
105	9	1	2¼ to 3	B	4.75
94	10	¾	1⅙ to 2⅓	A	5.25
95	10	1	2¼ to 3	A	5.50
97	10	¾	1⅙ to 2⅓	B	5.25
98	10	1	2¼ to 3	B	5.50
99	11	¾	1⅙ to 2⅓	A	5.50
100	11	1	2¼ to 3	A	5.75
101	11	¾	1⅙ to 2⅓	B	5.50
102	11	1	2¼ to 3	B	5.75
103	12	¾	1⅙ to 2⅓	B	6.00
104	12	1	2¼ to 3	B	6.25

In ordering state whether Arbor is for Right or Left Hand Mill



Morse No. 125B, with Morse Taper Shanks

Number	Each	Fitting Sizes, Inches	Number of Taper
1	\$3.75	1¼ to 1½	3
2	4.00	1⅙ to 2⅓	4
3	4.00	2¼ to 3	4

State whether Arbors are desired for Right or Left Hand Mills

Milling Machine Screw Arbors



Style A



Style B

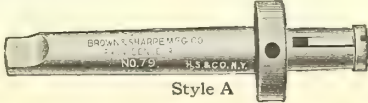


Style C

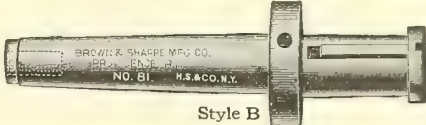
Brown & Sharpe

Number of Arbor	Number of Taper	Diameter of Arbor Inch	Thread	Style	Each
120	7	¾	20, L.	A	\$2.00
122	9	1½	16, L.	A	3.00
128	10	1	10, L.	B	5.50
130	11	1	10, L.	B	6.00
133	11	1	10, L.	C	7.00
135	12	1	10, L.	C	7.50

Arbors for Face Milling Cutters, with Inserted Teeth



Style A



Style B



Style C

Style D similar to Style C, but no threaded hole

Brown & Sharpe

Number of Arbor	Number of Taper of Shank	Number of Taper for Mill	Style	Each
79	10	10	A	\$8.00
82	11	12	A	10.00
81	11	12	B	10.00
80	11	10	C	12.00
83	11	12	C	12.00
87	12	12	C	12.00
84	11	12	D	12.00
85	12	12	D	12.00
86	12	10	C	12.00

Screw Slotting Cutter Arbors



For use with Screw Slotting Cutters and adapted for use on Centers. In following sizes: ¾, 1½, ¾, ¾, ¾ and 1 inch. Each, \$3.50.

Fly Cutter Arbors



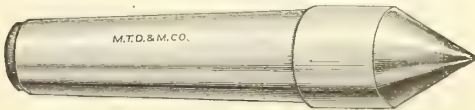
For Milling Machines
The hole in the head is ¼ inch square

Brown & Sharpe

Number of Arbor	Number of Taper	Each
110	10	\$6.50
112	11	8.00
113	12	9.00

Price includes tool with ⅛-inch radius

Lathe Centers



Morse No. 100L, with Morse Taper Shanks

Taper Shank Number	Each	Whole Length Inches	Length Body Inches
0	\$.50	2⅞	¾
1	.60	3⅝	1
2	.75	4⅞	1⅞
3	1.25	5¼	1⅞
4	1.75	6¾	2⅞
5	3.50	8½	3⅞

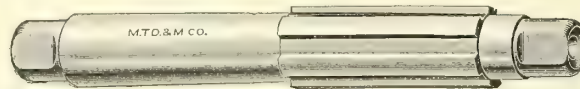
These Lathe Centers are made from tool steel, both ends being hardened. Included angle of point is 60 degree and ground true. Other Tapers made to order.

For Standard Tapers and Taper Holes see Index

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Taper Mandrels with Expanding Sleeves



Morse No. 123A

The entire Mandrel is hardened and the taper ground. The taper is such that it will hold the Sleeve and the work rigid. The Sleeve is of crucible steel, not hardened, and has several longitudinal slots giving the Sleeve greater flexibility. One of the slots is cut through, allowing the Sleeve to expand or contract.

Diameter Sleeve Inches	Each Sleeve without Mandrel	Length of Sleeve Inches	Fitting Taper Mandrel Number	Each Mandrel without Sleeve	Whole Length Inches	Diameter Sleeve Inches	Each Sleeve without Mandrel	Length of Sleeve Inches	Fitting Taper Mandrel Number	Each Mandrel without Sleeve	Whole Length Inches
$\frac{1}{2}$	\$.95	$1\frac{1}{2}$	4	\$1.85	5	$2\frac{9}{32}$	\$5.10	4	26	\$9.00	$12\frac{1}{2}$
$\frac{17}{32}$	.95	$1\frac{1}{2}$	4	1.85	5	$2\frac{5}{16}$	5.20	4	26	9.00	$12\frac{1}{2}$
$\frac{9}{16}$	1.05	$1\frac{5}{8}$	6	2.00	$5\frac{1}{4}$	$2\frac{11}{32}$	5.20	4	26	9.00	$12\frac{1}{2}$
$\frac{19}{32}$	1.05	$1\frac{5}{8}$	6	2.00	$5\frac{1}{4}$	$2\frac{3}{8}$	5.30	4	26	9.00	$12\frac{1}{2}$
$\frac{5}{8}$	1.15	$1\frac{3}{4}$	8	2.15	$5\frac{1}{2}$	$2\frac{13}{32}$	5.30	$4\frac{1}{4}$	26	9.00	$12\frac{1}{2}$
$\frac{21}{32}$	1.15	$1\frac{3}{4}$	8	2.15	$5\frac{1}{2}$	$2\frac{7}{16}$	5.40	$4\frac{1}{4}$	26	9.00	$12\frac{1}{2}$
$\frac{11}{16}$	1.25	$1\frac{7}{8}$	10	2.30	$5\frac{3}{4}$	$2\frac{5}{32}$	5.40	$4\frac{1}{4}$	26	9.00	$12\frac{1}{2}$
$\frac{23}{32}$	1.25	$1\frac{7}{8}$	10	2.30	$5\frac{3}{4}$	$2\frac{1}{2}$	5.50	$4\frac{1}{4}$	26	9.00	$12\frac{1}{2}$
$\frac{3}{4}$	1.35	2	12	2.50	6	$2\frac{17}{32}$	5.50	$4\frac{1}{4}$	26	9.00	$12\frac{1}{2}$
$\frac{25}{32}$	1.35	2	12	2.50	6	$2\frac{9}{16}$	5.90	$4\frac{1}{2}$	28	12.10	$13\frac{1}{2}$
$\frac{13}{16}$	1.45	$2\frac{1}{8}$	14	2.70	$6\frac{1}{2}$	$2\frac{19}{32}$	5.90	$4\frac{1}{2}$	28	12.10	$13\frac{1}{2}$
$\frac{27}{32}$	1.45	$2\frac{1}{8}$	14	2.70	$6\frac{1}{2}$	$2\frac{5}{8}$	6.00	$4\frac{1}{2}$	28	12.10	$13\frac{1}{2}$
$\frac{7}{8}$	1.55	$2\frac{1}{4}$	14	2.70	$6\frac{1}{2}$	$2\frac{21}{32}$	6.00	$4\frac{1}{2}$	28	12.10	$13\frac{1}{2}$
$\frac{29}{32}$	1.55	$2\frac{1}{4}$	14	2.70	$6\frac{1}{2}$	$2\frac{11}{16}$	6.10	$4\frac{1}{2}$	28	12.10	$13\frac{1}{2}$
$\frac{15}{16}$	1.80	$2\frac{3}{8}$	16	3.00	$7\frac{1}{2}$	$2\frac{23}{32}$	6.10	$4\frac{1}{2}$	28	12.10	$13\frac{1}{2}$
$\frac{31}{32}$	1.80	$2\frac{3}{8}$	16	3.00	$7\frac{1}{2}$	$2\frac{3}{4}$	6.20	$4\frac{3}{4}$	28	12.10	$13\frac{1}{2}$
1	1.95	$2\frac{3}{8}$	16	3.00	$7\frac{1}{2}$	$2\frac{25}{32}$	6.20	$4\frac{3}{4}$	28	12.10	$13\frac{1}{2}$
$1\frac{1}{32}$	1.95	$2\frac{1}{2}$	16	3.00	$7\frac{1}{2}$	$2\frac{13}{16}$	6.30	$4\frac{3}{4}$	28	12.10	$13\frac{1}{2}$
$1\frac{1}{16}$	2.10	$2\frac{1}{2}$	16	3.00	$7\frac{1}{2}$	$2\frac{27}{32}$	6.30	$4\frac{3}{4}$	28	12.10	$13\frac{1}{2}$
$1\frac{3}{32}$	2.10	$2\frac{1}{2}$	16	3.00	$7\frac{1}{2}$	$2\frac{7}{8}$	6.40	$4\frac{3}{4}$	28	12.10	$13\frac{1}{2}$
$1\frac{1}{8}$	2.40	$2\frac{5}{8}$	18	4.15	$8\frac{1}{2}$	$2\frac{29}{32}$	6.40	$4\frac{3}{4}$	28	12.10	$13\frac{1}{2}$
$1\frac{5}{32}$	2.40	$2\frac{5}{8}$	18	4.15	$8\frac{1}{2}$	$2\frac{15}{16}$	6.80	5	30	15.50	$14\frac{1}{2}$
$1\frac{7}{16}$	2.50	$2\frac{5}{8}$	18	4.15	$8\frac{1}{2}$	$2\frac{31}{32}$	6.80	5	30	15.50	$14\frac{1}{2}$
$1\frac{7}{32}$	2.50	$2\frac{5}{8}$	18	4.15	$8\frac{1}{2}$	3	6.90	5	30	15.50	$14\frac{1}{2}$
$1\frac{1}{4}$	2.60	$2\frac{3}{4}$	18	4.15	$8\frac{1}{2}$	$3\frac{1}{32}$	6.90	5	30	15.50	$14\frac{1}{2}$
$1\frac{9}{32}$	2.60	$2\frac{3}{4}$	18	4.15	$8\frac{1}{2}$	$3\frac{1}{16}$	7.10	5	30	15.50	$14\frac{1}{2}$
$1\frac{5}{16}$	2.70	$2\frac{3}{4}$	18	4.15	$8\frac{1}{2}$	$3\frac{3}{32}$	7.10	5	30	15.50	$14\frac{1}{2}$
$1\frac{11}{32}$	2.70	$2\frac{3}{4}$	18	4.15	$8\frac{1}{2}$	$3\frac{1}{8}$	7.30	$5\frac{1}{4}$	30	15.50	$14\frac{1}{2}$
$1\frac{3}{8}$	3.10	3	20	5.30	$9\frac{1}{2}$	$3\frac{5}{32}$	7.30	$5\frac{1}{4}$	30	15.50	$14\frac{1}{2}$
$1\frac{13}{32}$	3.10	3	20	5.30	$9\frac{1}{2}$	$3\frac{3}{16}$	7.50	$5\frac{1}{4}$	30	15.50	$14\frac{1}{2}$
$1\frac{7}{16}$	3.20	3	20	5.30	$9\frac{1}{2}$	$3\frac{7}{32}$	7.50	$5\frac{1}{4}$	30	15.50	$14\frac{1}{2}$
$1\frac{15}{32}$	3.20	3	20	5.30	$9\frac{1}{2}$	$3\frac{1}{4}$	7.70	$5\frac{1}{4}$	30	15.50	$14\frac{1}{2}$
$1\frac{1}{2}$	3.30	$3\frac{1}{4}$	20	5.30	$9\frac{1}{2}$	$3\frac{9}{32}$	7.70	$5\frac{1}{4}$	30	15.50	$14\frac{1}{2}$
$1\frac{17}{32}$	3.30	$3\frac{1}{4}$	20	5.30	$9\frac{1}{2}$	$3\frac{11}{16}$	7.90	$5\frac{1}{2}$	32	19.50	$15\frac{1}{2}$
$1\frac{9}{16}$	3.40	$3\frac{1}{4}$	20	5.30	$9\frac{1}{2}$	$3\frac{13}{32}$	7.90	$5\frac{1}{2}$	32	19.50	$15\frac{1}{2}$
$1\frac{19}{32}$	3.40	$3\frac{1}{4}$	20	5.30	$9\frac{1}{2}$	$3\frac{3}{8}$	8.10	$5\frac{1}{2}$	32	19.50	$15\frac{1}{2}$
$1\frac{5}{8}$	3.70	$3\frac{3}{8}$	22	6.50	$10\frac{1}{2}$	$3\frac{13}{32}$	8.10	$5\frac{1}{2}$	32	19.50	$15\frac{1}{2}$
$1\frac{21}{32}$	3.70	$3\frac{3}{8}$	22	6.50	$10\frac{1}{2}$	$3\frac{7}{16}$	8.30	$5\frac{1}{2}$	32	19.50	$15\frac{1}{2}$
$1\frac{11}{16}$	3.80	$3\frac{3}{8}$	22	6.50	$10\frac{1}{2}$	$3\frac{15}{32}$	8.30	$5\frac{1}{2}$	32	19.50	$15\frac{1}{2}$
$1\frac{23}{32}$	3.80	$3\frac{3}{8}$	22	6.50	$10\frac{1}{2}$	$3\frac{1}{2}$	8.50	$5\frac{1}{2}$	32	19.50	$15\frac{1}{2}$
$1\frac{3}{4}$	3.90	$3\frac{3}{8}$	22	6.50	$10\frac{1}{2}$	$3\frac{17}{32}$	8.50	$5\frac{3}{4}$	32	19.50	$15\frac{1}{2}$
$1\frac{25}{32}$	3.90	$3\frac{1}{2}$	22	6.50	$10\frac{1}{2}$	$3\frac{9}{16}$	8.70	$5\frac{3}{4}$	32	19.50	$15\frac{1}{2}$
$1\frac{13}{16}$	4.00	$3\frac{1}{2}$	22	6.50	$10\frac{1}{2}$	$3\frac{19}{32}$	8.70	$5\frac{3}{4}$	32	19.50	$15\frac{1}{2}$
$1\frac{27}{32}$	4.00	$3\frac{1}{2}$	22	6.50	$10\frac{1}{2}$	$3\frac{5}{8}$	8.90	$5\frac{3}{4}$	32	19.50	$15\frac{1}{2}$
$1\frac{7}{8}$	4.10	$3\frac{1}{2}$	22	6.50	$10\frac{1}{2}$	$3\frac{21}{32}$	8.90	$5\frac{3}{4}$	32	19.50	$15\frac{1}{2}$
$1\frac{29}{32}$	4.10	$3\frac{1}{2}$	22	6.50	$10\frac{1}{2}$	$3\frac{11}{16}$	9.10	$5\frac{3}{4}$	32	19.50	$15\frac{1}{2}$
$1\frac{15}{16}$	4.40	$3\frac{3}{4}$	24	7.75	$11\frac{1}{2}$	$3\frac{23}{32}$	9.10	$5\frac{3}{4}$	32	19.50	$15\frac{1}{2}$
$1\frac{31}{32}$	4.40	$3\frac{3}{4}$	24	7.75	$11\frac{1}{2}$	$3\frac{3}{4}$	9.30	6	34	24.00	$16\frac{1}{2}$
2	4.50	$3\frac{3}{4}$	24	7.75	$11\frac{1}{2}$	$3\frac{25}{32}$	9.30	6	34	24.00	$16\frac{1}{2}$
$2\frac{1}{32}$	4.50	$3\frac{3}{4}$	24	7.75	$11\frac{1}{2}$	$3\frac{13}{16}$	9.50	6	34	24.00	$16\frac{1}{2}$
$2\frac{1}{16}$	4.60	$3\frac{3}{4}$	24	7.75	$11\frac{1}{2}$	$3\frac{27}{32}$	9.50	6	34	24.00	$16\frac{1}{2}$
$2\frac{3}{32}$	4.60	$3\frac{7}{8}$	24	7.75	$11\frac{1}{2}$	$3\frac{7}{8}$	9.70	6	34	24.00	$16\frac{1}{2}$
$2\frac{1}{8}$	4.70	$3\frac{7}{8}$	24	7.75	$11\frac{1}{2}$	$3\frac{29}{32}$	9.70	6	34	24.00	$16\frac{1}{2}$
$2\frac{5}{32}$	4.70	$3\frac{7}{8}$	24	7.75	$11\frac{1}{2}$	$3\frac{15}{16}$	9.90	6	34	24.00	$16\frac{1}{2}$
$2\frac{3}{16}$	4.80	$3\frac{7}{8}$	24	7.75	$11\frac{1}{2}$	$3\frac{31}{32}$	9.90	6	34	24.00	$16\frac{1}{2}$
$2\frac{7}{32}$	4.80	$3\frac{7}{8}$	24	7.75	$11\frac{1}{2}$	4	10.10	6	34	24.00	$16\frac{1}{2}$
$2\frac{1}{4}$	5.10	4	26	9.00	$12\frac{1}{2}$						

Mandrels

Hardened and Ground Steel



Morse No. 123

These Mandrels are made of tool steel, hardened and accurately ground. They are tapered .0005 to 1 inch. They correspond in size to our Reamers and will fit holes reamed by them.

Other tapers per foot can be furnished at special prices.
Size of Mandrel stamped on large end.

Diameter Inches	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches
1/4	\$.65	3 3/4	2 3/16	\$6.00	12
5/16	.75	4	2 1/4	6.50	12
3/8	.85	4 1/4	2 1/8	6.90	12
7/16	.95	4 1/2	2 3/8	7.40	12
1/2	1.05	5	2 1/2	7.90	12 1/2
9/16	1.15	5 1/4	2 1/2	8.40	12 1/2
5/8	1.25	5 1/2	2 5/8	8.90	12 1/2
11/16	1.35	5 3/4	2 3/4	9.40	12 1/2
3/4	1.45	6	2 11/16	9.90	13
13/16	1.55	6 1/4	2 3/4	10.50	13
7/8	1.70	6 1/2	2 15/16	11.00	13
1 1/16	1.85	6 3/4	2 7/8	11.50	13
1	2.00	7	2 15/16	12.00	13
1 1/16	2.10	7 1/4	3	12.50	13
1 1/8	2.20	7 1/2	3 1/16	13.00	14
1 1/16	2.30	7 3/4	3 1/8	13.40	14
1 1/4	2.45	8	3 3/16	13.80	14
1 5/16	2.60	8 1/4	3 1/4	14.10	14
1 3/8	2.75	8 1/2	3 5/16	14.40	15
1 1/2	2.90	8 3/4	3 3/8	14.70	15
1 7/16	3.10	9	3 7/16	15.00	15
1 9/16	3.30	9 1/4	3 1/2	15.30	15
1 5/8	3.50	9 1/2	3 9/16	15.60	16
1 11/16	3.70	9 3/4	3 5/8	15.90	16
1 3/4	3.90	10	3 11/16	16.20	16
1 13/16	4.10	10 1/4	3 3/4	16.50	16
1 7/8	4.35	10 1/2	3 13/16	16.80	17
1 15/16	4.60	10 3/4	3 7/8	17.20	17
2	4.80	11	3 15/16	17.60	17
2 1/16	5.15	11 1/2	4	18.00	17
2 1/8	5.60	11 1/2			

Taper



Brown & Sharpe

Number	Whole Length Inches	Diameter at Small End, Inch	Each	Number	Whole Length Inches	Diameter at Small End, Inch	Each
3	3 11/16	.3125	\$1.40	9	7 3/16	.90	\$2.60
4	4 1/16	.35	1.50	10	7 3/4	1.05	3.00
5	4 1/2	.45	1.65	11	8 3/8	1.25	3.50
6	5 1/8	.50	1.80	12	9	1.50	4.00
7	5 15/16	.60	2.00	13	9 5/8	1.75	4.75
8	6 9/16	.75	2.25				

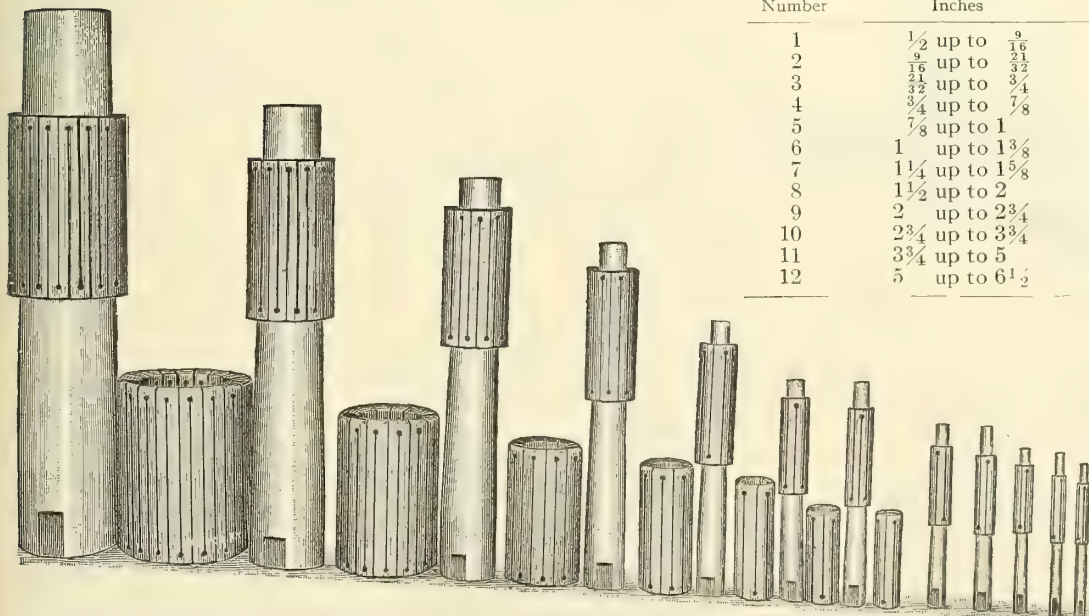
Mandrels take Bushings as follows: No. 3, 2 sizes; Nos. 4, 5, 6, 7 and 8, 3 sizes; Nos. 9, 10, 11, 12 and 13, 6 sizes.

Expansion Bushings

Outside Diameter of Bushing Inches	Length Inches	For Mandrel Number	Each	Outside Diameter of Bushing Inches	Length Inches	For Mandrel Number	Each
1 1/2	1 1/2	3	\$.55	2	4	10	\$2.00
1 9/16	1 5/8	3	.55	2 1/16	4 1/8	10	2.00
1 5/8	1 3/4	4	.65	2 1/8	4 1/8	10	2.00
1 11/16	1 7/8	4	.65	2 3/16	4 1/4	10	2.00
1 3/4	2	4	.65	2 1/4	4 1/4	10	2.00
1 13/16	2 1/8	5	.80	2 5/16	4 3/8	11	2.40
1 7/8	2 1/4	5	.80	2 3/8	4 3/8	11	2.40
1 15/16	2 3/8	5	.80	2 7/16	4 1/2	11	2.40
1	2 1/2	6	.95	2 1/2	4 1/2	11	2.40
1 1/16	2 5/8	6	.95	2 9/16	4 5/8	11	2.40
1 1/8	2 3/4	6	.95	2 5/8	4 5/8	11	2.40
1 1/4	2 7/8	7	1.15	2 11/16	4 3/4	12	2.80
1 1/2	3	7	1.15	2 3/4	4 3/4	12	2.80
1 5/16	3 1/8	7	1.15	2 13/16	4 7/8	12	2.80
1 3/8	3 1/4	8	1.40	2 7/8	4 7/8	12	2.80
1 7/16	3 3/8	8	1.40	2 15/16	5	12	2.80
1 1/2	3 1/2	8	1.40	3	5	12	2.80
1 9/16	3 5/8	9	1.70	3 1/16	5 1/8	13	3.20
1 5/8	3 3/4	9	1.70	3 1/8	5 1/8	13	3.20
1 11/16	3 3/4	9	1.70	3 3/16	5 1/4	13	3.20
1 3/4	3 3/4	9	1.70	3 1/4	5 1/4	13	3.20
1 13/16	3 7/8	9	1.70	3 5/16	5 3/8	13	3.20
1 7/8	3 7/8	9	1.70	3 3/8	5 3/8	13	3.20
1 15/16	4	10	2.00				

Champion Expanding

Expansion of this set, 1/2 to 6 1/2 inches. Positively the only Expanding Mandrel which completely fills a hole. Fully guaranteed



Number	Range Inches	Length of Arbor Inches	Length of Sleeve Inches	Each
1	1/2 up to 9/16	5 1/2	2 1/2	\$5.00
2	9/16 up to 21/32	6 1/2	2 3/4	5.50
3	21/32 up to 3/4	6 1/2	2 3/4	6.00
4	3/4 up to 7/8	7 1/2	3 1/4	6.50
5	7/8 up to 1	7 1/2	3 1/4	7.50
6	1 up to 1 3/8	9 1/4	4	13.50
7	1 1/4 up to 1 5/8	9 1/4	4	15.50
8	1 1/2 up to 2	11 1/2	5	17.50
9	2 up to 2 3/4	14 1/2	5 1/2	26.50
10	2 3/4 up to 3 3/4	17	6	37.50
11	3 3/4 up to 5	20	7	52.00
12	5 up to 6 1/2	24	8	68.50

All sizes from No. 1 to No. 5 inclusive have one flexible sleeve only. Price of sleeves two-thirds of price shown.

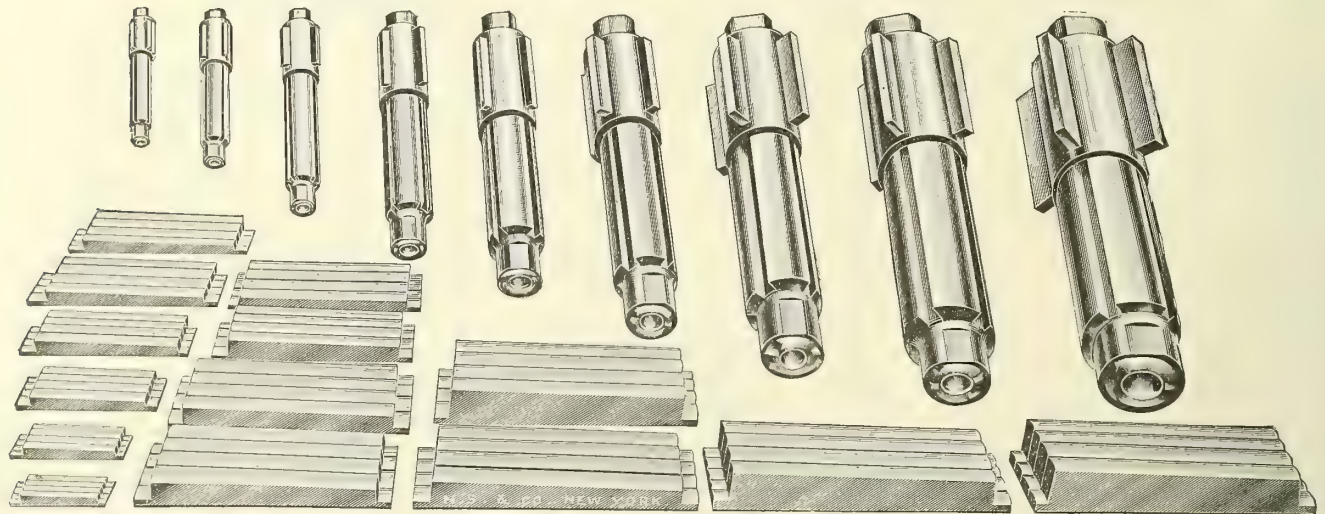
All sizes from No. 6 upwards have two flexible sleeves to obtain maximum expansion. Price of sleeves, each, one-half of prices shown.

Packed in neat individual boxes.

Complete Set, \$250.00

Expanding Mandrels

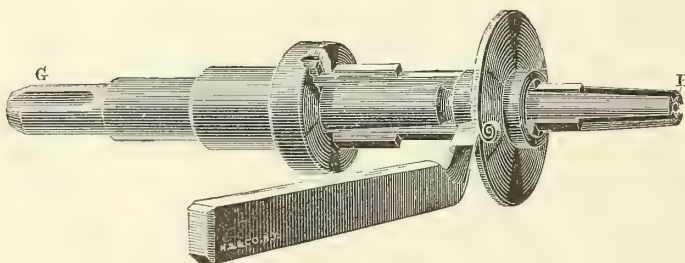
Nicholson



Number	A Jaws Expansion Inches	B Jaws Expansion Inches	C Jaws Expansion Inches	Length of Arbor, Inches	Length of Jaw Bearing, Inches	Each
00	$\frac{3}{4}$ to $\frac{7}{8}$	.....	.....	$8\frac{1}{4}$	2	\$7.00
0	$\frac{7}{8}$ to 1	.....	.....	$8\frac{1}{4}$	2	7.00
1	1 to $1\frac{1}{8}$	$1\frac{1}{8}$ to $1\frac{1}{4}$	.....	10	$2\frac{1}{2}$	9.00
2	$1\frac{1}{4}$ to $1\frac{3}{8}$	$1\frac{3}{8}$ to $1\frac{9}{16}$	.....	$11\frac{3}{4}$	3	10.50
3	$1\frac{9}{16}$ to $1\frac{25}{32}$	$1\frac{25}{32}$ to 2	.....	$14\frac{3}{4}$	4	14.50
4	2 to $2\frac{1}{4}$	$2\frac{1}{4}$ to $2\frac{1}{2}$	.....	$17\frac{1}{4}$	5	20.00
5	$2\frac{1}{2}$ to $2\frac{3}{4}$	$2\frac{3}{4}$ to 3	3 to $3\frac{1}{4}$	$18\frac{3}{4}$	$5\frac{3}{4}$	32.00
6	$3\frac{1}{4}$ to $3\frac{1}{2}$	$3\frac{1}{2}$ to $3\frac{3}{4}$	$3\frac{3}{4}$ to 4	21	6	39.00
7	4 to $4\frac{1}{8}$	$4\frac{1}{8}$ to $4\frac{1}{4}$	$4\frac{1}{4}$ to 5	$23\frac{1}{4}$	7	40.00
8	5 to $5\frac{1}{8}$	$5\frac{1}{8}$ to $5\frac{1}{4}$	$5\frac{1}{4}$ to 6	25	8	41.25
9	6 to $6\frac{1}{8}$	$6\frac{1}{8}$ to $6\frac{1}{4}$	$6\frac{1}{4}$ to $7\frac{1}{8}$	25	9	43.75

The No. 00 and the No. 0 Mandrels each have but one set of jaws; Nos. 1, 2, 3 and 4 each have two sets, and Nos. 5, 6, 7, 8 and 9 each have three sets, marked A, B and C, respectively.

Le Count



To tighten the work, drive with a copper hammer or a piece of soft iron or brass, on the large end, G, not too hard; to loosen, on small end, H. A good cut can be made by driving with a 1-ounce copper or brass hammer, not too hard.

The tool is steel, well made, simple, substantial and useful.

Nos. 4 and 5, owing to their weight, are made with a screw instead of a sleeve.

	Each
Amateur Size, $\frac{3}{8}$ to 1 inch	\$5.00
Machinists Size No. 1, $\frac{1}{2}$ to 1 inch	10.00
Machinists Size No. 2, 1 to $1\frac{1}{2}$ inches	14.00
Machinists Size No. 3, $1\frac{1}{2}$ to 2 inches	18.00
Machinists Size No. 4, 2 to 3 inches	32.00
Machinists Size No. 5, 3 to 4 inches	44.00

Extra Keys for No. 5

	Set
Machinists Size, 4 to $4\frac{1}{2}$ inches	\$10.00
Machinists Size, $4\frac{1}{2}$ to 5 inches	10.00
Machinists Size, 5 to $5\frac{1}{2}$ inches	13.00
Machinists Size, $5\frac{1}{2}$ to 6 inches	13.00
Machinists Size, 6 to $6\frac{1}{2}$ inches	16.00
Machinists Size, $6\frac{1}{2}$ to 7 inches	16.00

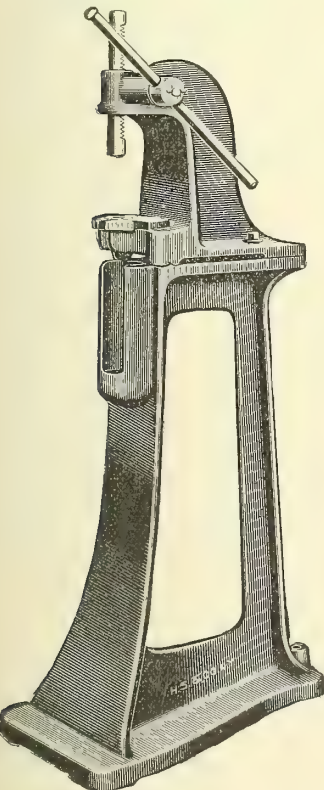
Arbor Presses

Greenerd

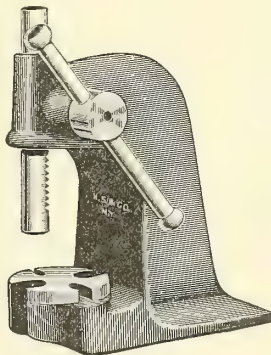
These Presses are powerful and can be easily moved close to workmen for convenience. Arbors or Mandrels can be put in and taken out without removing lathe dog, thereby saving much time. They prevent injury, not only to the work but to the Mandrels and leave centers perfectly clean. Can also be used for broaching, pressing in pins and bushings, bending (with dies) punching and many other purposes.

Pinions and rams are made of special steel with well-proportioned teeth, having angular pressure of 22½ degrees. Pressure is direct by lever on end of pinion shaft on small presses; large ones are provided with pawl and ratchet, as shown, so lever can be used where most effective.

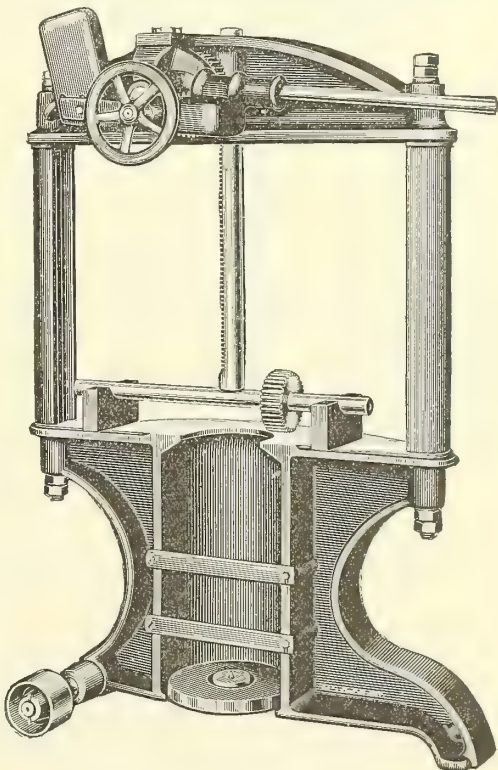
The frames are designed to withstand heavy strains. Some sizes can be furnished for use on lathe shears, bench, or mounted on suitable stands having sufficiently large base to require no floor fastenings.



No. 2 on stand



No. 1



No. 15

Number	Diameter of work Inches	Largest Arbor Inches	Height Over Plate Inches	Length and Diameter of Rack or Ram Inches	Leverage	Total Height Inches	Weight Pounds	Number	Presses Each	Weight Stands Pounds	Stands Each
1	3½	⅞	4½	7x⅞	25-1	8	15	1	\$ 8.00		
2	8	1	7	12x1⅜	35-1	14	70	2	13.00	200	\$12.00
3	12	1½	11	17x1¾	45-1	17	125	3	17.00	250	13.50
3-A	24	1½	11	17x1¾	45-1	24	235	3-A	28.00		
3½	19	3	15	19x2⅜	55-1	28	395	3½	37.00	300	20.00
3¾	22	3	21	24x2⅞	55-1	36	475	3¾	45.00	300	20.00
4	19	3	27	19x2⅜	55-1	57	900	4	75.00		
5	26	4	31	24x2⅞	135-1	65	1,450	5	125.00		
7	36	5	34	30x3⅞	250-1	75	2,550	7	210.00		
8	36	7	35	54x4x4	250-1	76	2,200	8	300.00		
9	48	7	35	54x4x4	250-1	76	2,850	9	380.00		
13	30	1½	11	17x1¾	45-1	55	360	13	32.00		
14	36	3	26	34x2⅞	55-1	65	900	14	75.00		
15	36	4	26	34x2⅞	135-1	66	1,000	15	100.00		
17	36	4	27	40x3⅞	250-1	70	1,950	17	165.00		

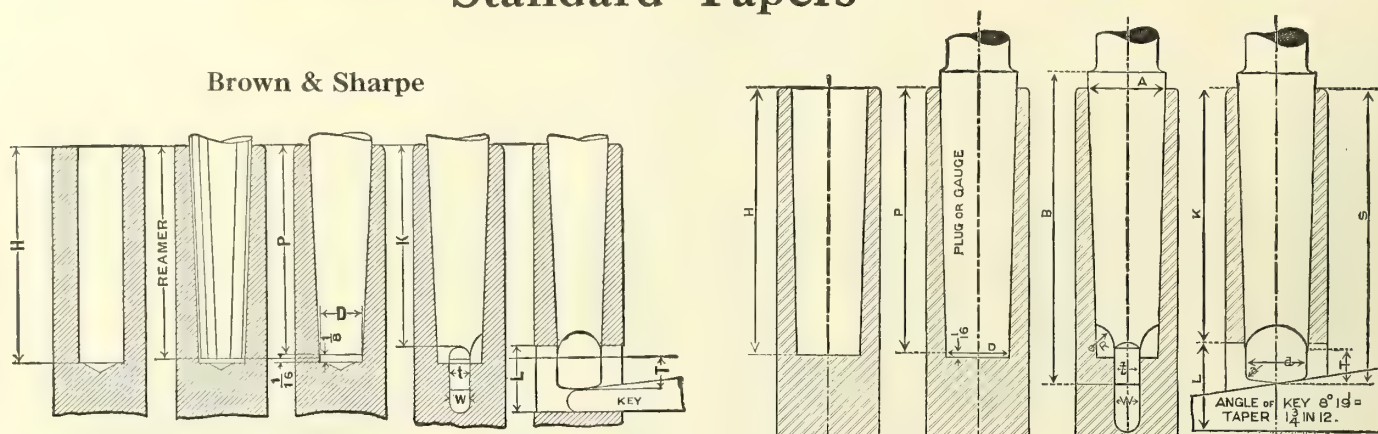
How to Obtain the Pressure Exerted from the Leverage Given

Multiply the power exerted upon the end of the lever by the leverage, and subtract 10 per cent for friction. Thus a No. 3 Press, 100 pounds, upon the lever end by leverage 45—10 per cent. = 100 x 45 = 4500—10 per cent. $\frac{4500}{450}$ = 4050 pounds power exerted.

Standard Tapers

Morse

Brown & Sharpe



Brown & Sharpe

Number of Taper	Diameter of Plug at Small End Inches	Plug Depth Inches	Depth of Hole Inches	Keyway from End of Spindle Inches	Length of Keyway Inches	Width of Keyway Inch	Length of Arbor Tongue Inch	Thickness of Arbor Tongue Inch	Taper per Foot
	D	P	H	K	L	W	T	t	
1	.20	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{3}{8}$	.135	$\frac{3}{16}$	$\frac{1}{8}$	.500
2	.25	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{2}$	.166	$\frac{1}{4}$	$\frac{5}{32}$	.500
3	.312	2	$2\frac{1}{8}$	$\frac{1}{16}$	$\frac{5}{8}$	.197	$\frac{5}{16}$	$\frac{3}{16}$	.500
4	.35	$1\frac{1}{4}$	$1\frac{3}{8}$	$\frac{1}{16}$	$\frac{11}{16}$	.228	$\frac{11}{32}$	$\frac{7}{32}$	.500
5	.45	$1\frac{3}{4}$	$1\frac{7}{8}$	$\frac{1}{16}$	$\frac{3}{4}$	.260	$\frac{3}{8}$	$\frac{1}{4}$	.500
6	.50	$2\frac{3}{8}$	$2\frac{1}{2}$	$\frac{1}{16}$	$\frac{7}{8}$	.291	$\frac{7}{16}$	$\frac{9}{32}$	.500
7	.60	3	$3\frac{1}{8}$	$\frac{1}{16}$	$\frac{15}{16}$	.322	$\frac{15}{32}$	$\frac{11}{32}$	.500
8	.75	$3\frac{9}{16}$	$3\frac{1}{16}$	$\frac{1}{16}$	1	.353	$\frac{1}{2}$	$\frac{15}{32}$	.500
9	.90	4	$4\frac{1}{8}$	$\frac{1}{16}$	$1\frac{1}{8}$	.385	$\frac{9}{16}$	$\frac{3}{8}$	.500
9	.90	$4\frac{1}{4}$	$4\frac{3}{8}$	$\frac{1}{16}$	$1\frac{1}{8}$	.385	$\frac{9}{16}$	$\frac{3}{8}$	.500
10	1.0446	5	$5\frac{1}{8}$	$\frac{1}{16}$	$1\frac{5}{8}$	.447	$\frac{21}{16}$	$\frac{7}{16}$	.5161
10	1.0446	$5\frac{11}{16}$	$5\frac{1}{8}$	$\frac{1}{16}$	$1\frac{5}{8}$	.447	$\frac{21}{16}$	$\frac{7}{16}$	.5161
11	1.25	$6\frac{3}{4}$	$6\frac{7}{8}$	$\frac{1}{16}$	$1\frac{3}{4}$	.447	$\frac{21}{16}$	$\frac{7}{16}$	.500
12	1.50	$7\frac{1}{8}$	$7\frac{1}{4}$	$\frac{1}{16}$	$1\frac{1}{2}$	.510	$\frac{3}{4}$	$\frac{1}{2}$	.500
13	1.75	$7\frac{3}{4}$	$7\frac{7}{8}$	$\frac{1}{16}$	$1\frac{1}{2}$	.510	$\frac{3}{4}$	$\frac{1}{2}$	.500
14	2	$8\frac{1}{4}$	$8\frac{3}{8}$	$\frac{1}{16}$	$1\frac{1}{2}$	.572	$\frac{27}{16}$	$\frac{9}{16}$	.500
15	2.25	$8\frac{3}{4}$	$8\frac{7}{8}$	$\frac{1}{16}$	$1\frac{1}{2}$	.572	$\frac{27}{16}$	$\frac{9}{16}$	.500
16	2.50	$9\frac{1}{4}$	$9\frac{3}{8}$	$\frac{1}{16}$	$1\frac{7}{8}$	.635	$\frac{31}{16}$	$\frac{5}{8}$	.500
17	2.75	$9\frac{3}{4}$	$9\frac{7}{8}$	...	...	...	...	...	.500
18	3.00	$10\frac{1}{4}$	$10\frac{3}{8}$	...	...	...	...	...	.500

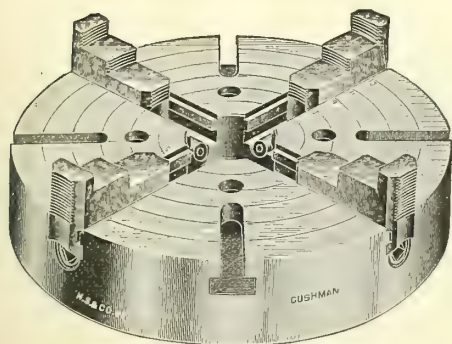
Morse Regular Shanks

Number of Taper	Diameter of Plug at Small End Inches	Diameter at End of Socket Inches	Shank		Depth of Hole Inches	Standard Plug Depth Inches	Tongue				Keyway				Taper Per Foot	Taper Per Inch
			Whole Length of Shank Inches	Shank Depth Inches			Thickness of Tongue Inches	Length of Tongue Inches	Radius of Mill for Tongue Inch	Diameter of Tongue Inches	Radius of Tongue Inch	Width of Keyway Inches	Length of Keyway Inches	End of Socket to Keyway Inches		
	D	A	B	S	H	P	t	T	R	d	a	W	L	K		
0	.252	.3561	2 ¹¹ / ₃₂	2 ⁷ / ₃₂	2 ¹ / ₃₂	2	⁵ / ₃₂	1 ¹ / ₄	⁵ / ₃₂	.235	.04	.160	⁹ / ₁₆	1 ¹⁵ / ₁₆	.625	.05208
1	.369	.475	2 ⁹ / ₁₆	2 ⁷ / ₁₆	2 ³ / ₁₆	2 ¹ / ₈	¹³ / ₆₄	³ / ₈	³ / ₁₆	.343	.05	.213	³ / ₄	2 ¹ / ₁₆	.600	.05
2	.572	.700	3 ¹ / ₈	2 ¹⁵ / ₁₆	2 ⁵ / ₈	2 ⁹ / ₁₆	¹ / ₄	¹ / ₁₆	¹ / ₄	.06	.06	.260	⁷ / ₈	2 ¹ / ₂	.602	.05016
3	.778	.938	3 ⁷ / ₈	3 ¹¹ / ₁₆	3 ¹ / ₄	3 ³ / ₁₆	⁵ / ₁₆	¹ / ₁₆	⁵ / ₃₂	.08	.08	.322	1 ³ / ₁₆	3 ¹ / ₁₆	.602	.05016
4	1.020	1.231	4 ⁷ / ₈	4 ⁵ / ₈	4 ¹ / ₈	4 ¹ / ₁₆	¹⁵ / ₃₂	⁵ / ₈	⁵ / ₁₆	.10	.10	.478	1 ¹ / ₄	3 ⁷ / ₈	.623	.05191
5	1.475	1.748	6 ¹ / ₈	5 ⁷ / ₈	5 ¹ / ₄	5 ³ / ₁₆	⁵ / ₈	³ / ₄	³ / ₈	1 ¹³ / ₃₂	.12	.635	1 ¹ / ₂	4 ¹⁵ / ₁₆	.630	.0525
6	2.116	2.494	8 ⁹ / ₁₆	8 ¹ / ₄	7 ³ / ₈	7 ¹ / ₄	³ / ₄	1 ¹ / ₈	¹ / ₂	2	.15	.760	1 ³ / ₄	7	.626	.05216
7	2.750	3.270	11 ⁵ / ₈	11 ¹ / ₄	10 ¹ / ₈	10	1 ¹ / ₈	1 ³ / ₈	³ / ₄	2 ⁵ / ₈	.18	1.135	2 ⁵ / ₈	9 ¹ / ₂	.625	.05208

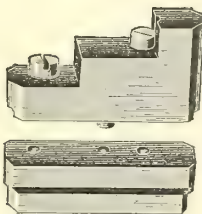
Morse Short Shanks

Number of Taper	Shank				Tongue				Keyway				Taper Per Foot	Taper Per Inch		
	Diameter of Plug at Small End Inches	Diameter at End of Socket Inches	Whole Length of Shank Inches	Shank Depth Inches	Depth of Hole Inches	Standard Plug Depth Inches	Thickness of Tongue Inches	Length of Tongue Inches	Radius of Mill for Tongue Inch	Diameter of Tongue Inches	Radius of Tongue Inch	Width of Keyway Inches			Length of Keyway Inches	End of Socket to Keyway Inches
	D	A	B	S	H	P	t	T	R	d	a	W			L	K
0	.271	.356	1 $\frac{31}{32}$	1 $\frac{27}{32}$	1 $\frac{21}{32}$	1 $\frac{5}{8}$	.186 .188 .249	$\frac{1}{4}$	$\frac{3}{16}$	.258	$\frac{3}{64}$	.193 .196 .260	$\frac{5}{8}$	1 $\frac{17}{32}$	.625	.05208
1	.388	.475	2 $\frac{3}{16}$	2	1 $\frac{13}{16}$	1 $\frac{3}{4}$	.251 .374	$\frac{5}{16}$	$\frac{1}{4}$	.371	$\frac{1}{16}$	.263 .385	$\frac{13}{16}$	1 $\frac{21}{32}$	.600	.05
2	.600	.700	2 $\frac{9}{16}$	2 $\frac{3}{8}$	2 $\frac{1}{16}$	2	.376 .499	$\frac{7}{16}$	$\frac{9}{32}$	.575	$\frac{1}{16}$	.388 .512	1 $\frac{3}{16}$	1 $\frac{27}{32}$	.602	.05016
3	.816	.938	3 $\frac{1}{8}$	2 $\frac{15}{16}$	2 $\frac{1}{2}$	2 $\frac{7}{16}$	.501 .624 .999	$\frac{9}{16}$	$\frac{5}{16}$	.783	$\frac{3}{32}$	.516 .637 .641	1 $\frac{5}{16}$	2 $\frac{7}{32}$	.602	.05016
4	1.062	1.231	4 $\frac{1}{16}$	3 $\frac{13}{16}$	3 $\frac{5}{16}$	3 $\frac{1}{4}$	.626 .999	$\frac{5}{8}$	$\frac{3}{8}$	1.023	$\frac{3}{32}$	.641 1.012	1 $\frac{1}{2}$	2 $\frac{31}{32}$	.623	.05191
5	1.532	1.748	5 $\frac{1}{16}$	4 $\frac{13}{16}$	4 $\frac{3}{16}$	4 $\frac{1}{8}$	1.001 1.248	$\frac{3}{4}$	$\frac{1}{2}$	1.483	$\frac{1}{8}$	1.016 1.263	2	3 $\frac{31}{32}$	.630	.0525
6	2.201	2.494	7 $\frac{1}{16}$	6 $\frac{3}{4}$	5 $\frac{3}{4}$	5 $\frac{5}{8}$	1.251 1.623	1 $\frac{1}{8}$	$\frac{5}{8}$	2.128	$\frac{1}{8}$	1.268 1.639	2 $\frac{3}{4}$	5 $\frac{1}{16}$	.626	.05216
7	2.857	3.270	9 $\frac{11}{16}$	9 $\frac{5}{16}$	8 $\frac{1}{16}$	7 $\frac{15}{16}$	1.627	1 $\frac{1}{2}$	$\frac{3}{4}$	2.769	$\frac{3}{16}$	1.644	3 $\frac{5}{8}$	7 $\frac{1}{8}$	.625	.05208

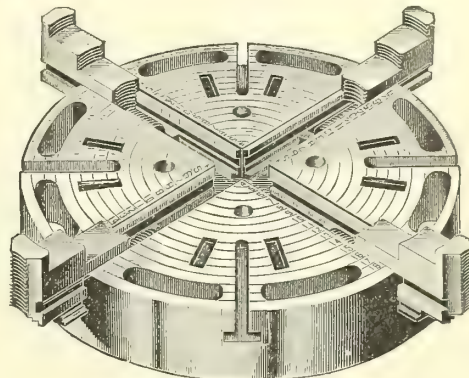
Independent Lathe Chucks



Cushman



Westcott Sectional Lathe Chuck Jaw



Westcott IXL

No. 12, Iron Body. No. 212, Steel Body

Both of these styles are strongly and heavily made—No. 12 from a superior quality of grey iron; No. 212 from cast steel with great tensile strength, the latter serving in all cases where extraordinary strength is needed.

The illustration shows style of 12, 14, 15 and 16-inch, with T slots; 8-inch and under have solid faces; 9 and 10-inch have openings in face; the 18-inch and over have both openings and slots.

The jaws are made from open hearth steel and they are carefully fitted to the body and case hardened. They are made in one piece and can be quickly reversed by running them out of the body and turning them end for end.

The screws are made of steel with heavy square threads, and none of the threaded portion is used for the bearing. The thread extends to the outer end of screw which allows the jaw to be opened very wide. These screws are equipped with hardened steel thrust bearings.

These Chucks are to be fitted to machine by means of an intermediate flange plate or adapter, the body being recessed for the purpose, and provided with bolt holes. With every Chuck we furnish bolts for attaching.

The capacity of these Chucks is as great as any chuck made of this type, but when a Chuck jaw is extended to hold larger than the diameter of Chuck body, many of the jaw teeth become disengaged with the screw threads, and the wider the Chuck is opened the fewer jaw teeth and screw threads are left to withstand all the strain from holding the extra large work. The safe capacity of this type of Chuck is as listed.

A powerful steel wrench for operating the jaws is furnished with each chuck.

Size Inches	Safe Capacity Inches	Diameter of Hole Inches	Recess for Face Plate Inches	Iron Body No. 12 Each	Steel Body No. 212 Each
4½	5	1	4⅛	\$14.00	
6	7	1 9/16	5⅝	18.00	
8	9	1 ¾	4¾	22.00	\$35.00
9	11	1 ¾	4¾	24.00	
10	12	2	5⅝	26.00	40.00
12	14	2 ¾	6 11/16	30.00	45.00
14	16	3	6 11/16	34.00	51.00
15	18	3	7 13/16	35.00	
16	19	3	7 13/16	38.00	60.00
18	21	4	9 1 1/2	44.00	66.00
20	23	4	9 1 1/2	50.00	75.00
22	25	5	11	57.00	85.00
24	27	5	11	65.00	100.00
26	29	5	12	80.00	120.00
28	31	5	13	100.00	150.00
30	34	5	15	120.00	180.00
32	36	5	15	150.00	
34	38	6	17 ¾	180.00	
36	40	6	17 ¾	210.00	

For Lathes and machines requiring larger Chucks than above, see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special jaws at special prices. With special jaws, steel chucks are excellent for projectile work and are widely used for that purpose.

The surfaces, after hardening, are ground to a perfect fit, and a good bearing secured

This Chuck is exceptionally strong, due to the fact that the end thrust and strain come upon the body where it is strongest. It does not come at one weak point, as in other Independent Chucks, but is distributed so as not to spring or break the chuck body. The screw carriers are adjustable, which is a distinctly new feature of great consequence.

When the Chuck is required to hold work larger than its diameter, remove the set-screws (two set-screws in each hole), and drive the screw carriers outward, together with the jaws and their adjusting screws, thereby retaining the full thread bearing between screw and jaw, the screw-carrier still supporting jaw; thus the desired capacity is secured without injury to Chuck. Another, and perhaps easier method of manipulation, is to screw the jaws against a block of wood or a piece of iron, thus forcing the screw-carriers, together with the screws, outward to the desired point, then drawing jaws out by turning screws the other way. As a result, this Chuck has a much greater capacity than any other Independent Chuck of the same size.

The jaws are made of steel and case hardened; they are reversible, have deep shoulders, and are turned so as to get a firm bite on the work.

Screws are made of steel best suited to the purpose; they are squared on both ends and square ends are tempered.

We are prepared to furnish the Chuck with either three or four solid jaws, which are always furnished unless otherwise specified.

Westcott sectional jaw, illustrated above, supplied if desired. This style of jaw is especially adapted to the attachment of special jaws. The upper part of jaw can be taken off and special jaw fitted to bottom part; this is the cheapest and easiest way ever contrived for attaching special jaws to a Chuck.

This Chuck is also suitable to be used as a cutting-off Chuck.

Screw heads do not project beyond diameter.

Face-plate seats can be enlarged to within 1 inch of the outside diameter of the Chuck, at no extra cost, if so ordered.

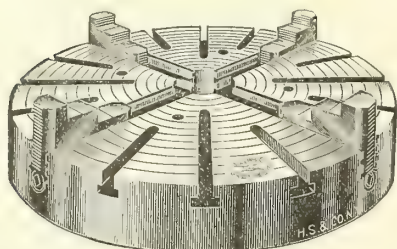
Diameter Inches	Capacity Inches	Diameter of Center Hole Inches	Diameter of Recess for Face Plate Inches	With 3 or 4 Jaws Each	Unfinished Face Plate Castings Each
4 9/16	5 1/2	1	3 1/2	\$14.00	\$.50
6	6 3/4	1 3/4	5 9/16	18.00	1.00
8	9	2 1/4	5	22.00	1.00
10 1/8	12	2 1/4	6	26.00	1.25
12	15	2 1/2	6 1/2	30.00	1.25
13 1/4	17	3	6 1/2	32.00	1.50
14	18	3	7 1/16	34.00	1.50
16	20	3 1/4	7 9/16	38.00	2.00
18 1/2	23	4	9 1/16	44.00	2.50
21 1/4	26	4	9 5/16	55.00	3.50
24	30	4 3/4	10	65.00	4.00
27	33	5	12 7/8	95.00	4.50
30	36	5	12 7/8	120.00	5.00
36	43	6	15	210.00	6.00

Three-jaw IXL Independent Chucks above 18½ inches in diameter are made to order only.

When ordering unfinished Face-plates for all Lathe Chucks, give the diameter of Lathe Spindle.

Independent Lathe Chucks

Four Reversible Jaws



Union

No. 118, Iron Body. No. 64, Steel Body

Both of these Chucks are strongly and heavily made—No. 118 from a superior quality of grey iron; No. 64 from cast steel, with tensile strength of 70,000 pounds, the latter serving in all cases where extraordinary strength is required.

10-inch size and under have solid faces.

12, 14, 16-inch have one T-slot between the jaws.

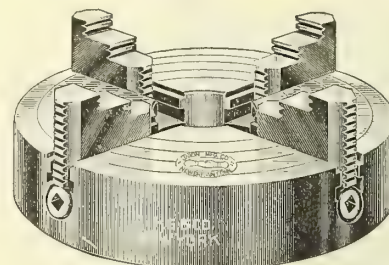
18 to 30-inch inclusive have two T-slots.

32-inch and larger have three T-slots. (See cut.)

This Chuck has socket screws, which give a longer bearing of the screw in the jaw, and also hardened steel thrust bearings, which take the thrust of the screw. In the 12-inch sizes and larger the jaws have a double bearing rib, on which the jaw slides.

Jaws are extra wide, and the screw is increased in size, giving a greater bearing than ordinarily found.

Three or Four Reversible Jaws



Union Light Pattern No. 19

For use on Light Lathes and for amateur work, sufficiently strong for work usually placed on the smaller sizes of Independent Chucks.

The jaws and screws are of steel and closely fitted. The screw heads are provided with square recesses for key, and are flush with the outside rim of the Chuck. A hardened steel collar takes the thrust of the screw, saving wear, and adds to the durability.

Size Inches	Iron Body, No. 118			Steel Body, No. 64		
	Diameter of Hole Inches	Recess for Face Plate Inches	Each	Diameter of Hole Inches	Recess for Face Plate Inches	Each
4	1 $\frac{1}{8}$	3 $\frac{11}{16}$	\$14.00			
5	1 $\frac{1}{8}$	3 $\frac{11}{16}$	16.00			
6	1 $\frac{3}{4}$	5	18.00			
8	2	5	22.00	2 $\frac{1}{8}$	4 $\frac{7}{8}$	\$35.00
9	2	5	24.00			
10	2	5	26.00	2 $\frac{1}{2}$	5 $\frac{1}{32}$	40.00
12	3	7	30.00	3 $\frac{1}{8}$	7 $\frac{1}{16}$	45.00
14	3	8	34.00	3 $\frac{1}{8}$	7 $\frac{1}{16}$	51.00
15	3	8	35.00	3 $\frac{1}{8}$	8	55.00
16	3	8	38.00	3 $\frac{1}{8}$	7 $\frac{1}{16}$	60.00
18	4 $\frac{3}{4}$	10	44.00	4	8	66.00
20	4 $\frac{3}{4}$	10	50.00	4 $\frac{1}{4}$	10	75.00
22	4 $\frac{3}{4}$	10	57.00	5	10	85.00
24	4 $\frac{3}{4}$	12	65.00	5	10	100.00
26	5 $\frac{1}{2}$	12	80.00	5	12	120.00
28	5 $\frac{1}{2}$	12	100.00	5 $\frac{1}{2}$	12	150.00
30	5 $\frac{1}{2}$	12	120.00	5 $\frac{1}{2}$	16 $\frac{1}{8}$	180.00
32	5 $\frac{1}{2}$	17 $\frac{3}{4}$	150.00	5 $\frac{1}{2}$	16 $\frac{1}{8}$	225.00
34	5 $\frac{1}{2}$	17 $\frac{3}{4}$	180.00	5 $\frac{1}{2}$	17 $\frac{3}{4}$	270.00
36	5 $\frac{1}{2}$	17 $\frac{3}{4}$	210.00	5 $\frac{1}{2}$	17 $\frac{3}{4}$	315.00
38	6	20	240.00			
40	6	20	270.00			
42	6	20	300.00			
44	6	20	350.00			
46	6	20	420.00			
48	6	20	500.00			

Diameter or Size Inches	Diameter of Hole Inches	Diameter of Recess Inches	Approximate Weight Pounds	3 Jaw Each	4 Jaw Each
3	$\frac{5}{8}$	2 $\frac{11}{16}$	2 $\frac{1}{2}$	\$8.50	\$10.00
4	1	3 $\frac{1}{2}$	4 $\frac{1}{4}$	10.00	12.00
5	1	3 $\frac{1}{2}$	6 $\frac{1}{2}$	12.00	14.00
6	1 $\frac{5}{8}$	3 $\frac{3}{4}$	9	14.00	16.00
7 $\frac{1}{2}$	1 $\frac{5}{8}$	3 $\frac{3}{4}$	12 $\frac{1}{2}$	16.00	18.00
9	1 $\frac{5}{8}$	3 $\frac{3}{4}$	18	18.00	20.00
10	1 $\frac{5}{8}$	5	24	20.00	22.00

Definition of Terms Used in Describing Chucks

A Universal Chuck is one in which all the jaws are operated by the application of the wrench at one pinion. This style of Chuck has a common center at all times, and none of the jaws can be operated independently of the others.

An Independent Chuck is one in which each jaw is moved to or from the center separately. In an Independent Chuck but one jaw can be moved at a time.

A Combination Chuck is one in which the jaws can be operated together, as in a Universal Chuck, or, by releasing the gearing, singly, as in an Independent Chuck. In other words, a Combination Chuck is a combination of both the Universal and Independent styles. One advantage of the Combination Chuck over the Universal lies in the fact that, to remove the jaws from a Chuck of this style, it is only necessary to set the Chuck as an Independent, and then run each jaw separately to the center. In a Universal Chuck, it is necessary to take the Chuck apart to remove the jaws.

Geared Scroll Chucks are always Universal in style, excepting the Scroll Combination, which is a Combination Chuck.

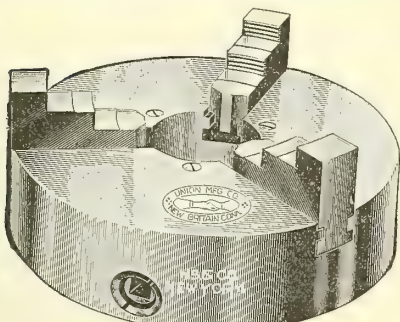
For Lathes and machines requiring larger Chucks than above, see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special jaws at special prices. With special jaws steel Chucks are excellent for projectile work, and are widely used for that purpose.

Geared Scroll Chucks

Union Universal

All Union Steel Shells are made in one piece of cast steel, and are designed for the heaviest work. The iron shells are also made in one piece and are very solid and substantial

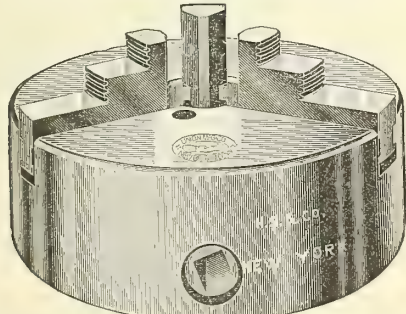
With Three or Four Outside Jaws



Nos. 133 and 93

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	Iron Body		Steel Body	
			3-Jaw No. 133 Each	4-Jaw No. 134 Each	3-Jaw No. 93 Each	4-Jaw No. 94 Each
2½	¾	1⅛	\$7.50	.....	\$12.00	
3	5⁄8	2⅞	10.00	\$11.00	15.00	\$17.00
4	¾	3	12.00	13.20	18.00	20.00
5	7⁄8	3⅛	15.00	16.50	23.00	25.00
6	1⅞	4¾	18.00	19.80	27.00	30.00
7½	2	4¾	20.00	22.00	30.00	33.00
9	2½	5¾	24.00	26.40	36.00	40.00
10½	3	5¾	27.00	29.70	41.00	45.00
12	3	7	30.00	33.00	45.00	50.00
15	3¼	8	40.00	44.00	60.00	66.00
18	3½	10	55.00	62.00	83.00	93.00
21	4½	11	80.00	90.00	120.00	135.00

With Three or Four Inside Jaws



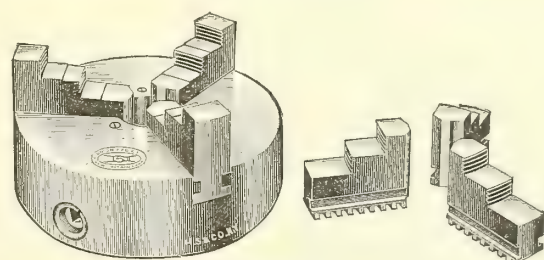
Nos. 143 and 113

Nos. 143 (3-jaw) and 144 (4-jaw) with iron body and inside jaws, take the same list and have the same dimensions as Nos. 133 and 134, respectively, in above table.

Nos. 113 (3-jaw) and 114 (4-jaw) with steel body and inside jaws, take the same list and have the same dimensions as Nos. 93 and 94, respectively, in above table.

With Three or Four Outside and Inside Jaws

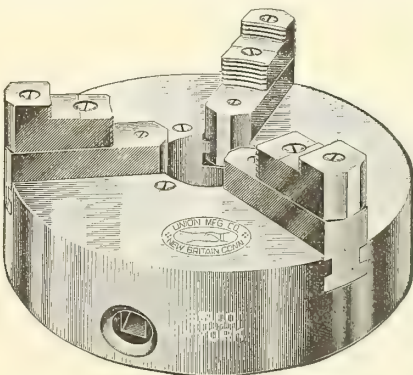
Two sets with each Chuck



Nos. 153 and 123

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	Iron Body		Steel Body	
			3-Jaw No. 153 Each	4-Jaw No. 154 Each	3-Jaw No. 123 Each	4-Jaw No. 124 Each
2½	¾	1⅛	\$9.00	....	\$14.00	
3	5⁄8	2⅞	12.00	\$13.60	18.00	\$20.00
4	¾	3	14.40	16.40	22.00	25.00
5	7⁄8	3⅛	18.00	20.50	27.00	31.00
6	1⅞	4¾	21.60	24.60	32.00	37.00
7½	2	4¾	24.00	27.30	36.00	41.00
9	2½	5¾	28.80	32.80	43.00	49.00
10½	3	5¾	32.40	37.00	49.00	56.00
12	3	7	36.00	41.00	54.00	62.00
15	3¼	8	48.00	54.60	72.00	81.90
18	3½	10	66.00	77.00	99.00	115.50
21	4½	11	96.00	110.00	144.00	165.00

With Three or Four Reversible Jaws

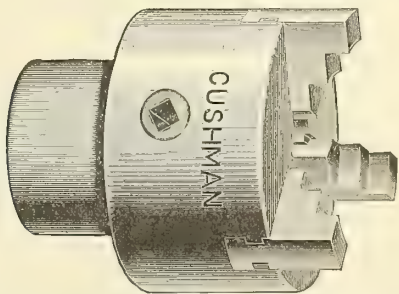


No. 163

Nos. 163 (3-jaw) and 164 (4-jaw) with iron body and reversible jaws, take the same list and have the same dimensions as Nos. 133 and 134, at top of this page.

Cushman Universal, with Hubs for Taper Arbor

With Three Outside or Inside Jaws, or Both



No. 36

Designed to be fitted to machine by means of a taper arbor. They are provided with hubs as shown, in which is a taper hole adapted for taper arbors.

For Lathes and machines requiring larger Chucks than above see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special jaws at special prices. With special jaws, steel Chucks are excellent for projectile work and are widely used for that purpose.

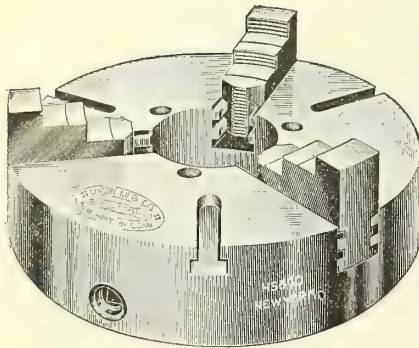
These Chucks have one pinion gear only.
 Style No. 36 has one set of outside jaws. Will hold pieces as large as the diameter of body.
 Style No. 37 has one set of inside jaws holding bars, rods or drills.
 Style No. 39 has two sets of jaws, one set outside and one set inside.

Nominal size	2 inches	2½ inches
Diameter of body	2 inches	2½ inches
Diameter of hub	1⅝ inches	1⅞ inches
Length over all	2⅝ inches	3 inches
Hole through body	½ inch	⅝ inch
Weight No. 36 and No. 37	1¼ pounds	2¼ pounds
Weight No. 39	1½ pounds	2½ pounds
No. 36 and No. 37	\$6.50	\$7.50
No. 39	8.00	9.00

Universal Geared Scroll Chucks

Union—Extra Heavy

With Three or Four Outside or Inside Jaws, or Both



No. 79

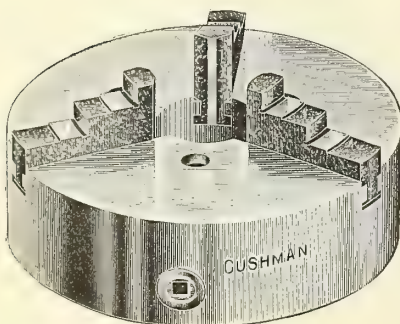
Size Inches		Diameter of Hole Inches	Recess for Face Plate Inches	No. 79 With Outside Jaws Each	No. 80 With Inside Jaws Each	No. 81 With Two Sets Jaws Each
4	{ 3 jaw 4 jaw }	$\frac{3}{4}$	3	\$16.00 18.00	\$16.00 18.00	\$20.00 23.50
5	{ 3 jaw 4 jaw }	$\frac{7}{8}$	$3\frac{1}{16}$	20.00 22.00	20.00 22.00	24.00 27.50
6	{ 3 jaw 4 jaw }	$1\frac{9}{16}$	$4\frac{3}{4}$	24.00 27.00	24.00 27.00	30.00 35.00
$7\frac{1}{2}$	{ 3 jaw 4 jaw }	2	$4\frac{3}{4}$	28.00 32.00	28.00 32.00	36.00 42.50
9	{ 3 jaw 4 jaw }	$2\frac{1}{2}$	$5\frac{3}{4}$	35.00 40.00	35.00 40.00	45.00 53.50
12	{ 3 jaw 4 jaw }	3	7	45.00 52.50	45.00 52.50	60.00 72.50
15	{ 3 jaw 4 jaw }	$3\frac{1}{4}$	8	65.00 74.00	65.00 74.00	83.00 98.00
18	{ 3 jaw 4 jaw }	$4\frac{1}{4}$	10	90.00 100.00	90.00 100.00	110.00 127.00
21	{ 3 jaw 4 jaw }	$4\frac{1}{4}$	11	120.00 131.00	120.00 131.00	142.00 160.00
24	{ 3 jaw 4 jaw }	$4\frac{1}{2}$	14	150.00 162.50	150.00 162.50	175.00 196.00
28	{ 3 jaw 4 jaw }	5	14	200.00 215.00	200.00 215.00	230.00 255.00
30	{ 3 jaw 4 jaw }	6	16	238.00 255.00	238.00 255.00	272.00 300.00
32	{ 3 jaw 4 jaw }	6	16	275.00 295.00	275.00 295.00	315.00 350.00

The changes that have been made in high-grade machine tools in the last few years have necessitated corresponding changes in the smaller tools used with them. These improvements, together with the general use of high speed steel in lathe tools, have called for a heavier and stronger Scroll Chuck than previously made. That demand is met by the Union Extra Heavy Geared Scroll Chuck, listed herewith.

All parts are extra heavy and of carefully selected material. The jaws operate in double grooves in the shell, thus bringing them deeper into the shell, increasing the strength.

In addition to the usual outside and inside jaws we furnish for these Chucks a number of soft blank jaws, designed to be shaped to the character of the work to be held.

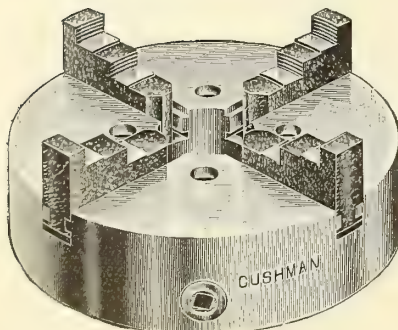
Cushman, with Three Outside or Inside Jaws, or Both



No. 32

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	No. 31 With Outside Jaws Each	No. 32 With Inside Jaws Each	No. 34 With Two Sets Jaws Each
2	$\frac{1}{2}$	$1\frac{1}{2}$	\$6.50	\$6.50	\$8.00
$2\frac{1}{2}$	$\frac{5}{8}$	$1\frac{7}{8}$	7.50	7.50	9.00
3	$\frac{5}{8}$	$2\frac{1}{8}$	10.00	10.00	12.00
4	1	$3\frac{1}{16}$	12.00	12.00	14.40
5	$1\frac{1}{4}$	$3\frac{3}{4}$	15.00	15.00	18.00
6	$1\frac{9}{16}$	$4\frac{3}{4}$	18.00	18.00	21.60
$7\frac{1}{2}$	2	$4\frac{3}{4}$	20.00	20.00	24.00
9	$2\frac{1}{2}$	$5\frac{5}{8}$	24.00	24.00	28.80
$10\frac{1}{2}$	3	$5\frac{5}{8}$	27.00	27.00	32.40
12	3	7	30.00	30.00	36.00
15	$3\frac{1}{4}$	7	40.00	40.00	48.00
18	$3\frac{1}{4}$	$9\frac{1}{2}$	55.00	55.00	66.00
21	$3\frac{3}{4}$	$9\frac{1}{2}$	80.00	80.00	96.00

Cushman, with Four Outside or Inside Jaws, or Both



No. 41

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	No. 41 With Outside Jaws Each	No. 42 With Inside Jaws Each	No. 44 With Two Sets Jaws Each
3	$\frac{5}{8}$	$2\frac{7}{8}$	\$10.75	\$10.75	\$13.35
4	1	$3\frac{1}{16}$	13.00	13.00	16.20
5	$1\frac{1}{4}$	$3\frac{3}{4}$	16.20	16.20	20.20
6	$1\frac{9}{16}$	$4\frac{3}{4}$	19.50	19.50	24.30
$7\frac{1}{2}$	2	$4\frac{3}{4}$	22.00	22.00	27.30
9	$2\frac{1}{2}$	$5\frac{5}{8}$	26.00	26.00	32.40
$10\frac{1}{2}$	3	$5\frac{5}{8}$	29.10	29.10	36.40
12	3	7	32.40	32.40	40.40
15	$3\frac{1}{4}$	7	43.30	43.30	53.90
18	$3\frac{1}{4}$	$9\frac{1}{2}$	62.00	62.00	77.00
21	$3\frac{3}{4}$	$9\frac{1}{2}$	90.00	90.00	110.00

Nos. 31 and 41 have outside jaws of the type most generally used for ordinary lathe work, as may be noted in cut. With this type jaw pieces as large as the Chuck itself may be held. Nos. 32 and 42 have inside jaws, adapted for holding bars, rods, drills, and special tools. The steps on the outside are for holding rings, etc.

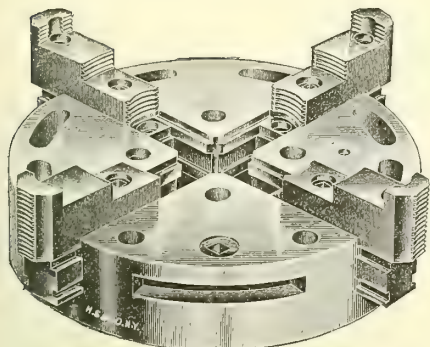
Nos. 34 and 44 have two sets of jaws, one each inside and outside, which can be changed easily and quickly. Having both sets, these Chucks are adapted for any kind of work and are generally the most useful.

For Lathes and machines requiring larger Chucks than above, see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special Jaws at special prices. With special jaws, steel Chucks are excellent for projectile work, and are widely used for that purpose.

Geared Scroll Chucks

Westcott Spur Universal or Combination

With Three or Four Reversible Jaws

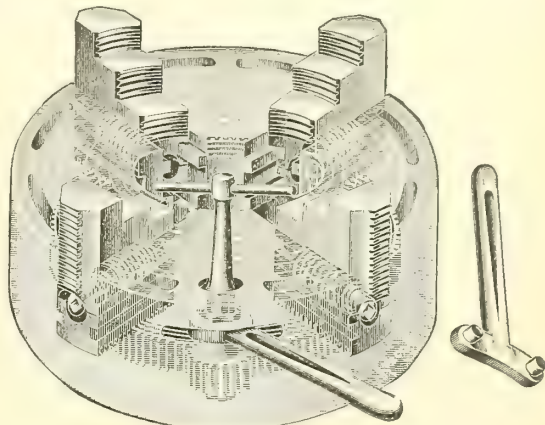


Universal

The Spur pinion is operated by a drop forged open-end wrench, which enters through an opening in the edge of the Chuck, and engages with hexagon pinion shaft. The scroll may be rapidly manipulated by a lever and increased gripping power then gained by applying the open-end wrench to the Spur pinion—a grip much stronger than any bevel gear Chuck.

The increased grip is due not only to the Spur Gear, but also to the open-end wrench, to which a man may apply as much power as he pleases without danger of breaking the gears.

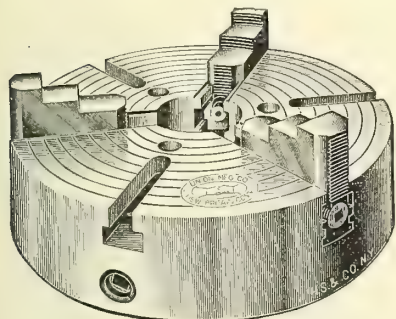
The mechanism by which the universal movement of the jaws is produced may be operated from the face and edge of Chuck, as well as from the rear. Screw heads do not project beyond body.



Combination

Diam- eter Over All Inches	Will Hold Inside of Jaw Inches	Diameter of Re- cess for Face Plate Inches	Three Jaws Each	Four Jaws Each	Unfinished Face Plates Each
6	6½	..	\$25.00	\$31.00	\$.75
8	8½	3½	26.00	32.00	.50
10⅛	12	5	34.00	42.00	1.00
13¼	15	6	44.00	56.00	1.25
16	18	7 9/16	52.00	64.00	1.50
18½	21½	9 5/16	62.00	75.00	2.00
21¼	26	9 5/16	80.00	95.00	2.50
24	30	10	100.00	120.00	4.00
27	33	12 7/8	135.00	160.00	4.50
30	36	12 7/8	170.00	200.00	5.00
36	43	15	230.00	285.00	6.00

When ordering unfinished Face Plates for all Lathe Chucks, give the diameter of Lathe Spindle.



No. 83

Union Combination

With Three or Four Reversible Jaws

Diameter Inches	Diameter of Hole Inches	Recess for Face Plate Inches	No. 83 Three Jaws Each	No. 84 Four Jaws Each
4	¾	3	\$20.00	\$26.00
5	7/8	3 11/16	22.00	28.00
6	1 9/16	4 3/4	24.00	30.00
7½	2	4 3/4	26.00	32.00
9	2 1/2	5 3/4	34.00	42.00
10½	3	5 3/4	40.00	50.00
12	3	7	44.00	56.00
15	3 1/4	8	52.00	64.00
18	3 1/2	10	62.00	75.00
21	4 1/2	11	80.00	95.00
24	4 1/2	14	100.00	120.00

Lathe Chucks

Union Combination

With Three or Four Outside, Inside or Reversible Jaws

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	With Outside Jaws		With Inside Jaws		With Reversible Jaws	
			No. 1 3-Jaw Each	No. 401 4-Jaw Each	No. 2 3-Jaw Each	No. 402 4-Jaw Each	No. 21 3-Jaw Each	No. 421 4-Jaw Each
3	...	...	\$18.00	...	\$18.00	...	...	...
4	...	...	22.00	\$26.00	22.00	\$26.00	...	...
5	1¼	3 11/16	25.00	30.00	25.00	30.00	\$25.00	\$30.00
6	1¼	3 11/16	26.00	32.00	26.00	32.00	26.00	32.00
8	1½	5 1/32	30.00	38.00	30.00	38.00	30.00	38.00
9	1½	5 1/32	34.00	42.00	34.00	42.00	34.00	42.00
12	1 5/8	6 3/8	44.00	56.00	44.00	56.00	44.00	56.00
15	2	7 1/16	52.00	64.00	52.00	64.00	52.00	64.00
18	2 3/8	8	62.00	75.00	62.00	75.00	62.00	75.00
21	2 3/4	9 21/32	80.00	95.00	80.00	95.00	80.00	95.00
24	2 3/4	10	100.00	120.00	100.00	120.00	100.00	120.00
26	3¼	12	130.00	160.00	130.00	160.00	130.00	160.00
30	3½	16 1/16	170.00	200.00	170.00	200.00	170.00	200.00
36	4	17 3/4	230.00	285.00	230.00	285.00	230.00	285.00
42	...	...	270.00	325.00	270.00	325.00	270.00	325.00

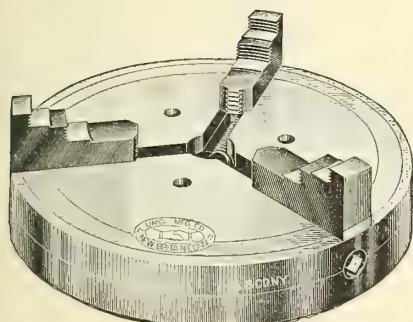
Union Universal

With Three or Four Outside, Inside or Reversible Jaws

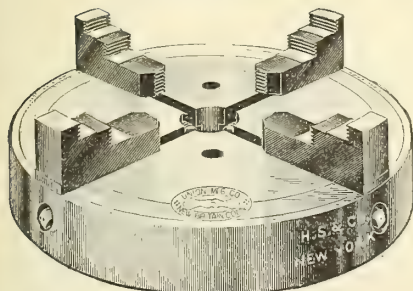
Nos. 11 (3-Jaw) and 411 (4-Jaw) with outside jaws, take the same list and have the same dimensions as Nos. 1 and 401, respectively, in above table.

Nos. 12 (3-jaw) and 412 (4-jaw) with inside jaws, take the same list and have the same dimensions as Nos. 2 and 402, respectively, in above table.

Nos. 42 (3-jaw) and 442 (4-jaw) with reversible jaws take the same list and have the same dimensions as Nos. 21 and 421, respectively, in above table.



No. 1



No. 411

For Lathes and machines requiring larger Chucks than above, see face-plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special Jaws at special prices. With special Jaws steel Chucks are excellent for projectile work, and are widely used for that purpose.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Car Wheel Chucks

Union Universal

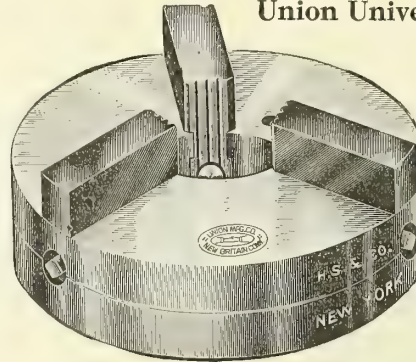


Size Inches	Jaw	Each
24	3	\$115.00
26	3	145.00
28	3	175.00
30	3	185.00
32	3	225.00
36	3	250.00
42	3	300.00
42	6 (No. 25)	400.00

These Chucks can be supplied with five, six or eight jaws at special prices.

Cutting-Off Chucks

Union Universal, Extra Heavy

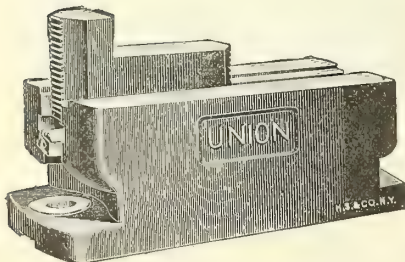


Size Inches	Diam- eter of Hole Inches	Recess for Face Plate Inches	Each
9	2 1/8	5	\$40.00
11	3 1/8	7 1/4	50.00
14	4 1/8	8 1/2	60.00
17	5 1/8	11	70.00

Made expressly for heavy and rough work. Will hold bars of any length from 1 1/4 inches up to the size of the center hole.

Face Plate Jaws

Union



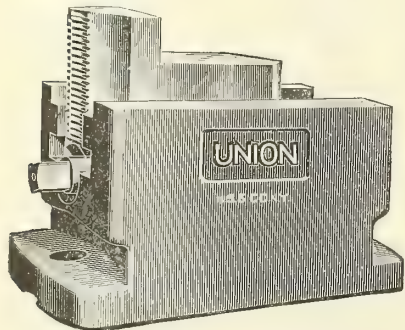
No. 48—Iron Body. No. 72—Steel Body

No. 48—With Iron Bodies

Size Inches	Set of Three	Set of Four
6	\$35.00	\$50.00
8	45.00	60.00
10	60.00	80.00
12	90.00	120.00
14	120.00	160.00

No. 72—With Steel Bodies

Size Inches	Set of Three	Set of Four
8	\$70.00	\$90.00
10	90.00	120.00
12	135.00	180.00
14	180.00	240.00



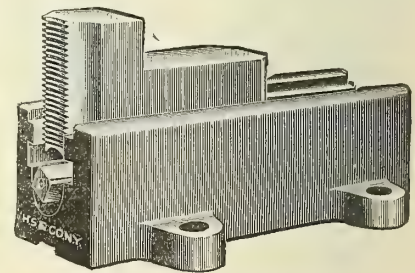
No. 50—Extra Heavy Iron Body

No. 50—With Extra Heavy Iron Body

Size Inches	Set of Three	Set of Four
10	\$80.00	\$105.00
12	120.00	160.00
18	200.00	260.00

No. 70—With Steel Body with Side Ears

Size Inches	Set of Three	Set of Four
8	\$70.00	\$90.00
10	90.00	120.00
12	135.00	180.00
14	180.00	240.00



No. 70—Steel Body with Side Ears

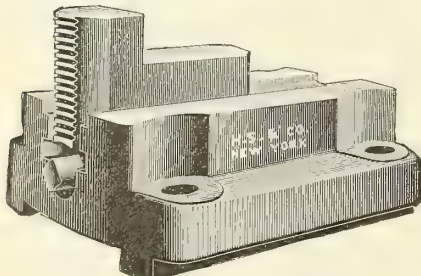
For Parallel Slots

No. 85—With Iron Bodies

Size Inches	Set of Three	Set of Four
6	\$47.00	\$67.00
8	60.00	80.00
10	80.00	107.00
12	120.00	160.00
14	160.00	214.00

No. 88—With Steel Bodies

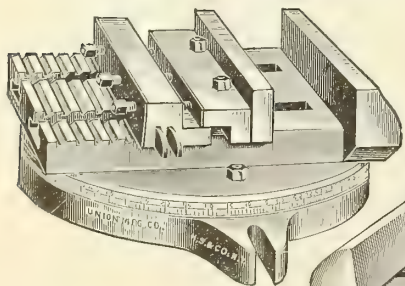
Size Inches	Set of Three	Set of Four
6	\$80.00	\$105.00
8	100.00	130.00
10	125.00	170.00
12	190.00	250.00
14	255.00	340.00



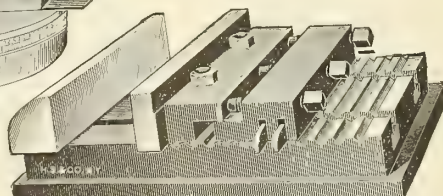
No. 86—Iron Body. No. 88—Steel Body

Planer Chucks

Union



Round Base, No. 76



Square Base, No. 78

Round Base, No. 76

Size Inches	Length of Jaw Inches	Depth of Jaw Inches	Jaws Open Inches	Dimension of Space Required Inches	Each	Dimensions of Space Required Inches	Each
6	7	1 1/2	3 1/2	10	\$25.00	7 1/4 x 11	\$20.00
8	9	1 7/8	5	12 1/2	30.00	9 x 12 1/2	25.00
10	11	2 3/8	6	14 1/2	36.00	11 x 15	30.00
12	13	2 3/8	8	16 3/4	40.00	13 x 17	35.00
15	15 1/2	2 1/2	9 1/2	20	50.00	15 1/2 x 21	45.00
18	18 1/2	2 3/4	11 1/4	23	60.00	18 1/2 x 24	55.00
24	24 1/4	2 3/4	16	27	90.00	24 1/4 x 28	75.00
30	30 1/4	2 3/4	21 1/2	34	140.00	30 1/4 x 34	120.00

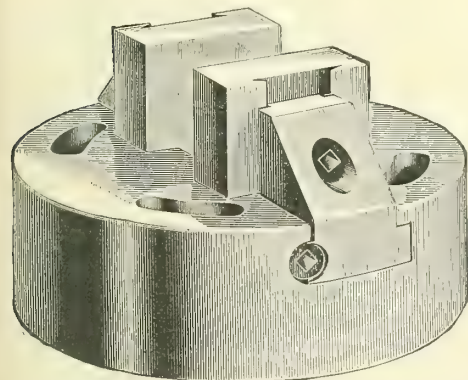
Square Base, No. 78

Two-Jaw Chucks

Two-jaw Chucks are designed for work where three or four-jaw Chucks are impracticable. Their strength is very great in comparison with their size and they are adapted for manufacturing purposes and for hard service generally. Slip Jaws (sometimes called false Jaws) are furnished blank and soft to be slipped on the Jaws in Chuck and turned to suit requirements. Slip Jaws are specially suitable for brass work and for holding soft metal pieces and special shapes. A key wrench is furnished with every Chuck, and with those to be fitted by means of flange plate, necessary bolts or screws are furnished.

Unless otherwise specified, two-jaw Chucks will be supplied with Universal Jaws.

Westcott I. X. L. Universal or Independent, with Slip Jaws



Cut shows 10 1/4-inch size with connected (Universal) screw placed at one side of jaws

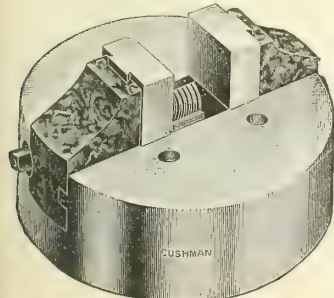
Diameter Inches	Capacity Inches	Diameter of Recess for Face Plate Inches	Including Two Blank Iron Slip Jaws	Extra Iron Slip Jaws Per Set	Extra Steel Slip Jaws Per Set	Unfinished Face Plate Castings
4 9/16	2	3 1/2	\$16.00	\$1.00	\$2.00	\$.50
6	3	5 9/16	20.00	1.00	2.00	1.00
8	4	4 7/16	24.00	1.00	2.00	1.00
10 1/8	5	5 1/2	30.00	1.25	3.00	1.25
12	6	5 9/16	33.00	1.25	3.50	1.25
13 1/4	7	6 1/2	36.00	1.25	4.00	1.50
14	8	6 1/2	40.00	1.25	4.00	1.50
16	9	7 9/16	42.00	1.25	5.00	2.00

The screw-carriers furnish steel bearings for the screws. Should jaw screw cut from need of oil, or become clogged with chips and dirt, the set-screw should be removed and screw-carrier driven out, together with jaw-screw and jaw, which can be done without injury to any of the parts. The screw-carrier, which makes the above possible, is a feature possessed by no other Two-jawed Chuck.

In ordering state whether wanted with connected (Universal) screw or with independent screws. Unless ordered otherwise, the Universal type, with screw in center of jaw, will be supplied.

When wanted to handle bars, rods, etc., the screw at side should be specified, as that type has opening clear through Chuck.

Cushman Universal or Independent, with Slip Jaws



No. 22
Jaws work Universally with each other

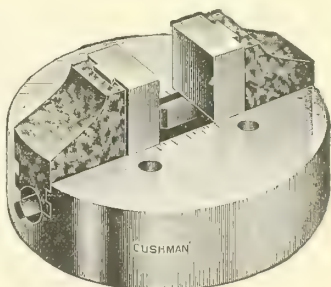
Nominal size, inches.....	4 1/2	6	7	9	12
Nos. 22 and 24.....	\$16.00	\$20.00	\$24.00	\$30.00	\$36.00
Chucks having tool steel slips instead of machinery steel	17.00	21.00	25.00	31.75	38.75
Extra slips, per pair.....	1.00	1.00	1.00	1.25	1.25
Extra tool steel slips, per pair....	2.00	2.00	2.00	3.00	4.00

The jaws are large and are carefully fitted and hardened and are dovetailed for slips. One pair machinery steel slips furnished with each chuck, but tool steel slips may be substituted or added. See price list.

No. 21 (Universal) and No. 23 (Independent) with solid jaws having a V-groove (sometimes called "V jaws") for use on screw machines, and for holding bars, rods, drills, square shank tools, etc., are supplied at regular prices, except the 4 1/2-inch size, which is listed at \$14.00 each.

The screws which are of large diameter with strong square threads are beneath the jaws but do not cross nor obstruct the hole through body.

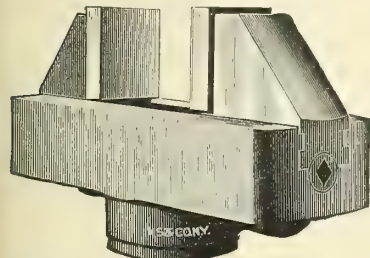
Recess in back for flange plate.



No. 24
Jaws work Independently of each other

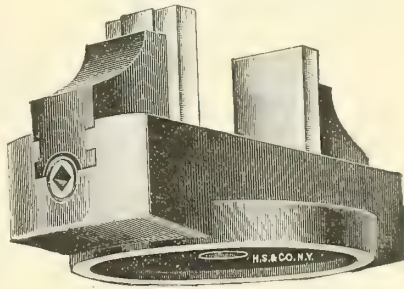
Union Universal or Independent, with Slip Jaws

Nos. 26 and 66



No. 26. With hub to be threaded to fit spindle of lathe

Size, Inches	Recess for Face Plates For No. 66 Inches	Each
7	3 11/16	\$24.00
9	5 3/32	30.00
12	5 1/32	36.00
15	7	42.00
18	7 1/2	60.00



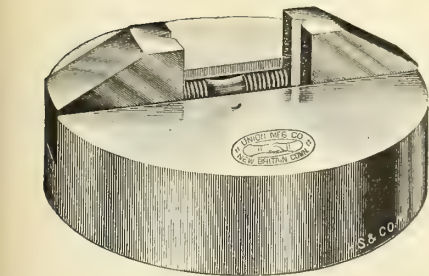
No. 66. With face-plate recess to be fitted to face-plate. For most work, this Chuck is preferable to that with threaded hub

Slip Jaws

Inches.....	4 1/2	6	7	9	12	15	18
Iron and machinery steel, per pair....	\$1.00	\$1.00	\$1.00	\$1.25	\$1.25	\$1.50	\$2.00
Tool steel, per pair.....	2.00	2.00	2.00	3.00	4.00	5.00	7.50

Union Universal or Independent, with V-Groove Jaws

No. 38



Diameter Inches	Diameter of Hole Inches	Each	Diameter Inches	Diameter of Hole Inches	Each
4 1/2	1	\$12.00	9	2	\$30.00
6	1 1/4	18.00	12	2 3/8	36.00
7	1 1/2	24.00	15	3 1/2	42.00

A round body Chuck with operating screw on side of jaw. Unobstructed hole through center of Chuck. Especially adapted for holding pipe, tube, and so forth.

No. 40, with slip jaws, at same list as No. 38, except 4 1/2 and 6-inch sizes, which list at \$16.00 and \$20.00 each, respectively.

Drill Chucks

Westcott "Little Giant" Auxiliary Screw

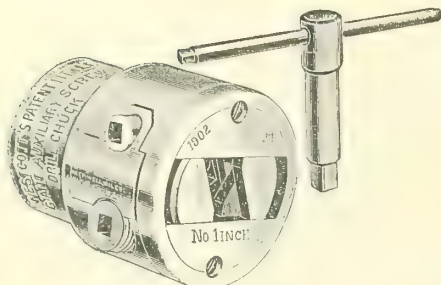


Figure 1—1 1/2 to 1 1/4 Inches

Size Number Inches	Approximate Diameter Inches	Capacity Inches	Diameter of Recess for Face Plate Inches	Each	Extra V Blocks Per Set	Unfinished Face Plate Castings Each
1 1/2	2 1/4	0 to 1 1/2	...	\$3.00		
3/4	3	0 to 3/4	...	9.00		
1	3 1/2	0 to 1	...	10.00		
1 1/4	4 7/8	1/8 to 1 1/4	...	15.00		
1 1/2	6	1/4 to 1 1/2	5 1/8	18.00	\$2.00	\$1.00
2	6 1/2	3/8 to 2	5 3/8	20.00	3.00	1.00
2 5/8	7 1/4	1/2 to 2 5/8	6 1/2	30.00	4.00	1.25
3	9	5/8 to 3	8	35.00	4.00	2.50
3 5/8	11	3/4 to 3 5/8	10	50.00	5.00	3.50
4	13 1/4	7/8 to 4	10	60.00	5.00	3.50

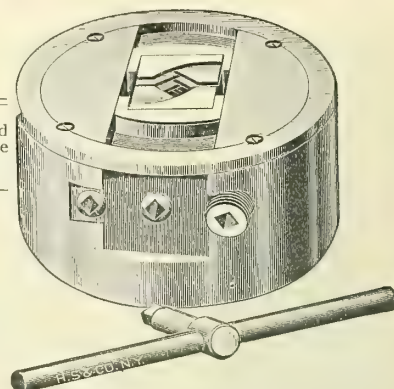


Figure 2—1 1/2 to 4 Inches

In all Drill Chucks with side screws, the inner, or gripping, part of the jaws has a tendency to crowd away from the right and left hand screws, while the outer end has a tendency to draw towards the right and left hand screws.

The auxiliary screw (in this new "Little Giant" Auxiliary Screw Drill Chuck) entirely overcomes said tendencies.

After closing jaws on drill in the usual manner (by turning right and left hand screws) then tighten the auxiliary screw. This greatly increases the gripping power of the Chuck. The effect of the auxiliary screw is similar to that of a bolt, as it virtually bolts the two jaws together. The 1/2-inch, 3/4-inch, 1-inch and 1 1/4-inch sizes are made of pattern shown in Figure 1. The hole in the hub is made to fit the Morse taper but can be bored out and threaded to suit the customer's templet at special price. We can also furnish these Chucks made with straight bodies, which are especially adapted to Hollow Spindle Lathes, for holding rods, round or square, which are to be turned or cut off. When a Chuck is wanted for holding square shank, it should be so stated in order. Square V jaws will not hold down to nothing.

The 1 1/2-inch and larger sizes are made of pattern shown in Figure 2. These six sizes are designed for Hollow Spindle Lathes, Screw Machines, Turret Head Lathes, and Cutting-off Machines taking the place of the more costly lathe chucks which have been used for cutting-off chucks.

They are made with straight bodies only, and can be attached only by means of a face plate.

Can furnish 1 1/4-inch made with recess for face plate, with diameter of recess for face plate 4 1/8-inch.

When the lathe spindle is light and it is important that the Chuck should not overhang, the center hole can be bored out so as to admit of reversing the face plate, bringing the hub inside the Chuck.

In sizes 1 1/2 inches to 4 inches, inclusive, of our regular Auxiliary Screw Chucks, the V blocks in jaws hold round, square and hexagon shanks.

Arbors for "Little Giant"



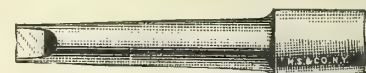
Style 1

Fitted to any size "Little Giant" Chuck
Each, \$.50



Style 2
Arbor with Nut

Fitted to any size "Little Giant" Chuck
Each, \$1.25



Style 3

With Morse Taper Shank, fitted to any size "Little Giant" Chuck.

Number.....	1	2	3	4	5
Each.....	\$1.00	1.00	1.25	1.50	2.00

Morse Center



No. 124

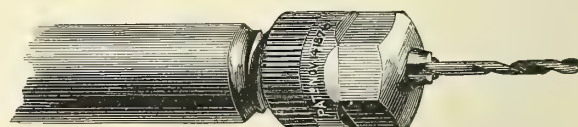
Center Drill Chucks are made of steel, have hardened jaws, and are made in two sizes. Each Chuck will hold but one size of drill—that for which it is especially made. Always specify diameter of drill to be used.

No. 1 Chuck can be made to hold any one size drill from 1/8 to 5/16 inch. Outside diameter of Chuck is 3/8 inch, whole length 2 1/8 inches.

No. 2 Chuck can be made to hold any one size drill from 3/16 to 1/4 inch. Outside diameter of Chuck is 1 1/8 inches, whole length 2 1/2 inches.

No. 1 Chuck.....	\$2.50
No. 2 Chuck.....	2.50

Trump



Numbers.....	1	2	3
Chucks, each.....	\$1.50	\$2.50	\$4.50
Shanks, each.....	.40	.85	1.00
Jaws, each.....	.50	.50	.75
Shells, each.....	.50	.50	1.00
Wrench, each.....	.10	.15	.50

No. 1 has 1 jaw, holds from 0 to 1/8 inch, standard shank 2 inches long, 1 1/8 inch diameter.

No. 2 has 2 jaws, holds from 0 to 1/4 inch, standard shank 2 3/4 inches long, 1 1/8 inch diameter.

No. 3 has 3 jaws, holds from 0 to 3/8 inch, standard shank 6 inches long, 1 1/8 inch diameter.

Arbors

For Morse Center No. 124



Morse No. 125G

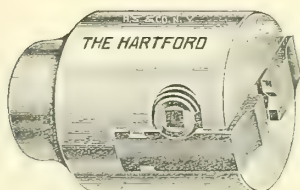
With one end blank to be fitted to lathe spindle.

Whole Length Inches	Length of Shank Inches	Diameter of Shank Inch	Each
4 3/4	3 1/2	1 3/16	\$.80

Shanks of special length, diameter or taper at special prices

Drill Chucks

Cushman



The Hartford

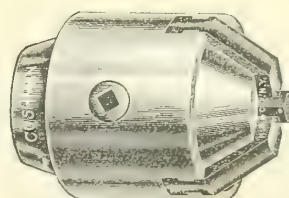
Number	Diameter Inches	Length Inches	Capacity Inch	Each
0	1 $\frac{3}{4}$	2 $\frac{1}{2}$	0 to $\frac{3}{8}$	\$6.00
1	2 $\frac{1}{8}$	2 $\frac{3}{4}$	0 to $\frac{1}{2}$	7.00
2	2 $\frac{7}{8}$	3 $\frac{1}{4}$	0 to $\frac{3}{4}$	8.00
3	3 $\frac{9}{16}$	4 $\frac{1}{4}$	$\frac{1}{16}$ to 1	10.00

Two jaws operated by right and left screw.

Taper hole in back for arbor.

These Chucks are designed for the hardest service that a chuck can be put to. There are but four pieces in its construction, and they are of such shape as not to be easily broken, even through misuse. The body is very solid and does not require a cap on the face to hold it together. The jaws interlock, as shown in cut, and they will firmly hold drills without damage to their shanks. The screw is large in diameter, and will firmly hold the jaws in position without breaking. A taper hole in the hub or back of Chuck enables it to be easily attached to machine.

These Chucks may be used for a great variety of work, holding drills, rods, taps, reamers, etc., and while designed for heavy work, they are no less adapted for fine accurate drilling and turning.



Nos. 306 and 307

Key Drill				
Number	Diameter Inches	Length Inches	Capacity Inch	Each
306	2	27 $\frac{1}{8}$	0 to $\frac{1}{2}$	\$6.50
307	2 $\frac{1}{2}$	31 $\frac{1}{8}$	$\frac{1}{64}$ to $\frac{5}{8}$	8.00

A Three-Jaw Geared Scroll Drill Chuck, designed for drilling and for general work. Holds firmly and true, running either forward or backward, and can be used for all kinds of turning.

The jaws, which have a long bearing on drill, are strongly supported and cannot easily wear loose or get out of true. The jaws are ground true after being hardened.

The Chucks are operated by means of a key. The pinion gears have mortised heads and are practically flush with chuck body.

These Chucks operate quickly, hold firmly and release easily.

Arbors for Cushman



Blank with Hexagon Section

One end fitted to Chuck, the other left blank for fitting machine spindle

No. 122 fits Drill Chucks No. 0, 1, 304, 306; 2-inch Lathe Chucks	Each
Nos. 36, 37, 39	\$.80
No. 123 fits Drill Chucks Nos. 2, 307; 2 $\frac{1}{2}$ -inch Lathe Chucks	
Nos. 36, 37, 39	1.00
No. 124 fits Drill Chuck No. 3	1.25



With Finished Straight Shanks

No. 142, Shank $\frac{1}{2}$ -inch	{ fits Chucks Nos. 0, 1, 306; 2-inch	Each
No. 143, Shank $\frac{3}{4}$ -inch	{ Lathe Chucks Nos. 36, 37, 39	\$.50
No. 144, Shank $\frac{1}{2}$ -inch	{ fits Chucks Nos. 2, 307; 2 $\frac{1}{2}$ -inch	
No. 145, Shank $\frac{3}{4}$ -inch	{ Lathe Chucks Nos. 36, 37, 39	.80
No. 146, Shank $\frac{1}{2}$ -inch	{ fits Drill Chuck No. 3	1.50
No. 147, Shank $\frac{3}{4}$ -inch		



Blank with Nut

These Arbors are left with one end blank for fitting to machine, and with the other end already fitted to our Chucks. By turning the nut the Chuck may be easily forced off the Arbor or the Arbor drawn from the spindle.

No. 132 fits Drill Chucks Nos. 0, 1, 306; 2-inch Lathe Chucks	Each
Nos. 36, 37, 39	\$1.00
No. 133 fits Drill Chucks Nos. 2, 307; 2 $\frac{1}{2}$ -inch Lathe Chucks	
Nos. 36, 37, 39	1.25
No. 134 fits Drill Chuck No. 3	1.50



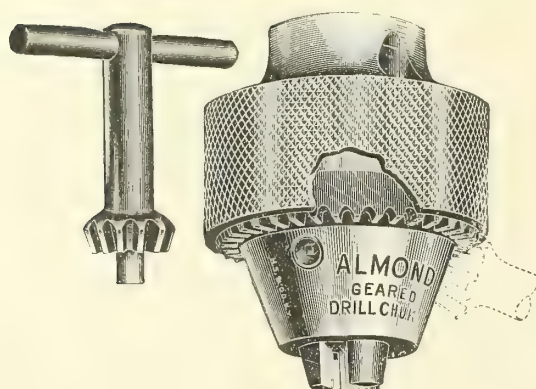
With Finished Morse Taper Shanks

No. 151, No. 1 Taper	{ fits Drills Chucks Nos. 0, 1, 306; 2-inch	Each
No. 152, No. 2 Taper	{ Lathe Chucks Nos. 36, 37, 39	\$1.50
No. 153, No. 3 Taper		2.00
No. 154, No. 1 Taper	{ fits Drill Chucks Nos. 2, 307, 2 $\frac{1}{2}$ -inch	1.50
No. 155, No. 2 Taper	{ Lathe Chucks Nos. 36, 37, 39	1.50
No. 156, No. 3 Taper		2.00
No. 157, No. 1 Taper	{ fits Drill Chuck No. 3	1.50
No. 158, No. 2 Taper		1.50
No. 159, No. 3 Taper		2.00

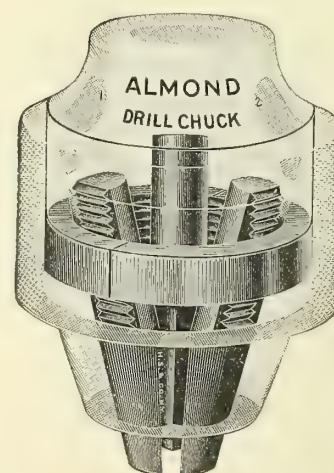
Drill Chucks

Almond

Geared



Standard



When using Chucks operated by spanner one hand must be used to prevent spindle from turning, but with this Chuck both hands are free to insert drill and tighten Chuck. To economically produce a Chuck it is necessary to make the body of mild steel, easily machined. This stock is not sufficiently hard to give satisfactory wearing qualities to the keyhole.

Each keyhole is fortified with a hardened steel bushing, preventing it from becoming large or out of round and maintaining alignment of the pinion with the gear. The gear teeth are cut on the split nut made of hardened, tool steel, far superior in every respect to the ordinary mild steel, case hardened, necessarily used in other chucks with teeth cut on the knurled sleeve. The key acts on the geared nut which operates the jaws; the operation of tightening is thereby performed with little effort and great speed. Because of the direct application every ounce of applied force is put to immediate advantage.

The two-fold area of the thrust bearing—which takes the pressure when jaws are forced out to take a tool—permits great pressure on this surface and the retention of the lubricant for a long period; the resultant advantage being greater gripping power and greater force applied to the jaws.

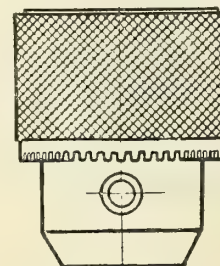
The key furnished with this Chuck is made from high-grade tool steel, insuring long life and dependable wearing quality. All broken keys returned to us will be replaced free of charge.

Keys used on the $\frac{5}{16}$ inch and $\frac{1}{2}$ inch Chucks are the same size. When using both sizes on a drill press only one key is necessary to operate both and this may be chained to the press the same as a key for forcing out arbors.

The standard is the same general construction as the new geared Chuck, except that it is operated with a spanner.

The jaw holes are opened at the rear so that finer finished holes can be bored, with diameters uniform from end to end, giving perfect fit and bearing to the jaws and to facilitate proper lubrication. The chuck has a taper on the front end, which is an advantage when using short drills.

Flat Back Geared



Designed and adapted for work where it is necessary to use Chucks of lighter weight and smaller diameter, but having the same capacity as the regular Almond Chucks. They are used extensively on pneumatic, electric and flexible shaft drills. The back end of the Chucks may be used as a thrust-bearing.

	Standard			Geared			Flat Back Geared			
Number	1	2	3	1	2	3	5	6	7	8
Capacity, inch	$0-\frac{3}{16}$	$0-\frac{5}{16}$	$0-\frac{1}{2}$	$0-\frac{3}{16}$	$0-\frac{5}{16}$	$0-\frac{1}{2}$	$0-\frac{3}{16}$	$0-\frac{1}{4}$	$0-\frac{3}{8}$	$0-\frac{1}{2}$
Length jaws retracted, inches.	$1\frac{1}{2}$	$2\frac{1}{8}$	3	$1\frac{1}{4}$	$2\frac{1}{8}$	3	$1\frac{1}{4}$	$1\frac{5}{16}$	$1\frac{15}{16}$	$2\frac{1}{2}$
Diameter, inches.	$1\frac{1}{8}$	$1\frac{5}{8}$	$2\frac{5}{16}$	$1\frac{1}{8}$	$2\frac{1}{16}$	$2\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{7}{32}$	$1\frac{5}{8}$	$1\frac{15}{16}$
Each	\$5.50	5.50	9.00	5.50	5.50	9.00	5.50	5.50	5.50	9.00

Parts

Ferrules, all sizes	\$.50
Nuts, all sizes . . . . .	.50
Spanners for Standard Chuck:	
No. 2 . . . . .	.12
No. 3 . . . . .	.18
Jaws for Nos. 1, 2, 5, 6 and 7 . . . . .	.50
Jaws for Nos. 3 and 8 . . . . .	.90
No. 1 Key operates No. 1 Geared Nut and Nos. 5 and 6 Flat Back.	
No. 2 Key operates Nos. 2 and 3 Geared Nut and Nos. 7 and 8 Flat Back Chucks.	

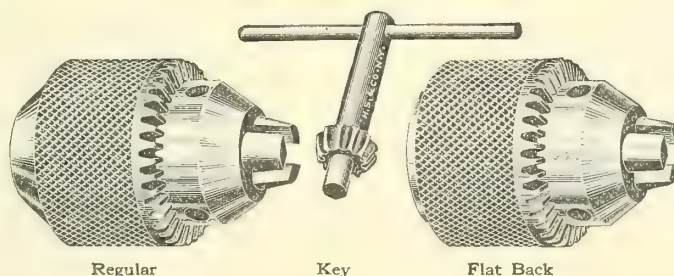
Nos. 1 and 2 Keys, each \$1.00
In ordering Jaws give the number found on back end of jaw.

Arbors

All Arbors accurately ground to Standard Sizes
For Nos. 1, 2, 5, 6 and 7 Chuck \$1.50
For Nos. 3 and 8 2.00
One end Almond Taper; other end either blank or No. 1, 2 or 3 Morse Taper.

Drill Chucks

Jacobs Improved



Prior to 1902 there were many different makes and styles of Drill Chucks in use, practically all of which may be classed under two titles, namely: the two-jawed key chuck, and the three-jawed spanner sleeve chuck. None of these chucks, however, possessed convenience, efficiency, accuracy and durability, the four important elements necessary in a first-class Drill Chuck.

The two-jawed key adjusting chuck was slow to adjust, because it could only be adjusted by the use of the key. It was clumsy and unshapely in form. It would not retain its accuracy, neither was it efficient.

The three-jawed spanner sleeve chuck was compact and shapely in form. It retained its accuracy to a remarkable degree. A large range of adjustment could be easily and quickly made without the use of a spanner, but when the spanner was required to forcibly revolve the sleeve for the initial or final adjustment, it proved inefficient and most annoying, because the action of the spanner was inclined to revolve the whole chuck, making it necessary to grasp the belt with one hand to prevent the lathe or drill press spindle from revolving, and this action would often twist the chuck off its shank, or the shank out of its spindle.

In general form and structure, the Jacobs Improved Drill Chuck is similar to old, well-known spanner sleeve chucks, but the patented device (the toothed sleeve and key) makes it superior to all others as, by the action of the key, the initial, or final adjustment may be easily and effectively performed with one hand only, leaving the other hand free to adjust or remove the drill.

Regular

- No. 1. Adapted for use where extreme lightness and small diameter is required, but where these factors are not essential, the use of a larger size chuck is more satisfactory.
- No. 2. Adapted for use on sensitive and high speed drill presses, lathes, tapping machines, and for other purposes where a light, compact, convenient, efficient, accurate and durable Drill Chuck is required.
- No. 3. Designed to meet the demand for a convenient, efficient, accurate and durable Drill Chuck having $\frac{1}{2}$ inch capacity, and is not only especially adapted and extensively used as a Drill Chuck, but is a most convenient tool for use in a lathe and, as a hole may be bored through the chuck and spindle the size of its full capacity, it is most convenient to use for holding rod stock, etc.
- No. 4. Same as No. 3, except capacity to $\frac{3}{4}$ inch.
- No. 5. Same as Nos. 3 and 4, except capacity to 1 inch.
- No. 6. Designed to meet the demand for a very light weight, convenient, efficient, accurate and durable Drill Chuck, having $\frac{1}{2}$ inch capacity, to be used on portable drills where extreme light weight is most essential.

Flat Back

These chucks are made without the chamfered portion at the back end of body, making them shorter than the regular chucks, and giving them their name. The flat back end is sometimes used as a thrust bearing. While the regular chucks are more shapely for general purposes, the flat back may be used if preferred.

- No. 1A. Designed to meet the demand for a light, convenient, efficient, accurate and durable chuck for portable drills, having $\frac{1}{4}$ inch capacity. Extensively used on many of the best known electric and pneumatic drills.
- No. 2A. Same as No. 1A, except capacity to $\frac{3}{8}$ inch.
- No. 3A. Same as Nos. 1A and 2A, except capacity to $\frac{1}{2}$ inch.
- No. 6A. Designed to meet the demand for a very light weight, convenient, efficient, accurate and durable Drill Chuck having $\frac{1}{2}$ inch capacity, to be used on portable drills where extreme light weight is most essential.

	Regular						Flat Back			
Numbers	1	2	3	4	5	6	1A	2A	3A	6A
Capacity, inch	0 to $\frac{13}{64}$	0 to $\frac{21}{64}$	0 to $\frac{17}{32}$	$\frac{1}{16}$ to $\frac{3}{4}$	$\frac{3}{8}$ to 1	0 to $\frac{1}{2}$	0 to $\frac{1}{4}$	0 to $\frac{3}{8}$	0 to $\frac{11}{32}$	0 to $\frac{1}{2}$
Length, jaws extended, inches	$1\frac{1}{8}$	$2\frac{3}{4}$	$3\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{5}{8}$	$3\frac{1}{16}$	$1\frac{3}{8}$	$2\frac{5}{8}$	$3\frac{5}{8}$	$3\frac{3}{8}$
Length, jaws retracted, inches	$1\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{16}$	4	$2\frac{11}{16}$	$1\frac{3}{8}$	2	$2\frac{11}{16}$	$2\frac{1}{2}$
Outside diameter, inches	$1\frac{3}{16}$	$1\frac{1}{16}$	$2\frac{5}{16}$	$2\frac{7}{8}$	$3\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{3}{16}$	$1\frac{1}{16}$	$2\frac{5}{16}$	$1\frac{7}{8}$
Each	\$5.50	\$5.50	\$9.00	\$18.00	\$25.00	\$9.00	\$5.50	\$5.50	\$9.00	\$9.00

Arbors

Numbers	1 and 1A	2 and 2A	3 and 3A	4	5	6 and 6A
No. 1 Morse Taper	\$1.25	\$1.25	\$1.75	\$2.25	\$3.00	\$1.75
No. 2 Morse Taper	1.40	1.40	2.00	2.75	3.25	2.00
No. 3 Morse Taper	2.00	2.00	2.25	3.00	3.75	2.25
No. 4 Morse Taper	3.50	3.50	4.00	4.50	4.50	4.00
$\frac{1}{2}$ -inch Straight Shank	1.00	1.00	1.00	1.50	2.00	1.00
$\frac{3}{4}$ -inch Straight Shank	1.00	1.00	1.00	1.50	2.00	1.00

Parts

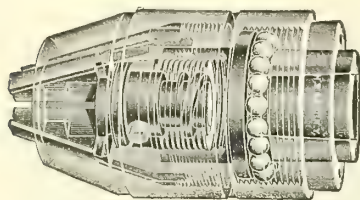
	Key	Jaws (per set)	Nut	Sleeve
Nos. 1 and 1A	\$.30	\$1.65	\$.55	\$.55
Nos. 2 and 2A	.30	1.65	.55	.55
Nos. 3 and 3A	.45	2.70	.90	.90
No. 4	.75	4.50	1.50	1.50
No. 5	1.25	6.75	2.25	2.25
Nos. 6 and 6A	.45	2.70	.90	.90

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

Drill Chucks

Horton-Morrow



Number	Capacity Inch	Each	Extra Jaws, Sets
1	0 to 1/4	\$7.00	\$1.75
2	0 to 3/8	7.50	1.75
3	0 to 1/2	9.00	2.00
4	1/4 to 3/4	18.00	2.25
5	1/2 to 1	25.00	2.25

Designed to meet the requirements of high speed tools, etc. Also adapted for operations on screw machines, automatics, and all turret machinery, milling machines or for other tools where hard work is required.

A hand-operated chuck without the use of key, spanner or wrench. Perfect alignment of parts on plain bearings. Large ball-bearing to take end thrust. Automatic positive grip that never slips. Quick unresisting release by hand.

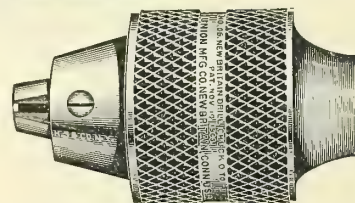
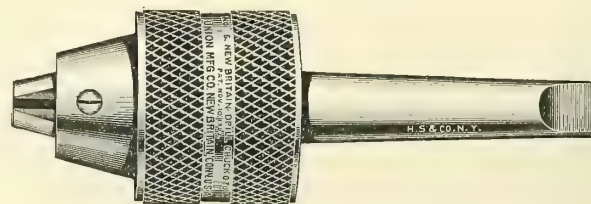
No exposed threads to catch waste or collect grit. Jaws crucible steel hardened and ground. All bearings hardened and ground.

Hoods hardened and ground.

Drills run true from shank to point.

The combination in this construction is almost perfect. The ball bearing reduces friction to the minimum; the hood is hardened and ground and on this surface the jaws advance and retract; the pressure from drill automatically tightens the jaws which are easily released by hand through a differential screw arrangement.

New Britain



Hand-operated, ball-bearing. No exposed gears or threads. Chuck is self tightening. The sizes Nos. 5 to 9 have the arbor incorporated as part of the Chuck. This feature will be appreciated by all who have used the separate arbors.

*With Arbors		The following List applies to Chucks with and without Arbors			Without Arbors			
Num-ber	Morse Taper Arbor	Capacity	Outside Diameter	Each	Num-ber	Depth of Taper	Diameter Large End	Taper per Foot
5	No. 1	0 to 1/4	1 1/8	\$ 5.50	05	5/8	.386	7/8
6	No. 2	0 to 1/2	1 5/8	5.50	06	7/8	.563	7/8
7	No. 2	0 to 1/2	2 1/8	9.00	07	1 1/4	.682	5/8
8	No. 3	0 to 3/4	3 1/8	18.00	08	1 3/4	.855	5/8
9	No. 4	0 to 1	4 1/8	25.00	09	1 3/4	1.153	5/8

*Can be furnished with any Taper desired

Arbors, with Morse Taper Fitted to Any Size Chuck

	Each
No. 1 Morse Taper	\$1.00
No. 2 Morse Taper	1.00
No. 3 Morse Taper	1.25
No. 4 Morse Taper	1.50
No. 5 Morse Taper	2.00

Taper Arbors

For Nos. 05 to 09 inclusive

	Each
No. 1 Morse Taper Arbors	\$1.50
No. 2 Morse Taper Arbors	1.50
No. 3 Morse Taper Arbors	2.00
No. 4 Morse Taper Arbors	2.00
No. 5 Morse Taper Arbors	3.00

B-M Co.



With Bit Stock Shank

No. 45. Holds drills to 3/16 inch. Holds taps to 1/4 inch, each. \$1.00

Star



Nos. 5, 6 and 7, with Round Shanks

Handsomely nicked, substantial chucks.

Three jaws carefully adjusted in a socket, opening with a spring and closing with pressure from spindle.

Grip tenaciously, and center accurately, round shanks.

Numbers	5	6	7
Capacity, inch	0 to 1/4	0 to 3/8	0 to 1/2
Outside diameter of chuck, inches	1	1 1/4	1 1/2
Dimensions of shank, inches	1 1/2 x 1/2	3 3/8 x 1/2	4 1/2 x 1/2
Weight, ounces	7	12	20
Each	\$1.25	\$2.00	\$2.50

Packed 1 in a pasteboard box

Chucks Furnished to Order with Shanks as Follows without Extra Charge

Numbers	5	6	7
Diameter of shank, inch	41/64	41/64	41/64 or 7/8

Special shanks, straight or taper, at additional charge of 50 cents each.

When ordering taper shanks, take care to state exact taper wanted.

Nos. 15, 16 and 17, with Bit Stock Shanks

The same as Nos. 5, 6 and 7, except that shanks are of the bit stock pattern, permitting chucks to be used in bit braces, breast drills, and other tools.

Numbers	15	16	17
Capacity, inch	0 to 1/4	0 to 3/8	0 to 1/2
Outside diameter of chuck, inches	1	1 1/4	1 1/2
Length of shank, inches	2	2 1/4	2 1/4
Weight, ounces	6	10	17
Each	\$2.00	\$2.50	\$3.00

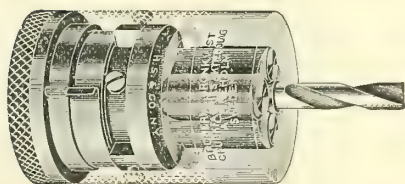
Packed 1 in a pasteboard box

Automatic Drill Chucks

For Straight and Taper Shank Drills

Drills may be changed while the spindle is running at full speed, without the use of wrench or key. Straight Shank Drills are cheaper than taper shank and there are no tangs to break

Grönkvist



Perfect centering and unlimited holding power. Three hardened rollers bearing upon eccentric hardened curves. The harder the strain the tighter the hold.

For Straight Shanks

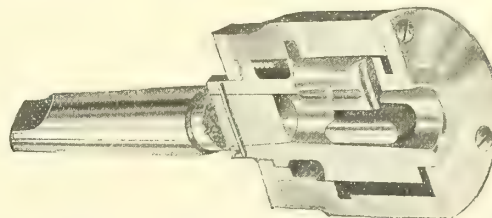
Number	Capacity Inch	Diameter Inches	Length Inches	Each
0	$\frac{1}{32}$ to $\frac{5}{64}$	$\frac{25}{32}$	$1\frac{1}{2}$	\$6.00
1	$\frac{5}{64}$ to $\frac{11}{64}$	$1\frac{1}{4}$	2	7.50
2	$\frac{11}{64}$ to $\frac{5}{16}$	$1\frac{5}{8}$	$2\frac{1}{2}$	9.00
3	$\frac{5}{16}$ to $\frac{1}{2}$	$2\frac{1}{2}$	3	11.00
4	$\frac{1}{2}$ to $\frac{3}{4}$	$2\frac{3}{4}$	$3\frac{3}{4}$	13.00

Arbors with Morse Tapers Nos. 1, 2 and 3 fitted to any size chuck. Each \$1.25.

GUARANTY

If the Drill does not run true in the "Grönkvist" it slips, and if it does, the guaranty of the maker entitles the user to a new chuck.

Wahlstrom



All tools changed without stopping the spindle. No interlocking jaws to chew up the drill shanks. Absolutely no slipping. Perfect centering assured by gripping surfaces. Jaws can be reversed.

For drilling, tapping, spotting, reaming, counterboring, etc., also on engine lathes for drilling, turning, burring, filing, etc.

Chucks for Taper Shank tools hold tools either with or without tangs, and no collets, sockets or wrenches are used.

For Straight Shank Tools

Size Inch	Capacity	Diameter Inches	Length Inches	Furnished With	Each
$\frac{1}{2}$	No. 53 to $\frac{1}{2}$ inch	$2\frac{1}{16}$	$2\frac{3}{8}$	* No. 1	\$16.00
$\frac{1}{2}$	No. 53 to $\frac{1}{2}$ inch	$2\frac{1}{16}$	$2\frac{3}{8}$	No. 2	16.00
$\frac{3}{4}$	No. 33 to $\frac{3}{4}$ inch	$2\frac{1}{16}$	$3\frac{1}{8}$	No. 2	24.50
$\frac{3}{4}$	No. 33 to $\frac{3}{4}$ inch	$2\frac{1}{16}$	$3\frac{1}{8}$	No. 3	25.00
$\frac{3}{4}$	No. 33 to $\frac{3}{4}$ inch	$2\frac{1}{16}$	$3\frac{1}{8}$	No. 4	25.50
1	$\frac{3}{16}$ to 1 inch	$3\frac{1}{2}$	$3\frac{3}{4}$	No. 3	34.50
1	$\frac{3}{16}$ to 1 inch	$3\frac{1}{2}$	$3\frac{3}{4}$	No. 4	35.00

For Taper Shank Tools

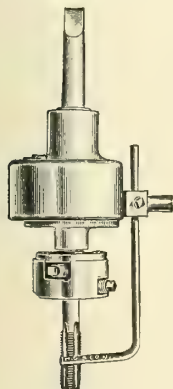
	Diameter Inches	Length Inches	Furnished With	Each
1, 2 and 3 Morse Tapers.....	$2\frac{15}{16}$	$3\frac{1}{2}$	No. 3	\$29.50
1, 2 and 3 Morse Tapers.....	$2\frac{15}{16}$	$3\frac{1}{2}$	No. 5	30.00

* Standard Morse Taper Arbors furnished

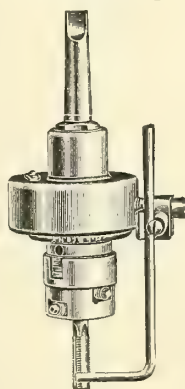
Auto-Reverse Tapping Chucks

Errington

The Errington Auto-Reverse Tapping Chuck requires no reversing mechanism on the drill press, as it drives the tap in, stops automatically, and backs the tap out with quick return by simply raising (not stopping or reversing) the drill spindle. Fits socket of any drill press, and can be used for right and left threads

Adjustable
Positive Stop

Style B

Adjustable
Friction Stop

Style C

Style B should be used where the work is easily handled and centered, so that all the holes can be drilled, then the work rehandled and tapped. Only one hand required to operate.

Style C should be used for tapping in copper, bronze or steel, wherever there is danger of breaking taps. Can be changed to Positive Drive by inserting a key.

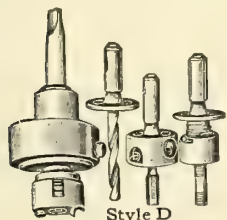
Style D drills, taps and sets studs in line, without stopping or reversing machine and without moving work. Stud Setter is not included in price.

Size Number	Taps Standard Inches	Pipe Inches	Morse Taper Shank Number	Style B Positive Tap Holder and Stop Each	Style C Friction Tap Holder and Stop Each	Style D Friction Inter- changeable Drill and Tap Holders Each	Stud Setter Fitted to Style D Each
00	$\frac{1}{16}$ — $\frac{3}{8}$	...	1, 2, 3	\$25.00	\$30.00		
0	$\frac{1}{8}$ — $\frac{5}{8}$	$\frac{1}{4}$	3, 2 (1*)	30.00	35.00		
1	$\frac{1}{4}$ — $\frac{3}{4}$	$\frac{1}{2}$	3, 4	35.00	40.00	\$55.00	\$12.50
2	$\frac{5}{16}$ —1	$\frac{1}{2}$	4, 5 (3*)	40.00	50.00	65.00	15.00
3	$\frac{3}{8}$ — $1\frac{1}{4}$	1	4, 5 (3*)	50.00	60.00	75.00	17.50
4	$\frac{1}{2}$ — $1\frac{1}{2}$	$1\frac{1}{4}$	5, 4	70.00	80.00	90.00	20.00
5	$\frac{1}{2}$ —2	2	5 (4*)	80.00	90.00	100.00	22.50

The first size of Morse Taper Shank given above for each size is the one regularly furnished; the other sizes can be furnished, but the size marked (*) is too small to be used unless it is re-enforced by a set-screw.

Friction Interchangeable Drill and Tap Holder

Errington



Style D

Drill Press Turret with Interchangeable
Drill, Tap and Stud Holders

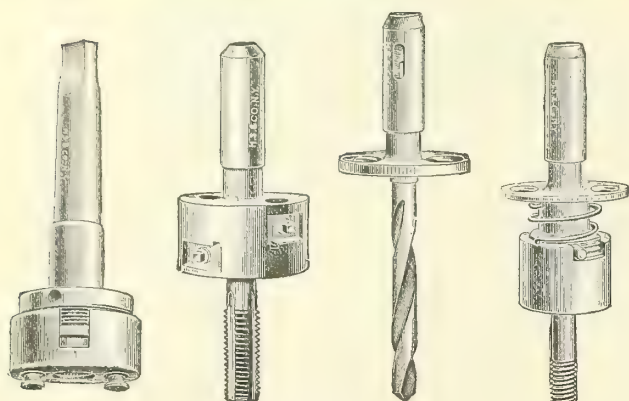
See next page for prices and sizes of Drill Holders—when desired for above Chucks specify Style "D" instead of Style "E"

Duplex Tools

Errington

For Use on Reversible Drill Presses

Interchangeable Drill and Tap Holder



Style E

Style E drills Taps and sets Studs without stopping the press or moving the work. The self-centering Tap Chuck is the only tap holder that will hold any make of taps. It is a Universal Chuck without a universal screw. Two universal dogs, placed one above the other, center the tool with the direct pressure of two set screws against wide V surfaces. This Chuck compels the operator to grip both the square and the round of the tap, making it impossible for the tap to turn in, or destroy the alignment of the Chuck. Price of this tool does not include Stud Setter.

Style F is the Tap Chuck described above with Morse Taper Shank, and Style G the same with friction stop.

Positive Tap Holder

Friction Tap Holder



Style F



Style G

Size Number	Standard Taps Inches	Pipe Inches	Morse Taper Shank Number	Model E Interchangeable Drill and Tap Holder	Stud-Setter fitted to Style E	Model F Positive Tap Holder	Model G Friction Tap Holder
00	$\frac{1}{16}$ — $\frac{3}{8}$	...	1, 2	...	...	\$6.00	\$10.00
0	$\frac{1}{8}$ — $\frac{5}{8}$	$\frac{1}{4}$	3, 2 (1*)	...	...	9.00	15.00
1	$\frac{1}{4}$ — $\frac{3}{4}$	$\frac{1}{2}$	3, 4	\$40.00	\$12.50	12.50	20.00
2	$\frac{5}{16}$ —1	$\frac{1}{2}$	4, 3, 5	50.00	15.00	15.00	22.50
3	$\frac{3}{8}$ — $1\frac{1}{4}$	1	4, 5	60.00	17.50	17.50	25.00
4	$\frac{1}{2}$ — $1\frac{1}{2}$	$1\frac{1}{4}$	5, 4	70.00	20.00	20.00	27.50
5	$\frac{1}{2}$ —2	2	5	80.00	22.50	25.00	30.00

The first size of Morse Taper Shank given above for each size is the one regularly furnished, the other sizes can be furnished, but the size marked (*) is too small to be used unless it is reinforced by a set screw.

Extra Drill-Holder for No. 1	Style E has No. 1 Morse Taper Socket	\$6.25
Extra Drill-Holder for No. 2	Style E has No. 2 Morse Taper Socket	8.00
Extra Drill-Holder for Nos. 3 and 4	Style E has No. 3 Morse Taper Socket	10.00
Extra Drill-Holder for No. 5	Style E has No. 4 Morse Taper Socket	18.00
Special Drill-Holder for No. 2	Style E has No. 3 Morse Taper Socket	12.00
Special Drill-Holder for Nos. 3 and 4	Style E has No. 4 Morse Taper Socket	18.00

Extra tap holders for Styles D and E are listed the same as Style F duplex tap holders

For Use on Turret Lathes

Style F-H (Style F with Double-clutch Sleeve) taps the hole and pulls off at distance set by stop on machine, when the tap revolves freely with the work until the machine is reversed, where-upon the back-clutch engages and the tap backs out. The best style for brass and through holes.

Style G-H has the additional advantage of an Adjustable Friction Clutch, to avoid breaking taps, and is especially valuable for tapping steel. It can be used with or without the Double-clutch Sleeve, according to the nature of the work.

Style G-I (Style G with Splined Sleeve) is designed for using Roughing and Finishing taps in one hole in the Turret in tapping tool steel, etc. Spring in shank insures catching the same thread. Taps steel without breaking taps in bottom or through holes. Taps last longer and can be run faster than when positively driven.

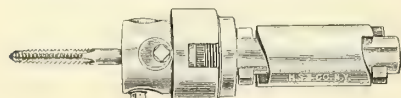
No special shanks; use any make of taps.

Positive Turret Tap Holder



Style F-H

Friction Self-centering Tap Holder



Style G-H

Interchangeable Friction Turret Tap Holder



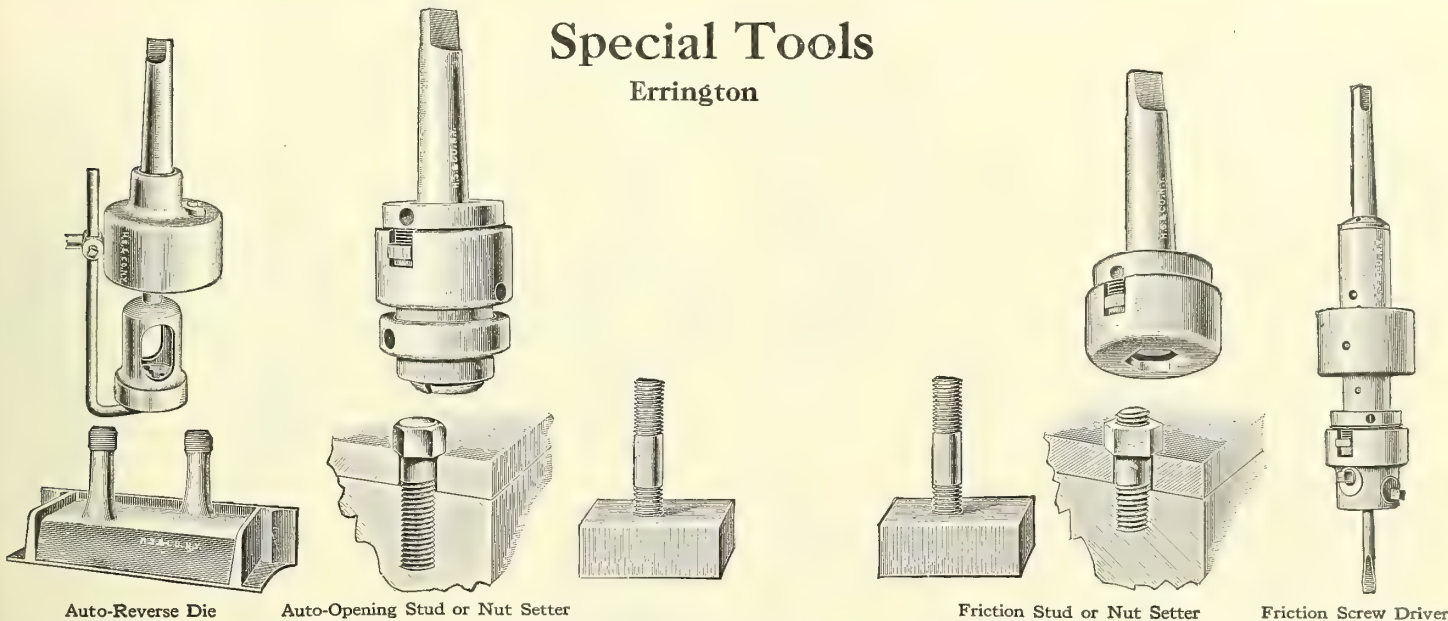
Style G-I

Number	00	0	1	2	3	4	5
Style F-H	\$11.00	\$14.00	\$17.50	\$20.00	\$22.50	\$25.00	\$30.00
Style G-H	15.00	20.00	25.00	27.50	30.00	32.50	35.00
Style G-I	15.00	20.00	25.00	27.50	30.00	32.50	35.00

For capacity of each size see table for Styles E, F and G

Special Tools

Errington



Auto-Reverse Die

The Auto-Reverse Die will thread work on a Drill Press at a saving of 80 per cent over chucking the work in a lathe.

The Auto-opening Stud or Nut Setter (Positive or Friction) can be used on any Drill Press, Portable, Electric or Pneumatic Drill, Flexible Shaft, etc., making it possible, without stopping or reversing machine, to set studs, cap screws, nuts, etc., after the work has been erected. The jaws open automatically by the slipping of the friction.

The Friction Stud or Nut Setter accomplishes the same work as the Auto-Opening Setter, but machine must be stopped each time to disengage the holder from the nut, or reversed off stud.

The Friction Screw Driver for Drill Press, Speed Lathes, Flexible Shaft, etc., sets machine or wood screws at a uniform tension.

Prices on Automatic Stud Setter will be furnished on application. State definitely the work that is to be done and the method of drive to be employed.

Auto-Opening Stud or Nut Setter

Friction Stud or Nut Setter

Friction Screw Driver

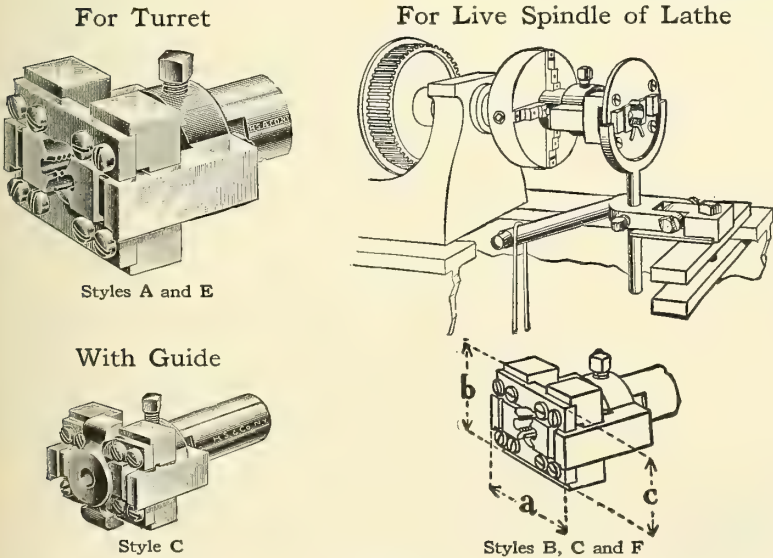
Prices on Auto-Reverse Die and Friction Screw Driver

Size	Morse Taper Shank Number	Holds Dies or Drives Screws Inches	Auto-Reverse Die Each	Friction Screw Driver Each
00	1, 2, 3	$\frac{1}{16}$ — $\frac{3}{8}$	\$25.00	\$20.00
0	3, 2 (1*)	$\frac{1}{8}$ — $\frac{5}{8}$	30.00	25.00
1	3, 4	$\frac{1}{4}$ — $\frac{3}{4}$	35.00	30.00
2	4, 5 (3*)	$\frac{5}{16}$ —1	40.00	32.50
3	4, 5 (3*)	$\frac{3}{8}$ — $1\frac{1}{4}$	50.00	35.00
4	5, 4	$\frac{1}{2}$ — $1\frac{1}{2}$	70.00	37.50
5	5 (4*)	$\frac{1}{2}$ —2	80.00	40.00

Prices do not include dies or bits.
*These sizes of shanks not recommended unless reinforced by set screw.

Automatic Die-Heads

Errington



The Skeleton Frame and the simple, direct-acting principle of opening and closing the Dies axially (all other heads make a quarter turn to open or close the dies) permit a universal adaptability of the Errington Die to every requirement of screw cutting, either as a rotary or stationary device. Style A for Turret, except where close to shoulder work demands the Style E attachment. Style B, C, D, for Live Spindle of Speed-Lathe, Engine-Lathe, Drill Press, etc., except where close shoulder work demands Style F. Styles C and D have self-centering guides that avoid chucking the work.

In ordering Die Chucks give diameter of hole in your turret (to fit shank to), and name length of thread on largest diameter of work (to bore shank out for).

In ordering Dies, state diameter, pitch, right or left, and style of thread (V., U. S. S., or W. Pipe Taper, or Pipe straight) desired. Send a sample wherever possible, and state whether for rod or shoulder work, and the metal to be cut.

Opens automatically. Closes by foot while rotating.

Number	Size of Dies Inches		Size Shank Inches		Dimensions for Turret			Rotary for Lathe or Drill, Each						Extra Dies per Pair Net	
	Standard	Pipe	Stock Diameter	Stock Bore	A	Inches B	C	Turret, Each Style A	Each Style E	Style B	Yoke foot closer	Style C	Style D		Style F
1	$\frac{1}{8}$ to $\frac{5}{8}$	$\frac{1}{8}$ to $\frac{3}{8}$	$1\frac{1}{4}$	$\frac{3}{8}$	$3\frac{1}{8}$	$2\frac{1}{4}$	$1\frac{15}{16}$	\$30.00	\$35.00	\$35.00	\$2.50	\$35.00	\$40.00	\$40.00	\$1.50
2	$\frac{5}{16}$ to 1	$\frac{1}{8}$ to $\frac{3}{4}$	$1\frac{3}{4}$	$\frac{1}{2}$	$4\frac{1}{8}$	$2\frac{3}{4}$	$2\frac{3}{8}$	40.00	45.00	45.00	3.00	45.00	50.00	50.00	2.00
3	$\frac{1}{2}$ to $1\frac{1}{2}$	$\frac{1}{8}$ to 1	2	$\frac{5}{8}$	5	$3\frac{1}{4}$	$2\frac{7}{8}$	50.00	55.00	55.00	3.50	55.00	60.00	60.00	2.50
4	$\frac{3}{4}$ to 2	$\frac{1}{2}$ to $1\frac{1}{2}$	2	$\frac{5}{8}$	$5\frac{5}{8}$	$3\frac{1}{2}$	$3\frac{1}{2}$	60.00	65.00	60.00	4.00	65.00	70.00	70.00	4.00
5	1 to $2\frac{1}{2}$	$\frac{3}{4}$ to 2	$2\frac{1}{2}$	$1\frac{1}{4}$	7	$4\frac{1}{4}$	$4\frac{1}{4}$	80.00	85.00	85.00	4.00	85.00	90.00	90.00	5.00

From center of turret hole to top of turret slide is one-half of "a" when held edgways. From center of turret hole to top of turret slide is one-half of "b" when held flat. To pass between parting and forming tools is "c"

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Lathe Dogs

Vulcan Drop-Forged

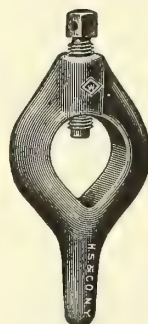
Either Square Head or Safety type screws will be supplied, but we recommend, and will ship, the Safety unless otherwise specified, as they reduce the risk to the operator and provide a better balance on the lathe

Number	Capacity			Screws Extra	Safety	Safety
Straight	Bent	Inches	Each	Square Head	Each	Wrenches Extra
21	1	$\frac{3}{8}$	\$.40	\$.08	\$.10	\$.06
22	2	$\frac{1}{2}$	.50	.10	.14	.07
23	3	$\frac{3}{4}$	.60	.12	.18	.08
24	4	1	.70	.15	.22	.09
25	5	$1\frac{1}{4}$	.85	.16	.26	.10
26	6	$1\frac{1}{2}$	1.00	.18	.32	.11
27	7	$1\frac{3}{4}$	1.20	.20	.40	.13
28	8	2	1.40	.23	.50	.15
29	9	$2\frac{1}{2}$	1.70	.24	.60	.18
30	10	3	2.10	.27	.70	.22
31	11	$3\frac{1}{2}$	2.60	.32	.80	.27
32	12	4	3.30	.35	.90	.33
33	13	5	6.00	.50	1.00	.40
32A	12A	4	5.00	.35	.90	.33
33A	13A	5	9.00	.50	1.00	.40
34A	14A	6	14.00	.50	1.15	.48

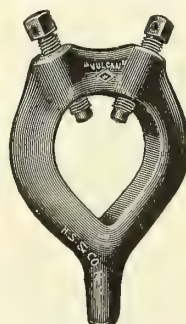
Price of Dogs with Safety Screws does not include wrench

With Square Head Screws

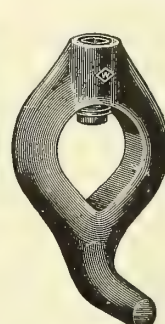
With Safety Screws



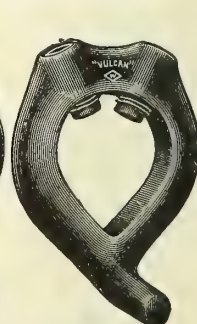
Straight Tail
Nos. 21 to 33



Heavy Straight Tail
Nos. 32 A to 34 A



Bent Tail
Nos. 1 to 13



Heavy Bent Tail
Nos. 12 A to 14 A

All above Dogs furnished with either type screw



Safety Screw Wrench



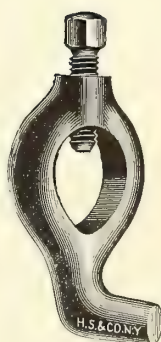
Safety Screw

Le Count, Cast Steel

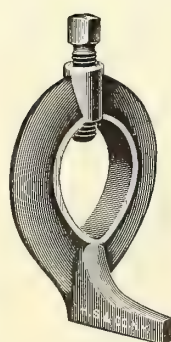
Single Screw



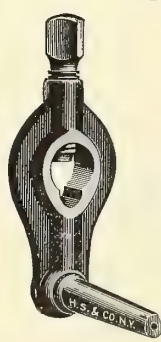
Heavy
Straight Tail



Heavy Bent
Tail



Light
Bent Tail



Amateur
Bent Tail

Heavy Straight Tail

Number	Size Inches	Each	Number	Size Inches	Each
1	$\frac{3}{4}$	\$.60	11	$2\frac{1}{2}$	\$1.45
2	$\frac{7}{8}$	.70	12	3	1.60
3	1	.70	13	$3\frac{1}{2}$	1.80
4	$1\frac{1}{8}$	.80	14	4	2.10
5	$1\frac{1}{4}$	.80	15	$4\frac{1}{2}$	2.75
6	$1\frac{3}{8}$	.95	16	5	3.25
7	$1\frac{1}{2}$	.95	17	$5\frac{1}{2}$	4.00
8	$1\frac{3}{4}$	1.10	18	6	5.00
9	2	1.20	19	7	6.00
10	$2\frac{1}{4}$	1.35	20	8	7.00

Heavy Bent Tail

Number	Size Inches	Each	Number	Size Inches	Each
1	$\frac{3}{8}$	\$.40	13	$2\frac{1}{4}$	\$1.35
2	$\frac{1}{2}$	.50	14	$2\frac{1}{2}$	1.45
4	$\frac{3}{4}$	.60	15	3	1.60
6	1	.70	16	$3\frac{1}{2}$	1.80
8	$1\frac{1}{4}$	.80	17	4	2.10
10	$1\frac{1}{2}$	.95	18	$4\frac{1}{2}$	2.75
11	$1\frac{3}{4}$	1.10	19	5	3.25
12	2	1.20			

Light Bent Tail

Number	Size Inches	Each	Number	Size Inches	Each
1	$\frac{3}{8}$	\$.35	7	$1\frac{3}{4}$	\$1.00
2	$\frac{1}{2}$	.35	8	2	1.10
3	$\frac{3}{4}$	.50	9	$2\frac{1}{2}$	1.40
4	1	.60	10	3	1.50
5	$1\frac{1}{4}$	.75	11	$3\frac{1}{2}$	1.70
6	$1\frac{1}{2}$	.85	12	4	1.90

Amateur Bent Tail

Number	Size Inch	Each	Number	Size Inch	Each
1	$\frac{3}{8}$	\$.30	3	$\frac{3}{4}$	\$.45
2	$\frac{1}{2}$	.35	4	1	.50

Two-Screw

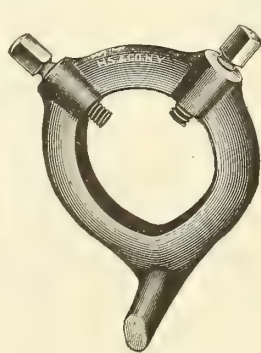
Extra Heavy. Straight, Bent or Double Tail

Size Inches	Each	Size Inches	Each
2	\$5.75	5	\$10.50
$2\frac{1}{2}$	7.50	$5\frac{1}{2}$	11.25
3	8.00	6	12.00
$3\frac{1}{2}$	8.50	$6\frac{1}{2}$	12.75
4	9.00	7	13.50
$4\frac{1}{2}$	9.75	8	14.50

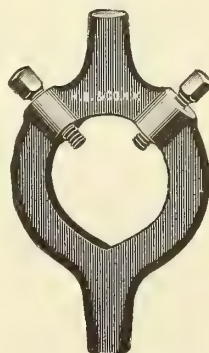
Double Tail also furnished in 9-inch, \$17.00; 10-inch, \$19.50; 11-inch \$26.00; and 12-inch \$28.00.



Straight Tail



Bent Tail



Double Tail

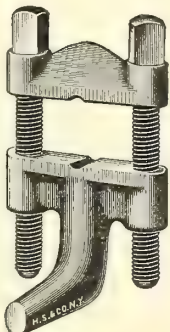
Lathe and Clamp Dogs, Etc.

Armstrong U-Clamp Lathe Dog



Safe and well balanced. Will accommodate itself readily to work of any shape and will hold it securely and squarely, being especially adapted for use on finished work which would be liable to be damaged by the set screw of a common lathe dog. One advantage is that it can be adjusted without removing work from center. It possesses a wide range of adjustment.

Number	Capacity Inches	Each
1	1/8 to 5/8	\$.65
2	1/4 to 1	.90
3	3/8 to 1 1/2	1.40
4	1/2 to 2	2.00
5	3/4 to 3	2.00
6	1 to 4	4.00
7	1 1/2 to 5	5.00

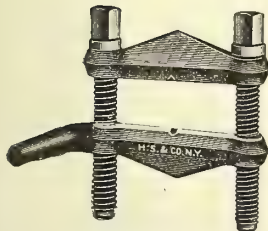


Lecount Clamp Lathe Dog

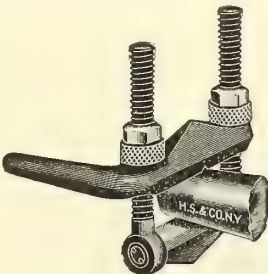
Malleable Iron

		Each
No. 1	Opens 1 inch.....	\$1.00
No. 2	Opens 1 1/2 inches.....	1.10
No. 3	Opens 2 inches.....	1.30
No. 4	Opens 3 inches.....	1.60
No. 5	Opens 4 inches.....	2.75
No. 6	Opens 5 inches.....	3.25
No. 7	Opens 6 inches.....	4.00

Billings and Spencer Clamp Lathe Dogs



Model A U—Regular



Model A V—Swivel Jaw

Model A U—Drop-forged from Best Bar Steel

	Each
No. 1—1 3/4 inches between screws.....	\$1.50
No. 2—2 1/4 inches between screws.....	2.00
No. 3—2 3/4 inches between screws.....	2.50
Per set of three, \$5.50	
No. 1—Screw.....	.10
No. 2—Screw.....	.15
No. 3—Screw.....	.20

Model A V—With Swivel Jaw

For holding taper pieces. The top jaw rolls in the eye of the screw, conforming to the taper of the piece, holding it securely. It can also be used on straight pieces.

	Each
No. 00—Amateur, 3/4 inch between screws.....	\$.75
No. 0—Amateur, 1 1/4 inches between screws.....	1.25
No. 1—1 3/4 inches between screws.....	1.75
No. 2—2 1/4 inches between screws.....	2.25
No. 3—2 3/4 inches between screws.....	2.75
Per set of five, \$8.00	
No. 00—Screw.....	.10
No. 0—Screw.....	.12
No. 1—Screw.....	.12
No. 2—Screw.....	.18
No. 3—Screw.....	.25

Steel Dog Wrenches



Fitting screw heads from 3/8 to 3/4 inch square, will answer for both dogs and tool post.....Each \$.75

Vulcan Drop-forged Milling Machine Dogs



These are designed for taper work carried between centers on milling machines; the flat tail works in the head-slot without the back-lash unavoidable in dogs with taper tail. They serve also as a heavy pattern lathe dog.

Number	Capacity Inches	Each
42	1/2	\$.50
43	3/4	.60
44	1	.70
45	1 1/4	.85
46	1 1/2	1.00
47	1 3/4	1.20
48	2	1.40

Vulcan Drop-forged Clamp Dog

These are drop-forged from a strong, grade of carefully selected steel and are submitted to a special process after forging which increases their stiffness and strength and reduces the liability of springing.

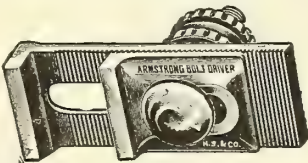
The screws, threaded U. S. Standard, are made of a special grade of steel, well adapted to the purpose and are hardened and tempered. The nuts are case hardened. Extra screws and nuts carried in stock.

The nuts furnish ready means of arrangement for the minimum projection of screws beyond the body of dog and thus lessen the danger to the operator when tool is in use.

Number	Distance between Screws Inches	Maximum Opening Inches	Each
61	1 3/4	1 5/8	\$1.50
62	2 1/4	1 7/8	2.00
63	2 3/4	2 1/2	2.50
64	3 1/2	3 1/4	3.50

Armstrong Bolt Driver

An extremely handy lathe attachment for turning square, flat or hexagon stock, especially when a number of pieces of same size are to be turned, as no adjustment, tightening or loosening is necessary, when changing pieces.



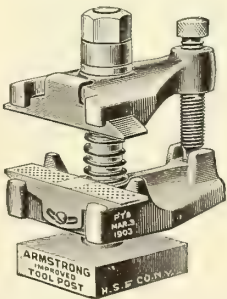
Number	Capacity, Inches	Each
2-D	2	\$2.75
3-D	3	4.00
4-D	4	6.00

Armstrong Improved Lathe Tool Post

It has a great range of adjustment without loss of holding power as the rocker jaws adjust themselves on parallel lines.

The open side design permits rapid and convenient change and adjustment of tools. It will not cut or tear the tool shank, and is therefore peculiarly adapted to use in connection with tool holders.

Fitting: An extra charge of 50 cents net will be made for fitting bolt head to dimensions.

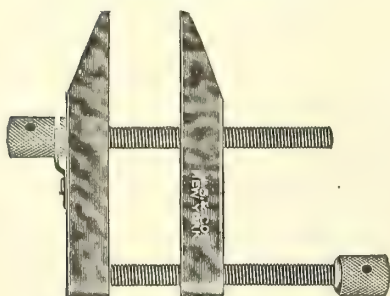


No.	For Tools	For Lathes	Each
1-T	1/2x1 inch and less	12 to 14 inch swing	\$5.50
2-T	5/8x1 1/4 and 3/4x1 1/2 inches	16 to 18 inch swing	7.00
3-T	3/4x1 1/2 and 7/8x1 5/8 inches	20 to 22 inch swing	9.00
4-T	7/8x1 5/8 and 1x1 3/4 inches	24 to 32 inch swing	12.00

Clamps

Toolmakers Parallel

Brown & Sharpe

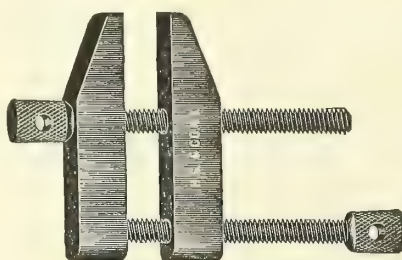


No 754—Steel, Hardened

The spring attachment holds the "loose" jaw tightly and prevents its dropping or sliding while opening or closing the Clamp.

Opening of Jaws Inches	Length of Jaws Inches	Each
5/8	1 1/2	\$.45
1	2 1/8	.50
1 1/2	2 3/4	.65
2	3 3/8	.75
2 1/2	4	1.00
3 1/2	5	1.65

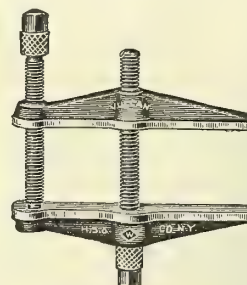
Starrett



Steel, Hardened

Number	Opening of Jaws Inches	Length of Jaws Inches	Each
161AA	3/4	1 5/8	\$1.00
161A	1 1/4	2	1.25
161B	1 3/4	2 1/2	1.50
161C	2 1/4	3	1.75
161D	2 3/4	4	2.00

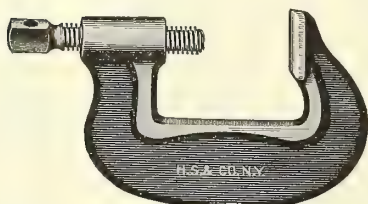
Machinists Parallel Vulcan



Steel, Drop-forged

Number	Maximum Opening Inches	Capacity Length Jaw from Screw Inches	Each
301	1 1/4	1 3/4	\$1.50
302	2 1/4	2 3/4	2.00
303	3 1/4	2 3/4	2.50
304	4 1/4	3 1/4	3.00

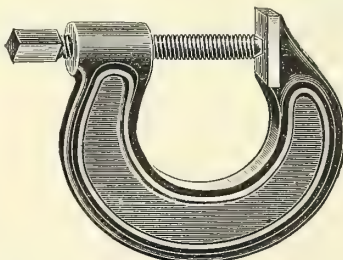
Mechanics



The back is 1 1/2 inches from center of screw

Number	Opens Inches	Weight Pounds	Each
1	2	3 1/4	\$1.25
2	3	3 1/2	1.50
3	4	3 3/4	1.75
4	5	4	2.00
5	6	4 1/4	2.25
6	7	4 1/2	2.50
7	8	4 3/4	2.75
8	9	5	3.00

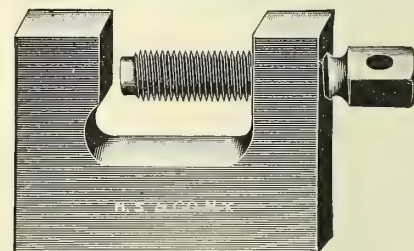
Steel Fitters



These Clamps have square thread steel screws with hardened points running down to the foot. The foot is planed square by the screw.

Number	Opens Inches	Depth Inches	Weight Pounds	Each
1	1 1/8	1 1/8	1 1/2	\$1.25
2	1 3/4	1 3/4	2 1/2	1.50
3	2 1/2	2 1/2	3 1/2	1.75

Parallel



All steel, case-hardened. All surfaces are either parallel or at right angles to each other. Articles held in these Clamps may have holes drilled parallel or at right angles to each other without being removed from the Clamps.

Size Open Inches	Weight	Each
1	4 1/2 ounces	\$.75
1 1/4	8 ounces	1.00
1 5/8	9 ounces	1.25
2	1 7/8 pounds	1.75
3	2 pounds	2.00
4	5 pounds	3.00
5	11 1/2 pounds	5.00
6	12 3/4 pounds	6.00

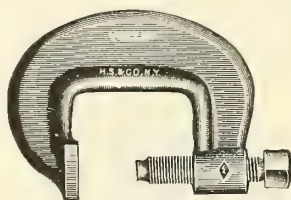
Extra Heavy Steel Bridge



Screws are made to reach the next lower number. Screw is heavy and has button on end.

No. 12.	Opens 24 inches, each	\$12.00
No. 13.	Opens 30 inches, each	16.00
No. 14.	Opens 42 inches, each	20.00

Vulcan



For Severe Service
Depth of throat is measured from center of screw.

Number	Old Number	Capacity	Depth of Throat Inches	Approx. Weight Pounds	Extra Screws Each	Clamps Complete Each
0	9	3/4	3/4	1/4	\$.08	\$.50
1	10	1 1/4	1 1/8	5/8	.11	.75
1 1/2	11	1 3/4	1 1/2	1 7/8	.14	1.25
2	12	2 1/4	1 3/4	3 3/4	.20	1.75
3	13	3 1/4	2 3/8	6	.28	2.50
4	14	4 1/2	2 3/4	10 1/4	.38	3.25
5	15	5 1/2	3 1/8	12 1/4	.50	4.00
6	16	6 1/2	3 3/8	17	.65	5.00
8	18	8 1/2	3 3/4	23 1/4	.85	7.00
10 1/2	..	10 1/2	4 1/8	28	.85	9.50
12 1/2	..	12 1/2	4 1/2	40	1.20	12.50

Drop-Forged Steel "C"



For Less Severe Service

Number	Capacity	Depth of Throat from center of Screw Inches	Extreme Dimensions of Body Length Inches	Width Inches	Approximate Weight Each Pounds	Extra Screws Each	Clamps Complete Each
104	4	2 3/8	8 3/16	5 1/8	5 1/4	\$.70	\$2.25
106	6	2 1/2	10 5/16	5 3/8	6 1/4	.70	2.75
108	8	2 5/8	12 1/8	5 9/16	7 1/2	.70	3.25
110	10	2 3/4	14 5/8	5 11/16	9	.70	3.75
112	12	2 7/8	16 3/16	6 1/16	10 1/2	.70	4.25
115	15	3 1/16	20 1/4	6 9/16	15	.90	5.50
118	18	3 1/4	23 1/2	7	20	.90	7.00

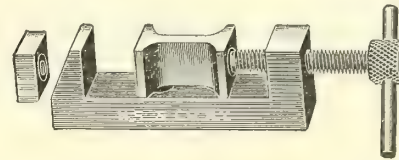
Clamps

Toolmakers Vise

Brown & Sharpe



Starrett



This is a reliable and handy tool for use in drilling, fitting, and laying out work on surface plates. The screw will hold the jaws rigidly in place.

It is drop-forged and case-hardened, thus adapting it for hard usage without danger of damaging it. It is also light and convenient to handle, being frequently held in the hand during operations.

The distinctive feature in this tool is the V-groove in the under side of the base. This adds to the handiness of the clamp as it can be used as a V-block.

The greatest capacity of the clamp is 2 inches. Each clamp is furnished with two steel jaws, as shown in the cut, that slip on and off the end of the screw.

No. 752, each..... \$1.00

These Clamps are made from drop forgings, nicely finished, case-hardened, and have take-up blocks to slip on and off end of screw, and are held to same in a novel manner. They will hold work square and parallel for laying out on surface plates, fitting or drilling. A round piece may be rigidly held in two of the clamps and drilled on an upright, central and parallel. Put up and sold in pairs. With the small block in use, the capacity of the smaller clamp is a little over 1 inch, and that of the larger clamp 2 inches.

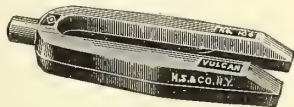
No. 160

1 inch (per pair)..... \$1.35
2 inches (per pair)..... 1.75

Drop-Forged Strap

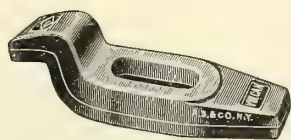
Vulcan

These forgings are made from a strong, tough grade of carefully selected steel and are submitted to a special process after forging, which increases their strength and stiffness. On Planer, Lathe, Drill Press, Milling and Boring Machine work they are time-saving and effective.



Pattern

Number	Old Number	Length Inches	Maximum Width Inches	Thickness Inches	Slot Minimum Width Inch	Maximum Length Inches	Finger Dimensions Inch	Each
64	104	4½	1¾	¾	1½	3½	1½x1½	\$.30
66	106	6½	1½	7⁄8	1½	5½	5⁄8x5⁄8	.50
68	...	8¾	2½	1½	1½	7¾	¾x¾	.85



Goose Neck Pattern

Num-ber	Old Num-ber	Length Inches	Width, Inches Ends Center	Thickness, Inches Ends Center	Slot Minimum Dimensions Inches Length Width	Neck Offset Inches	Each
74	204	4	1½	1½	1½x¾	1½	\$.30
76	206	6	1¼	1¼	1½x¾	1½	.50
78	208	8	1½	2½	1½x¾	1½	.85



Adjustable Step Pattern

Old Num-ber	Length Inches	Width, In. Ends Center	Thickness In. Ends Center	Slot Minimum Dimensions Inches	Screws Diameter Inch	Screws Length Inch	Extra Screws Each	Clamp Each
54A	4A	4	1½	1½	1½	1½	\$.14	\$.45
56A	6A	6	1¼	1¼	1½	2½	.18	.72
58A	8A	8	1½	2½	1½	2½	.25	1.20



Finger Pattern, Double End

Num-ber	Old Number	Length Inches	Width Center Inches	Thickness Center Inch	Diameter Hole Inch	Finger Dimensions Inch	Each
30	330	3	1½	5⁄8	1½	1½ & 1½	\$.20
35	335	3½	1½	¾	1½	5⁄8 & 5⁄8	.25
40	340	4	1½	7⁄8	1½	¾ & ¾	.35



Finger Pattern, Single End

Num-ber	Old Number	Length Inches	Width Inches Flat End Center	Thickness Inches Flat End Center	Slot Minimum Dimensions Inches Length Width	Finger Dimensions Inch	Each
44	...	4	1½	1½	1½	1½ & 1½	\$.30
46	306	6	1¼	1¼	1½	5⁄8 & 5⁄8	.50
48	308	8	1½	2½	1½	¾ & ¾	.85



Plain Slot Pattern

Num-ber	Old Number	Length Inches	Width Inches Ends Center	Thickness Inches Ends Center	Slot Minimum Dimensions Inches Length Width	Each
54	4	4	1½	1½	1½	\$.30
56	6	6	1¼	1¼	1½	.50
58	8	8	1½	2½	1½	.85

Lathe Tools

Armstrong Holders and Cutters

Complete with Two Cutters and Wrench

Left Hand Number	Straight Shank Number	Right Hand Number	Size of Holder Inches	Size of Cutters Inches Square	Each Complete With Self-Hardening Cutters	With High Speed Cutters	Extra Cutters, Each Self-Hardening	High Speed
00-L	00-S	00-R	$\frac{5}{16} \times \frac{3}{4} \times 4\frac{1}{2}$	$\frac{3}{16}$	\$1.60	\$1.80	\$.10	\$.20
0-L	0-S	0-R	$\frac{3}{8} \times \frac{7}{8} \times 5$	$\frac{1}{4}$	1.65	1.90	.12	.24
1-L	1-S	1-R	$\frac{1}{2} \times 1\frac{1}{8} \times 6$	$\frac{5}{16}$	1.80	2.15	.18	.35
2-L	2-S	2-R	$\frac{5}{8} \times 1\frac{1}{8} \times 7$	$\frac{3}{8}$	2.30	2.70	.25	.45
3-L	3-S	3-R	$\frac{3}{4} \times 1\frac{1}{8} \times 8$	$\frac{7}{16}$	3.00	3.60	.35	.65
4-L	4-S	4-R	$\frac{7}{8} \times 1\frac{3}{4} \times 9$	$\frac{1}{2}$	3.80	4.60	.45	.85
5-L	5-S	5-R	1 x 2 x 11	$\frac{5}{8}$	4.75	5.85	.65	1.20
6-L	6-S	6-R	$1\frac{1}{4} \times 2\frac{1}{4} \times 13$	$\frac{3}{4}$	7.00	8.75	1.00	1.90
7-L	7-S	7-R	$1\frac{1}{2} \times 2\frac{1}{2} \times 16$	$\frac{7}{8}$	12.00	15.00	1.75	3.25
750-L	750-S	750-R	$1\frac{5}{8} \times 2\frac{3}{4} \times 18$	1	17.50	22.00	2.50	4.75
800-L	800-S	800-R	$1\frac{3}{4} \times 3 \times 20$	$1\frac{1}{8}$	23.00	28.50	3.25	6.00

Complete with Two Cutters and Wrench

Left Hand Off-set Number	Straight Shank Number	Right Hand Off-set Number	Size of Holder Inches	Size of Cutter Inch Square	Height of Cutter Point	Each Complete With Self-Hardening Cutters	With High Speed Cutters	Extra Cutters, Each Self-Hardening	High Speed
100-L	100-S	100-R	$\frac{1}{2} \times \frac{5}{8} \times 6$	$\frac{3}{16}$	$\frac{9}{16}$	\$1.75	\$1.90	\$.10	\$.20
101-L	101-S	101-R	$\frac{5}{8} \times \frac{3}{4} \times 7\frac{1}{2}$	$\frac{1}{4}$	$\frac{11}{16}$	2.00	2.25	.12	.24
201-L	201-S	201-R	$\frac{3}{4} \times \frac{7}{8} \times 8\frac{1}{2}$	$\frac{5}{16}$	$\frac{13}{16}$	2.50	2.85	.18	.35
102-L	102-S	102-R	$\frac{7}{8} \times 1 \times 9\frac{1}{2}$	$\frac{3}{8}$	$\frac{15}{16}$	3.25	3.65	.25	.45
301-L	301-S	301-R	1 x $1\frac{1}{8} \times 10\frac{1}{2}$	$\frac{7}{16}$	$1\frac{1}{16}$	4.00	4.60	.35	.65
103-L	103-S	103-R	$1\frac{1}{8} \times 1\frac{1}{4} \times 11\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{16}$	5.00	5.80	.45	.85
104-L	104-S	104-R	$1\frac{3}{8} \times 1\frac{1}{2} \times 13\frac{1}{2}$	$\frac{5}{8}$	$1\frac{5}{16}$	7.50	8.60	.65	1.20
105-L	105-S	105-R	$1\frac{5}{8} \times 1\frac{3}{4} \times 15\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	12.00	13.80	1.00	1.90
106-L	106-S	106-R	$1\frac{7}{8} \times 2 \times 17\frac{1}{2}$	$\frac{7}{8}$	$1\frac{3}{4}$	17.50	20.50	1.75	3.25
107-L	107-S	107-R	$2\frac{1}{8} \times 2\frac{1}{4} \times 19\frac{1}{2}$	1	2	23.00	27.50	2.50	4.75

Complete with One Cutter and Wrench

Left Hand Number	Right Hand Number	Size of Holder Inches	Each Complete With Self-Hardening Cutter	With High Speed Cutter	Extra Cutters, Each Self-Hardening	High Speed
79-L	79-R	$\frac{5}{16} \times \frac{3}{4} \times 4\frac{1}{2}$	\$2.00	\$2.40	\$.40	\$.80
80-L	80-R	$\frac{3}{8} \times \frac{7}{8} \times 5$	2.20	2.65	.45	.90
81-L	81-R	$\frac{1}{2} \times 1\frac{1}{8} \times 6$	2.40	3.00	.55	1.10
82-L	82-R	$\frac{5}{8} \times 1\frac{1}{8} \times 7$	3.00	3.75	.75	1.50
83-L	83-R	$\frac{3}{4} \times 1\frac{1}{8} \times 8$	3.90	5.00	1.15	2.30
84-L	84-R	1 x $1\frac{1}{8} \times 9$	4.90	6.25	1.35	2.70
85-L	85-R	$1\frac{1}{8} \times 2 \times 11$	6.50	8.25	1.85	3.70
86-L	86-R	$1\frac{1}{4} \times 2\frac{1}{4} \times 13$	8.50	11.00	2.50	5.00
87-L	87-R	$1\frac{1}{2} \times 2\frac{3}{8} \times 15$	12.00	15.75	3.75	7.50

Complete with One Cutter and Wrench

Left Hand Off-set Number	Straight Shank Number	Right Hand Off-set Number	Size of Holder Inches	Size of Blade Inches	Each Complete With Self-Hardening Blade	With High Speed Blade	Extra Blades, Each Self-Hardening	High Speed
29-L	19	29-R	$\frac{5}{16} \times \frac{3}{4}$	$\frac{5}{64} \times \frac{1}{2}$	\$1.65	\$1.90	\$.25	\$.50
30-L	20	30-R	$\frac{3}{8} \times \frac{7}{8}$	$\frac{3}{32} \times \frac{5}{8}$	1.65	1.90	.25	.50
31-L	21	31-R	$\frac{1}{2} \times 1\frac{1}{8}$	$\frac{1}{8} \times \frac{3}{4}$	1.80	2.15	.35	.70
32-L	22	32-R	$\frac{5}{8} \times 1\frac{1}{8}$	$\frac{1}{4} \times \frac{7}{8}$	2.30	2.75	.45	.90
33-L	23	33-R	$\frac{3}{4} \times 1\frac{1}{8}$	$\frac{1}{16} \times 1$	3.00	3.60	.60	1.20
34-L	24	34-R	$\frac{7}{8} \times 1\frac{3}{4}$	$\frac{3}{16} \times 1\frac{1}{8}$	3.80	4.50	.75	1.50
35-L	25	35-R	1 x 2	$\frac{1}{4} \times 1\frac{1}{4}$	4.75	5.75	.95	1.90
36-L	26	36-R	$1\frac{1}{4} \times 2\frac{1}{4}$	$\frac{1}{4} \times 1\frac{3}{8}$	6.50	7.75	1.25	2.50

Round Cutter

With Straight Shanks

The convenience and economy of this tool will recommend it wherever a single tool is required to do a wide variety of lathe and shaper work. The Cutter is round and rake and clearance can be altered instantly by rotating the Cutter in the socket. The Cutter is held solidly by a tapered tool steel key.

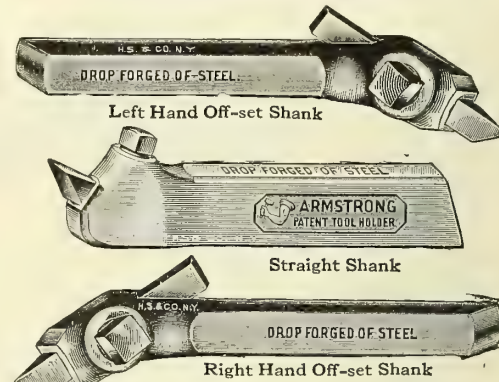


Complete with One Cutter

Number	Size of Holder Inches	Size of Cutter Round Inch	Each Complete With Self-Hardening Cutter	With High Speed Cutter	Extra Cutters, Each Self-Hardening	High Speed
120	$\frac{3}{8} \times \frac{3}{4} \times 5$	$\frac{1}{4}$	\$1.45	\$1.55	\$.12	\$.24
121	$\frac{1}{2} \times 1 \times 6$	$\frac{5}{16}$	1.55	1.70	.18	.35
122	$\frac{5}{8} \times 1\frac{1}{4} \times 7$	$\frac{3}{8}$	1.90	2.10	.25	.45
123	$\frac{3}{4} \times 1\frac{1}{2} \times 8$	$\frac{7}{16}$	2.50	2.80	.35	.65
124	$\frac{7}{8} \times 1\frac{5}{8} \times 9$	$\frac{1}{2}$	3.25	3.65	.45	.85
125	1 x $1\frac{3}{4} \times 11$	$\frac{5}{8}$	4.00	4.55	.60	1.15

Regular

With Straight and Off-set Shanks



Drop Head

With Straight and Off-set Shanks



Side

With Straight Shanks



Cutting-off

With Straight and Off-set Shanks



Straight Shank

Side

With Off-set Shanks



Complete with One Cutter and Wrench

Left Hand Number	Right Hand Number	Size of Shank Inches	Each Complete With Self-Hardening Cutter	With High Speed Cutter	Extra Cutters, Each Self-Hardening	High Speed
69-L	69-R	$\frac{5}{16} \times \frac{3}{4}$	\$2.00	\$2.40	\$.40	\$.80
70-L	70-R	$\frac{3}{8} \times \frac{7}{8}$	2.20	2.65	.45	.90
71-L	71-R	$\frac{1}{2} \times 1\frac{1}{8}$	2.40	3.00	.55	1.10
72-L	72-R	$\frac{5}{8} \times 1\frac{1}{8}$	3.00	3.75	.75	1.50
73-L	73-R	$\frac{3}{4} \times 1\frac{1}{8}$	3.90	5.00	1.15	2.30
74-L	74-R	$\frac{7}{8} \times 1\frac{3}{4}$	4.90	6.25	1.35	2.70
75-L	75-R	1 x 2	6.50	8.25	1.85	3.70
76-L	76-R	$1\frac{1}{4} \times 2\frac{1}{4}$	8.50	11.00	2.50	5.00

Lathe Tools

Armstrong Holders and Cutters

Threading



Each tool is equipped with one single point cutter, V, U. S. or Whitworth Standard, and a drop-forged wrench.

Number	Size of Holder Inches	Each Complete	
		With Carbon Steel Cutter	With High Speed Cutter
00T	$\frac{5}{16} \times \frac{3}{4} \times 5$	\$2.25	\$2.75
50	$\frac{3}{8} \times \frac{7}{8} \times 5$	2.25	2.75
51	$\frac{1}{2} \times 1 \frac{1}{8} \times 6$	2.75	3.35
52	$\frac{5}{8} \times 1 \frac{3}{8} \times 7$	3.50	4.25
53	$\frac{3}{4} \times 1 \frac{5}{8} \times 8$	4.50	5.50
54	$\frac{7}{8} \times 1 \frac{3}{4} \times 9$	5.50	6.50
55	1 x2 x10	7.00	8.25

Note—In ordering tools equipped with U. S. or Whitworth cutters be careful to specify pitch or number of threads per inch wanted. Tools equipped with single point Sharp V cutter will always be shipped unless otherwise ordered.

Tools with Carbon Steel Cutters will be sent if High Speed is not specified.

Cutters

For Tool Number		00T and 50		51	
Shape of Thread	Made from	Single Point	Chaser	Single Point	Chaser
Sharp V	Carbon Steel	\$.45	\$.90	\$.55	\$1.05
	High Speed	.90	1.80	1.10	2.10
United States Standard	Carbon Steel	.50	.90	.60	1.05
	High Speed	1.00	1.80	1.20	2.10
Whitworth	Carbon Steel	.75	1.25	.90	1.40
	High Speed	1.50	2.50	1.80	2.80

For Tool Number		52		53 and 54		55
Shape of Thread	Made from	Single Point	Chaser	Single Point	Chaser	Single Point Only
Sharp V	Carbon Steel	\$.70	\$1.20	\$.90	\$1.30	\$1.25
	High Speed	1.40	2.40	1.80	2.60	2.50
United States Standard	Carbon Steel	.75	1.20	.95	1.30	1.35
	High Speed	1.50	2.40	1.90	2.60	2.70
Whitworth	Carbon Steel	1.15	1.65	1.40	1.80	1.95
	High Speed	2.30	3.30	2.80	3.50	3.90

Note—When ordering cutters or chasers (except single point V cutters) it is necessary to specify exact pitch or number of threads per inch.

When High Speed is not specified in order, Carbon Steel Cutters will be shipped

HOLDERS for Grinding Cutters



Save Tool Holders from being ground away and ruined by holding cutters in them while being ground or sharpened.

Every shop should have a set of these holders on the tool grinder.

Number	Holds Cutters	Each
1-G	$\frac{3}{16}$ inch and $\frac{1}{4}$ inch	\$.30
2-G	$\frac{5}{16}$ inch and $\frac{3}{8}$ inch	.35
3-G	$\frac{7}{16}$ inch and $\frac{1}{2}$ inch	.45
4-G	$\frac{5}{8}$ inch and $\frac{3}{4}$ inch	.60
5-G	$\frac{7}{8}$ inch and 1 inch and $1 \frac{1}{8}$ inches	.85

Planer



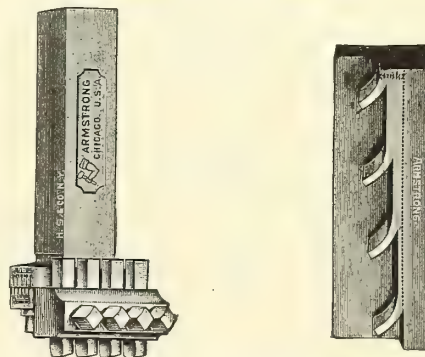
Works at any angle, right or left hand. Equals a complete set of Forged Planer Tools

Complete with Wrench and two Cutters

Number	Size of Holder Inches	Size of Cutter Inches	Each Complete	Each Complete	Extra	Extra
			With Self-Hardening Cutters	With High Speed Cutters	Cutters Each Self-Hardening	Cutters Each High Speed
40	$\frac{1}{2} \times 1 \times 7$	$\frac{1}{4} \times \frac{3}{8}$	\$2.75	\$3.10	\$.20	\$.37
401	$\frac{5}{8} \times 1 \frac{1}{4} \times 8 \frac{1}{2}$	$\frac{5}{16} \times \frac{7}{16}$	3.50	4.00	.30	.55
41	$\frac{3}{4} \times 1 \frac{1}{2} \times 10$	$\frac{3}{8} \times \frac{1}{2}$	4.50	5.25	.40	.75
42	$1 \frac{1}{8} \times 1 \frac{3}{4} \times 13$	$\frac{1}{2} \times \frac{3}{4}$	7.00	8.25	.70	1.30
43	$1 \frac{3}{8} \times 2 \times 16$	$\frac{5}{8} \times \frac{7}{8}$	11.00	12.75	1.00	1.90
44	$1 \frac{7}{8} \times 2 \frac{1}{4} \times 19$	$\frac{3}{4} \times 1$	16.00	19.50	2.00	3.75
45	$2 \frac{1}{8} \times 2 \frac{3}{4} \times 22$	$\frac{7}{8} \times 1 \frac{1}{8}$	25.00	30.00	3.00	5.70

Gang Planer

For Planing Large Surfaces



As each chip is comparatively light, a planer will, with this tool, carry with ease a feed and depth of cut much greater than is possible when using an ordinary tool, and there is much less tendency to "break out" at the end of cut. On larger surfaces, this tool has reduced time 50 to 75 per cent.

The illustration shows plan of cut made by Gang Planer Tool set to $\frac{1}{4}$ inch, distributing the cut so that each cutter takes but $\frac{1}{16}$ inch.

Complete with one Set (four) Cutters, Wrench and Grinding Gauge

Number	Size Shank Inches	Length Over All Inches	Size Cutter Inch	Feed Adjust- ment Inch	Each Complete	Each Complete	Extra	Extra
					With Self-Hardening Cutters	With High Speed Cutters	Cutters Each Self-Hardening	Cutters Each High Speed
61	$1 \frac{1}{4} \times 1 \frac{3}{4} \times 7 \frac{1}{2}$	10	$\frac{3}{8} \times \frac{1}{2}$	0 to $\frac{1}{4}$	\$12.00	\$13.00	\$.35	\$.65
62	$1 \frac{5}{8} \times 2 \frac{1}{4} \times 9$	12	$\frac{1}{2} \times \frac{1}{4}$	0 to $\frac{3}{8}$	20.00	22.00	.60	1.15
63	$2 \times 2 \frac{1}{2} \times 11$	14	$\frac{5}{8} \times \frac{7}{8}$	0 to $\frac{1}{2}$	35.00	38.50	1.00	1.90

When not otherwise specified Self-Hardening Cutters will be shipped

Slotter



With Hollow Bar

Complete with Wrench and two Cutters

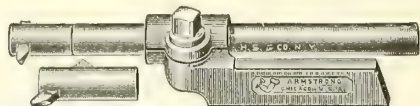
Number	For Slotting Machine Inches Stroke	Diam. Bar Inches	Length Over all Inches	Size of Cutter Inch	Each Complete	Each Complete	Extra	Extra
					With Self-Hardening Cutters	With High Speed Cutters	Cutters Each Self-Hardening	Cutters Each High Speed
91	6 and 8	$1 \frac{1}{2}$	16	$\frac{1}{16} \times \frac{9}{16}$	\$20.00	\$20.75	\$.50	\$.90
92	10 and 12	2	22	$\frac{1}{2} \times \frac{11}{16}$	30.00	31.00	.65	1.20
93	14 and 16	$2 \frac{1}{4}$	27	$\frac{9}{16} \times \frac{3}{4}$	45.00	46.50	.85	1.60
94	18 and 20	$2 \frac{1}{2}$	32	$\frac{5}{8} \times \frac{7}{8}$	65.00	67.00	1.15	2.20
95	22 and 24	$2 \frac{3}{4}$	37	$\frac{3}{4} \times 1$	95.00	98.50	2.00	3.75

Note—As there is considerable difference in size of the T-slots of machines of different manufacture, the clamps and bolt heads of this tool are made of ample size to allow for fitting.

Fitting. An extra charge of \$2.00 net will be made for fitting to dimensions.

Boring Lathe Tools

Armstrong Holders and Cutters



This is a stiff, handy tool and can be used on any lathe without fitting. Effectively equal to a dozen forged tools.

Including Straight and 45-degree End Caps, two Cutters and Wrench.

Number	Size Shank Inches	Diameter Bar Inches	Size Cutter Inch Square	Each Complete With Self-Hardening Cutters	With High Speed Cutters	Extra Cutters, Each Self-Hardening	High Speed
00B	$\frac{5}{16} \times \frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{16}$	\$3.00	\$3.25	\$.12	\$.24
8	$\frac{3}{8} \times \frac{7}{8}$	$\frac{9}{16}$	$\frac{3}{16}$	3.00	3.25	.12	.24
9	$\frac{1}{2} \times 1\frac{1}{8}$	$\frac{3}{4}$	$\frac{1}{4}$	3.60	3.85	.15	.28
10	$\frac{5}{8} \times 1\frac{3}{8}$	$\frac{15}{16}$	$\frac{5}{16}$	4.75	5.10	.20	.37
11	$\frac{3}{4} \times 1\frac{5}{8}$	$1\frac{1}{8}$	$\frac{3}{8}$	6.75	7.25	.30	.55
12	$\frac{7}{8} \times 1\frac{3}{4}$	$1\frac{1}{2}$	$\frac{7}{16}$	10.00	10.75	.40	.75
13	1 x 2	$1\frac{1}{2}$	$\frac{1}{2}$	14.00	15.00	.50	1.00

Without Shank

In many cases it is very convenient and desirable to have a Boring Tool equipped with bars of different sizes. We are prepared to furnish extra bars with bushings to fit same to shanks of larger size. These extra bars to be of practical use must necessarily be equipped with wrench, caps, etc., making it a complete tool with exception of the shank.

Includes Bar with Straight and 45-degree End Caps, two Cutters, Wrench and Bushing. No bushing with Nos. 013, 014, 015.

Number	Dimensions of Bar Diam. Inches	Length Inches	Size of Cutter Inch Square	With Bushing to Fit Shank Number	Each Complete With Self-Hardening Cutter	With High Speed Cutter	Extra Cutters, Each Self-Hardening	High Speed
0B	$\frac{1}{2}$	8	$\frac{3}{16}$	8, 9 or 10	\$1.75	\$2.00	\$.12	\$.24
08	$\frac{9}{16}$	9	$\frac{3}{16}$	9, 10 or 11	1.75	2.00	.12	.24
09	$\frac{3}{4}$	11	$\frac{1}{4}$	10, 11 or 12	2.25	2.50	.15	.28
010	$\frac{15}{16}$	13	$\frac{5}{16}$	11, 12 or 13	3.25	3.60	.20	.37
011	$1\frac{1}{8}$	16	$\frac{3}{8}$	12 or 13	4.50	5.00	.30	.55
012	$1\frac{1}{8}$	18	$\frac{7}{16}$	13	6.25	7.00	.40	.75
013	$1\frac{1}{2}$	21	$\frac{1}{2}$	None	7.75	8.75	.50	1.00
014	$1\frac{1}{2}$	24	$\frac{5}{8}$	None	9.75	11.00	.70	1.30
015	$2\frac{1}{4}$	30	$\frac{3}{4}$	None	13.00	14.75	1.00	1.90

When not otherwise specified Self-Hardening Cutters will be shipped.

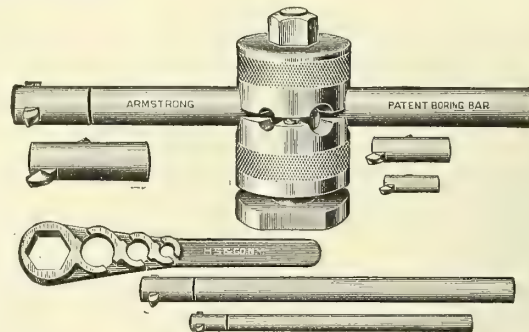
Note—In ordering be careful to give size of shank (or number of tool) in which bar is to be used. When this information is not given no bushing will be included.



For Use on Lathes with Clamp Tool Rest

Complete with Holder and Bar, straight and 45-degree End Caps. Two Cutters and Double Head Wrench.

Number	Size of Shank Inches	Diameter of Bar Inches	Length of Bar Inches	Size of Cutter Inch Square	Each Complete With Self-Hardening Cutters	With High Speed Cutters	Extra Cutters, Each Self-Hardening	High Speed
108	$\frac{3}{4} \times \frac{7}{8}$	$\frac{9}{16}$	9	$\frac{3}{16}$	\$2.50	\$2.75	\$.12	\$.24
109	1 x $1\frac{1}{8}$	$\frac{3}{4}$	11	$\frac{1}{4}$	3.00	3.25	.15	.28
110	$1\frac{1}{4} \times 1\frac{3}{8}$	$\frac{15}{16}$	13	$\frac{5}{16}$	4.00	4.35	.20	.37
111	$1\frac{1}{2} \times 1\frac{5}{8}$	$1\frac{1}{8}$	16	$\frac{3}{8}$	5.75	6.25	.30	.55
112	$1\frac{3}{4} \times 1\frac{7}{8}$	$1\frac{5}{8}$	18	$\frac{7}{16}$	8.00	8.75	.40	.75
113	2 x $2\frac{1}{8}$	$1\frac{1}{2}$	21	$\frac{1}{2}$	10.50	11.50	.50	1.00
114	$2\frac{1}{4} \times 2\frac{3}{8}$	$1\frac{3}{4}$	24	$\frac{5}{8}$	13.75	15.00	.70	1.30
115	$2\frac{3}{4} \times 2\frac{7}{8}$	$2\frac{1}{4}$	30	$\frac{3}{4}$	18.50	20.25	1.00	1.90



Three Bar

A slight turn of one nut releases or fastens both Bar and Holder.

Bars can be changed as needed almost instantly, thus allowing the operator to use the stiffest bar possible for each job with the result that speeds and feeds can be increased and time saved.

The set comprises the Holder and three Armstrong Boring Bars, with straight and 45-degree End Caps, six Cutters, and a Combination Wrench.

Number of Tool	1-B	2-B	3-B	4-B
Complete Set with Self-hardening Cutters	\$12.00	\$16.00	\$21.00	\$28.00
Complete Set with High Speed Cutters	13.00	17.25	22.75	30.00

Dimensions

Number of Tool	1-B	2-B	3-B	4-B
Diameter Bars	$\frac{1}{2}, \frac{3}{4}, 1\frac{1}{8}$	$\frac{9}{16}, \frac{15}{16}, 1\frac{5}{16}$	$\frac{3}{4}, 1\frac{1}{8}, 1\frac{1}{2}$	$1\frac{5}{16}, 1\frac{5}{8}, 1\frac{13}{16}$
Length Bars	8, 11, 16	9, 13, 18	11, 16, 21	13, 18, 24
Size Cutters	$\frac{3}{16}, \frac{1}{4}, \frac{3}{8}$	$\frac{3}{16}, \frac{5}{16}, \frac{7}{16}$	$\frac{1}{4}, \frac{3}{8}, \frac{1}{2}$	$\frac{5}{16}, \frac{7}{16}, \frac{5}{8}$
For Lathes	14 to 16	16 to 18	20 to 22	24 to 32

Extra Cutters—Stock Shapes Only

Size, inches	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
square							
Each, High Speed	\$.24	\$.28	\$.37	\$.55	\$.75	\$1.00	\$1.30
Each, Self-hardening	.12	.15	.20	.30	.40	.50	.70

When not otherwise specified Self-Hardening Cutters will be shipped.

Note—Bolt Head and bottom part of Holder are made of ample size to allow for fitting, which is necessary on account of the great variation in height of centers above slide rest and difference in sizes of T-slots.

Fitting—An extra charge of \$1.00 net will be made for tools ordered fitted to special dimensions.



For Light Work

Includes Holder, Wrench, two Boring Bars and one Self-hardening Cutter

Number	Size of Shank Inches	Size of Bars Furnished Diameter Inch	Size of Square Cutter Inch	Each Complete	Extra Square Cutter Each
15	$\frac{3}{8} \times \frac{3}{4}$	$\frac{1}{8}$ and $\frac{1}{4}$	$\frac{1}{4}$	\$2.75	\$.12
16	$\frac{1}{2} \times 1$	$\frac{3}{16}$ and $\frac{5}{16}$	$\frac{3}{8}$	3.50	.18
17	$\frac{5}{8} \times 1\frac{1}{4}$	$\frac{1}{4}$ and $\frac{3}{8}$	$\frac{1}{2}$	4.50	.25
18	$\frac{3}{4} \times 1\frac{1}{2}$	$\frac{5}{16}$ and $\frac{7}{16}$	$\frac{3}{4}$	5.75	.35

Extra Boring Bars

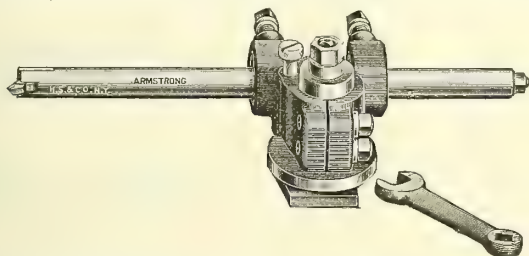
Diameter, inch	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$
Length, inches	4	$4\frac{1}{2}$	5	6	7	8
Each	\$.20	\$.25	\$.30	\$.40	\$.55	\$.75

Lathe Tools

Armstrong

Adjustable Boring

This tool combines Convenience, Adjustability and Rigidity to a remarkable degree and is well adapted to a very wide range of work. The holder is easily adjustable to different heights and will hold bars of various diameters. The Bars are made from high carbon steel seamless tubing of heavy gauge and are extremely stiff. The cutter can be adjusted and solidly fixed at various angles for boring, facing or turning.



Including Holder, one Bar, two Cutters and Wrench

Number	Capacity of Holder Diameter Bars Inches	Size Bar Furnished Inches	Size Cutter Inch Square	For Lathes Swinging Inches	With Self-Hardening Cutters Each	With High Speed Cutters Each
212	$\frac{1}{4}$ to $1\frac{5}{16}$	$1\frac{5}{16} \times 21$	$\frac{3}{8}$	14 to 18	\$16.00	\$16.50
213	$\frac{3}{8}$ to $1\frac{1}{2}$	$1\frac{1}{2} \times 24$	$\frac{1}{2}$	16 to 20	21.00	21.75
214	$\frac{1}{2}$ to $1\frac{3}{4}$	$1\frac{3}{4} \times 28$	$\frac{3}{4}$	18 to 24	28.00	29.00
215	$\frac{5}{8}$ to $2\frac{1}{4}$	$2\frac{1}{4} \times 36$	$\frac{1}{2}$	20 to 36	40.00	41.25

Note—Bolt Head is made large enough to allow for fitting T-slots of various sizes. Fitting—An extra charge of 50 cents net will be made for fitting Bolt Head to special dimensions.

Extra Bars

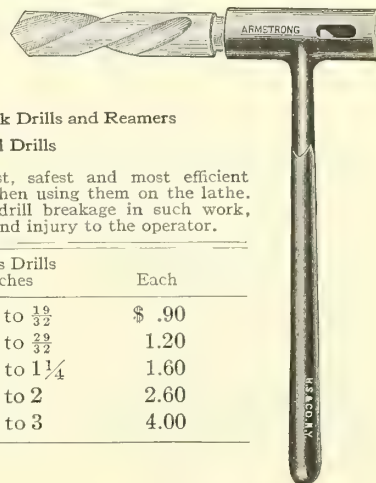
Including one Bar of size specified, two Cutters and Wrench

Diameter Inches	Size of Bar Length Inches	Size Cutter Inch Square	With Self-Hardening Cutters Each	With High Speed Cutters Each
$\frac{3}{4}$	14	$\frac{3}{16}$	\$3.00	\$3.25
$\frac{15}{16}$	16	$\frac{1}{4}$	3.75	4.00
$1\frac{1}{8}$	18	$\frac{5}{16}$	4.75	5.10
$1\frac{5}{16}$	21	$\frac{3}{8}$	6.00	6.50
$1\frac{1}{2}$	24	$\frac{7}{16}$	8.00	8.75
$1\frac{3}{4}$	28	$\frac{1}{2}$	11.00	12.00
$2\frac{1}{4}$	36	$\frac{5}{8}$	15.00	16.25

Extra Cutters—Stock Shapes Only

Size Inch Square	High Speed Each	Self-Hardening Each	Size Inch Square	High Speed Each	Self-Hardening Each
$\frac{3}{16}$	\$.24	\$.12	$\frac{3}{8}$	\$.55	\$.30
$\frac{1}{4}$	.28	.15	$\frac{1}{2}$	.75	.40
$\frac{5}{16}$	.37	.20	$\frac{3}{4}$	1.00	.50
			$\frac{1}{2}$	1.30	.70

Drill and Reamer Holders



For Holding Morse Taper Shank Drills and Reamers

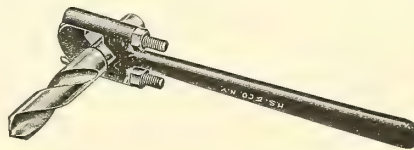
Saves Fingers and Drills

This Holder furnishes the simplest, safest and most efficient means for holding Taper Shank Drills when using them on the lathe. Its use will eliminate 90 per cent of drill breakage in such work, mutilation of drill shanks and sockets, and injury to the operator.

Number	Size Shank Morse Taper	Holds Drills Inches	Each
1	No. 1	$\frac{1}{16}$ to $\frac{1}{32}$	\$.90
2	No. 2	$\frac{3}{64}$ to $\frac{2}{32}$	1.20
3	No. 3	$\frac{5}{64}$ to $1\frac{1}{4}$	1.60
4	No. 4	$1\frac{17}{64}$ to 2	2.60
5	No. 5	$2\frac{1}{64}$ to 3	4.00

U-Clamp Drill and Reamer Holder

This tool is designed for use in holding Straight Shank Drills, Reamers or similar tools, with safety to the operator and without danger of injury to the tool held.



Number	Capacity, Inches	Length, Inches	Each
200	$\frac{1}{4}$ to 1	11	\$1.20
300	$\frac{3}{8}$ to $1\frac{1}{2}$	13	1.60
400	$\frac{1}{2}$ to 2	$15\frac{1}{2}$	2.60
500	$\frac{3}{4}$ to 3	18	4.00

Books

The Mechanic's Tool-Book

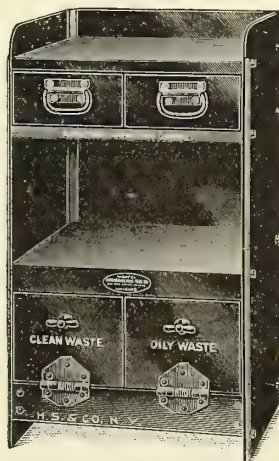
By W. B. Harrison

Contents: Contains a veritable mine of valuable information for the mechanic about the use of his various tools to their best advantage, and shows how to make small tools and how to use these as auxiliaries or by themselves. With practical rules and suggestions for use of Machinists, Ironworkers and others. 44 illustrations, 5x7 $\frac{1}{2}$ inches. 286 pages.

Each \$1.50

All Steel Tool Cabinets

Armstrong



Especially Adapted for Armstrong Lathe Tool Sets

These handsome cabinets not only add to the systematic and orderly appearance of the shop, but they will save much time that is ordinarily wasted hunting for mislaid tools, as they keep together each man's tools, chuck, waste and other equipment within easy reach at all times.

They also conform to the modern shop practice of replacing wood with non-combustible materials wherever possible, and furnish separate, automatic closing receptacles for clean and oily waste, as required by the insurance rules.

Number	Dimensions Inches	Suitable for Lathe Tool Sets	Each
0-1	18x16x34	Nos. 0 and 1	\$24.00
2-3	21x19x34	Nos. 2 and 3	27.00
4-5	24x22x34	Nos. 4 and 5	30.00

Lathe Tool Sets



Straight Shank Turning Tool



Left Hand Off-set Side Tool



Straight Shank Cut-off Tool



Left Hand Off-set Cut-off Tool



Left Hand Turning Tool

Armstrong

Each set includes ten tools shown on the preceding pages and is so complete as to cover the entire range of lathe work and to render entirely unnecessary the forging of tools with the attendant waste of time and material.

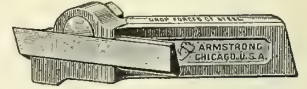
Number	Size of Tool Shanks Inches	For Lathes (See Note) Inches Swing	With Self-Hardening Cutters* Per Set	With High Speed Cutters Per Set
00	$\frac{5}{16} \times \frac{3}{4}$	7 to 10	\$19.00	\$21.90*
0	$\frac{3}{8} \times \frac{7}{8}$	10 to 12	19.50	22.75
1	$\frac{1}{2} \times 1\frac{1}{8}$	14 to 16	22.00	26.00
2	$\frac{5}{8} \times 1\frac{3}{8}$	16 to 18	28.00	33.25
3	$\frac{3}{4} \times 1\frac{5}{8}$	18 to 20	37.00	44.25
4	$\frac{7}{8} \times 1\frac{3}{4}$	24 to 36	48.00	57.00
5	1 x 2	36 to 48	62.25	74.50

Note—As there is a wide variation in the proportions of Lathes of different manufacture, it is only possible to give approximate size or swing of Lathes adapted to the use of tools of different sizes. Tool posts should be carefully measured before ordering tools.

*Except Threading Tool Cutter of Carbon Steel.



Boring Tool



Right Hand Off-set Side Tool



Threading Tool



Right Hand Off-set Cut-off Tool



Right Hand Turning Tool

Tool Steel Lathe Tool Cutters

Require only grinding to make them ready for use in Armstrong Tool Holders

Squares for Turning and Boring Tools

For Turning Tools				For Boring Tools			
Size Inches	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen	Size Inch	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{3}{16}$	$1\frac{3}{4}$	\$.50	\$.70	$\frac{3}{16}$	1	\$.35	\$.55
$\frac{1}{4}$	$2\frac{1}{8}$	.65	1.00	$\frac{1}{2}$	$1\frac{1}{4}$	.40	.60
$\frac{5}{16}$	$2\frac{3}{4}$	1.15	1.80	$\frac{1}{4}$	$1\frac{1}{4}$	.50	.75
$\frac{3}{8}$	$3\frac{1}{4}$	1.90	3.00	$\frac{1}{4}$	$1\frac{3}{4}$	.55	.90
$\frac{7}{16}$	$3\frac{3}{4}$	2.95	4.70	$\frac{5}{16}$	$1\frac{1}{2}$	.75	1.20
$1\frac{1}{2}$	$4\frac{1}{4}$	4.25	6.80	$\frac{5}{16}$	$2\frac{1}{4}$	.95	1.60
$\frac{5}{8}$	$4\frac{3}{4}$	6.80	10.85	$\frac{3}{8}$	$1\frac{7}{8}$	1.20	2.10
$\frac{3}{4}$	$5\frac{3}{4}$	11.40	19.70	$\frac{3}{8}$	$2\frac{3}{8}$	1.55	2.70
$\frac{7}{8}$	$6\frac{3}{4}$	18.80	29.90	$\frac{1}{2}$	$2\frac{1}{8}$	1.85	3.25
1	$7\frac{1}{2}$	27.00	43.35	$\frac{1}{2}$	$2\frac{7}{8}$	2.30	4.00
$1\frac{1}{8}$	$8\frac{1}{2}$	36.00	58.00	$\frac{1}{2}$	$2\frac{3}{8}$	2.60	4.45
				$\frac{1}{2}$	$3\frac{1}{4}$	3.30	5.75
				$\frac{5}{8}$	$2\frac{3}{4}$	4.30	7.55
				$\frac{5}{8}$	4	5.75	10.00
				$\frac{3}{4}$	$3\frac{1}{8}$	7.40	12.90
				$\frac{3}{4}$	5	10.75	18.85

Round for Turning Tools

Size Inch	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{1}{4}$	$2\frac{3}{8}$	\$.65	\$.95
$\frac{5}{16}$	3	1.05	1.65
$\frac{3}{8}$	$3\frac{1}{2}$	1.70	2.70
$\frac{7}{16}$	$3\frac{7}{8}$	2.55	4.00
$\frac{1}{2}$	$4\frac{1}{2}$	3.80	6.00
$\frac{5}{8}$	$5\frac{1}{2}$	6.40	10.15

Bevel for Cutting-off Tools

Size Inches	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{5}{16} \times 1\frac{1}{2}$	$4\frac{1}{2}$	\$1.65	\$2.60
$\frac{3}{8} \times 1\frac{1}{2}$	5	1.80	2.90
$\frac{1}{2} \times 1\frac{1}{2}$	6	2.60	4.15
$\frac{5}{8} \times 1\frac{1}{2}$	7	3.40	5.30
$\frac{3}{4} \times 1\frac{1}{2}$	8	6.20	9.85
$\frac{7}{8} \times 1\frac{1}{2}$	9	8.50	13.85
$1 \times 1\frac{1}{2}$	10	10.80	17.50
$1\frac{1}{4} \times 1\frac{1}{2}$	11	14.25	24.50

Flats for Planer and Slotter Tools

For Planer Tools				For Slotter and Gang Planer Tools			
Size Inches	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen	Size Inch	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{1}{4} \times \frac{3}{8}$	$2\frac{1}{2}$	\$1.05	\$1.65	$\frac{7}{16} \times \frac{9}{16}$	$3\frac{1}{2}$	\$3.60	\$5.65
$\frac{5}{16} \times \frac{7}{16}$	3	1.75	2.75	$\frac{1}{2} \times \frac{11}{16}$	$3\frac{3}{4}$	5.00	7.95
$\frac{3}{8} \times \frac{1}{2}$	$3\frac{1}{2}$	2.75	4.30	$\frac{9}{16} \times \frac{3}{4}$	$4\frac{1}{4}$	7.15	11.35
$\frac{1}{2} \times \frac{3}{4}$	$4\frac{1}{4}$	6.20	8.80	$\frac{5}{8} \times \frac{7}{8}$	5	10.25	16.25
$\frac{5}{8} \times \frac{7}{8}$	5	10.15	16.10	$\frac{3}{4} \times 1$	$5\frac{3}{4}$	16.00	25.40
$\frac{3}{4} \times 1$	6	16.65	26.50	$\frac{3}{8} \times \frac{1}{2}$	3	2.35	3.70
$\frac{7}{8} \times 1$	7	25.35	40.25	$\frac{1}{2} \times \frac{11}{16}$	$3\frac{1}{2}$	4.70	7.40
				$\frac{5}{8} \times \frac{7}{8}$	$4\frac{1}{2}$	9.15	14.50

Special Shape for Side Tools

Size Inches on Lines AA and BB	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{1}{4} \times \frac{1}{2}$	$4\frac{1}{2}$	\$1.65	\$2.60
$\frac{5}{16} \times \frac{5}{8}$	5	2.90	4.60
$\frac{3}{8} \times \frac{3}{4}$	6	4.35	6.90
$\frac{1}{2} \times \frac{7}{8}$	7	6.75	10.75
$\frac{5}{8} \times 1$	8	10.60	16.90
$\frac{3}{4} \times 1\frac{1}{4}$	9	15.35	25.90
$\frac{7}{8} \times 1\frac{3}{8}$	10	21.10	36.50
$1 \times 1\frac{1}{2}$	11	28.50	48.55
$\frac{9}{16} \times 1\frac{5}{8}$	15	42.75	

Note—Steel for side Tools and Cutting-off Tools is rolled to approximate size, but requires grinding on edges to bring to exact size.

Tool Steel

For use in Armstrong Tool Holders

Special Self-Hardening Steel

Ready to use. No treatment required
Three-Foot Bars



Squares

For use in Armstrong Turning and Boring Tools

Size, inches.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Per Bar.....	\$.50	.60	.85	1.20	1.65	2.10
Size, inches.....		$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$
Per Bar.....		\$3.00	4.50	5.75	7.60	9.00



Flats

For use in Armstrong Planer and Slotter Tools

Size, inches.....	$\frac{1}{4} \times \frac{3}{8}$	$\frac{5}{16} \times \frac{7}{16}$	$\frac{3}{8} \times \frac{1}{2}$	$\frac{7}{16} \times \frac{9}{16}$	$\frac{1}{2} \times \frac{11}{16}$
Per Bar.....	\$.85	1.20	1.60	2.10	2.75
Size, inches.....	$\frac{1}{2} \times \frac{3}{4}$	$\frac{9}{16} \times \frac{3}{4}$	$\frac{5}{8} \times \frac{7}{8}$	$\frac{3}{4} \times 1$	$\frac{7}{8} \times 1\frac{1}{8}$
Per Bar.....	\$3.00	3.40	4.20	5.75	7.50



Rounds

For use in Armstrong Turning Tools

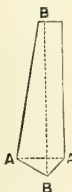
Size, inches.....		$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
Per Bar.....		\$.50	.70	1.00
Size, inches.....		$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
Per Bar.....		\$1.35	1.75	2.40



Bevel

For use in Armstrong Cutting-off Tools

Size of Steel, inches.....	$\frac{5}{8} \times \frac{1}{2}$	$\frac{3}{4} \times \frac{5}{8}$	$\frac{1}{8} \times \frac{3}{4}$	$\frac{1}{8} \times \frac{7}{8}$
Per Bar.....	\$.75	.75	.90	1.00
Size of Steel, inches.....	$\frac{3}{4} \times 1$	$\frac{3}{16} \times 1\frac{1}{8}$	$\frac{1}{4} \times 1\frac{1}{4}$	$\frac{1}{4} \times 1\frac{3}{8}$
Per Bar.....	\$1.60	2.00	2.75	3.10



Special Shape

For use in Armstrong Side Tools

Size of Steel on lines AA and BB, inches.....	$\frac{1}{8} \times \frac{1}{2}$	$\frac{5}{32} \times \frac{5}{8}$	$\frac{3}{16} \times \frac{3}{4}$	$\frac{1}{4} \times \frac{7}{8}$	$\frac{5}{16} \times 1$
Per Bar.....	\$.75	1.20	1.50	2.00	2.75
Size of Steel on lines AA and BB, inches.....	$\frac{3}{8} \times 1\frac{1}{4}$	$\frac{7}{16} \times 1\frac{3}{8}$	$\frac{1}{2} \times 1\frac{1}{2}$	$\frac{9}{16} \times 1\frac{5}{8}$	
Per Bar.....	\$3.75	4.75	5.75	6.75	

Note—Steel for Side Tools and Cutting-off Tools is rolled to approximate size, but requires grinding on edges to bring to exact size.

High-Speed Steel

Treatment—Cutters made from Armstrong High Speed Steel will give best results when treated as follows: Pre-heat slowly to 1200 degrees Fahrenheit, then bring up heat rapidly to 2150 degrees (or until steel begins to sweat) and cool in air (fan blast is best) or in oil. Draw cutters to 500 or 550 degrees to toughen and remove strains.

Three-Foot Bars, Annealed



Squares

For use in Armstrong Turning and Boring Tools

Size, inches.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Per Bar.....	\$.75	.90	1.30	1.80	2.50	3.15
Size, inches.....		$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$
Per Bar.....		\$4.50	6.75	8.65	11.50	13.50



Flats

For use in Armstrong Planer and Slotter Tools

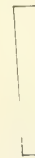
Size, inches.....	$\frac{1}{4} \times \frac{3}{8}$	$\frac{5}{16} \times \frac{7}{16}$	$\frac{3}{8} \times \frac{1}{2}$	$\frac{7}{16} \times \frac{9}{16}$	$\frac{1}{2} \times \frac{11}{16}$
Per Bar.....	\$1.30	1.80	2.40	3.15	4.15
Size, inches.....	$\frac{1}{2} \times \frac{3}{4}$	$\frac{9}{16} \times \frac{3}{4}$	$\frac{5}{8} \times \frac{7}{8}$	$\frac{3}{4} \times 1$	$\frac{7}{8} \times 1\frac{1}{8}$
Per Bar.....	\$4.50	5.10	6.30	8.65	11.25



Rounds

For use in Armstrong Turning Tools

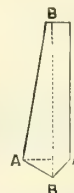
Size, inches.....		$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
Per Bar.....		\$.75	1.05	1.50
Size, inches.....		$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
Per Bar.....		\$2.00	2.60	3.60



Bevel

For use in Armstrong Cutting-off Tools

Size of Steel, inches.....	$\frac{5}{8} \times \frac{1}{2}$	$\frac{3}{4} \times \frac{5}{8}$	$\frac{1}{8} \times \frac{3}{4}$	$\frac{1}{8} \times \frac{7}{8}$
Per Bar.....	\$1.15	1.15	1.35	1.50
Size of Steel, inches.....	$\frac{3}{4} \times 1$	$\frac{3}{16} \times 1\frac{1}{8}$	$\frac{1}{4} \times 1\frac{1}{4}$	$\frac{1}{4} \times 1\frac{3}{8}$
Per Bar.....	\$2.40	3.00	4.15	4.65



Special Shape

For use in Armstrong Side Tools

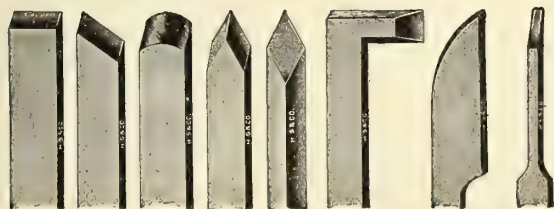
Size of Steel on lines AA and BB, inches.....	$\frac{1}{8} \times \frac{1}{2}$	$\frac{5}{32} \times \frac{5}{8}$	$\frac{3}{16} \times \frac{3}{4}$	$\frac{1}{4} \times \frac{7}{8}$	$\frac{5}{16} \times 1$
Per Bar.....	\$1.15	1.80	2.25	3.00	4.15
Size of Steel on lines AA and BB, inches.....	$\frac{3}{8} \times 1\frac{1}{4}$	$\frac{7}{16} \times 1\frac{3}{8}$	$\frac{1}{2} \times 1\frac{1}{2}$	$\frac{9}{16} \times 1\frac{5}{8}$	
Per Bar.....	\$5.65	7.15	8.65	10.00	

Note—Steel for side Tools and Cutting-Off Tools is rolled to approximate size, but requires grinding on edges to bring to exact size.

Turning Tools for Metal, Bone, Hard Rubber, Etc.

Buck Bros.

With Handles



No. 1 No. 2 No. 4 No. 5 No. 6 No. 7 No. 9 No. 11

	Dozen	Each
No. 1 Square points, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch.....	\$4.20	\$.42
No. 2 Skew points, right hand, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch.....	4.20	.42
No. 3 Skew points, left hand, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch.....	4.20	.42
No. 4 Round points, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch.....	4.20	.42
No. 5 Spear points, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch.....	4.40	.44
No. 6 Square graver, $\frac{1}{4}$, $\frac{5}{16}$ and $\frac{3}{8}$ inch.....	4.40	.44
No. 7 Inside tool, right hand.....	6.00	.60
No. 8 Inside tool, left hand.....	6.00	.60
No. 9 Side tool, right hand.....	6.00	.60
No. 10 Side tool, left hand.....	6.00	.60
No. 11 Cutting-off tool.....	6.00	.60

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

Tool Holders and Tools

O K

This system of Holders and Tools offers all the advantages of a solid forged cutting tool combined with the economical use of high priced high speed steel. It will be noticed that for lathe, planer and shaper work one holder, and for boring mill work two holders only are required for the full range of work. With these holders and assorted tools and fixtures a mechanic has, contained in a small wood block, an outfit that will enable him to do any ordinary range of work. These tools are Hydraulic and Drop-forged from best grades of high speed and other steels and are guaranteed to be correctly ground and tempered.

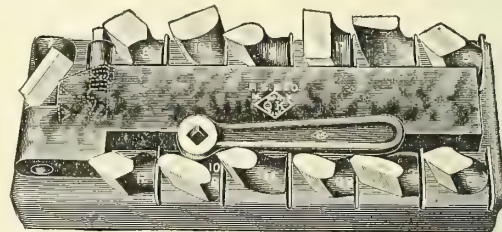
Standard Complete Sets, Number 100



Consisting of Holder and twenty-two assorted tools and fixtures, including block. In size A complete set we furnish single knurl. Complete sets, sizes B and C, are regularly furnished with double knurl. With single knurl, \$1.00 less. All cutters are made from the best high speed steel obtainable.

Number	Size of Shank Inches	Contains Tools	Set
A	$\frac{3}{8} \times \frac{3}{4}$	Nos. 1, 2, 13, 3, 4, 5, 6, 7, 8, 9, 12, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25.....	\$10.75
B	$\frac{1}{2} \times 1$	Nos. 1, 2, 13, 3, 4, 5, 6, 7, 8, 9, 12, 11, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25.....	13.00
C	$\frac{1}{2} \times 1$ $\frac{5}{16} \times 1\frac{1}{8}$ $\frac{5}{8} \times 1\frac{1}{4}$	Nos. 13, 17, 14, 10L, 10R, 11R, 11L, 15, 16, 5, 9, 6, 1, 12, 2, 13, 12..... 18, 19, 23, 24, 25.....	15.00 15.00

Standard Lathe Working Sets, Number 200

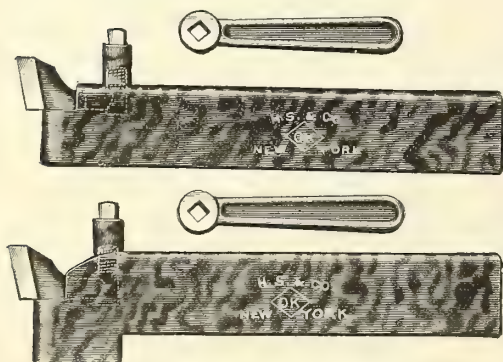


Working Sets in sizes from A to C consist of a Holder, Block and thirteen assorted tools. From D to H consist of a Holder, Block and twelve assorted tools. All cutters are made from the best high speed steel obtainable.

Number	Size of Shank Inches	Contains Tools	Set
A	$\frac{3}{8} \times \frac{3}{4}$	Nos. 5, 6, 1, 2, 17, 9, 13, 14, 8, 12, 12, 7, 2.....	\$5.85
B	$\frac{1}{2} \times 1$	Nos. 5, 6, 1, 2, 17, 11R, 13, 14, 8, 9, 12, 7, 2.....	6.50
C	$\frac{1}{2} \times 1$ $\frac{5}{16} \times 1\frac{1}{8}$ $\frac{5}{8} \times 1\frac{1}{4}$ $\frac{3}{4} \times 1\frac{3}{8}$	Nos. 12, 9, 2, 1, 14, 13, 10R, 10L, 11R, 17, 5, 6, 7.....	8.00
D	$1 \times 1\frac{3}{4}$	Nos. 1, 2, 5, 6, 9, 10L, 10R, 11R, 11L, 17, 12, 13.....	13.00
E	$1 \times 1\frac{3}{4}$	Nos. 1, 2, 5, 6, 9, 10R, 10L, 11R, 11L, 17, 12, 12.....	17.15
F	$1\frac{1}{4} \times 2$	Nos. 11R, 11R, 11L, 5A, 6A, 10R, 10L, 12, 9, 5, 6, 17.....	22.25
G	$1\frac{1}{2} \times 2$	Nos. 11R, 11R, 11L, 12, 9, 5, 6, 11R, 11L, 17, 11R, 11L.....	29.25
H	$1\frac{3}{4} \times 2\frac{1}{2}$	Nos. 11R, 11R, 11R, 11L, 11L, 11L, 12, 9, 5, 6, 17, 11R.....	37.25

Working sets for shaper use same as above, except tools are ground with same clearance as planer tools, and tools Nos. 20 and 11L substituted for tools Nos. 13 and 14. Be sure and specify for shaper use when ordering.

Standard Lathe Holders

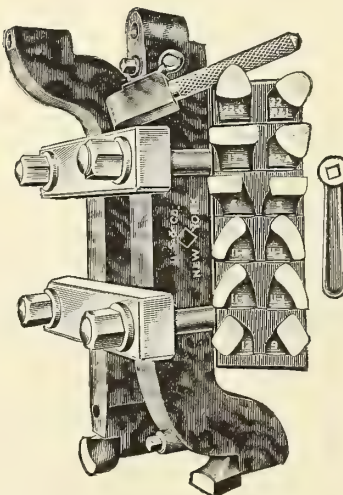


Number	Size Shank Inches	Height from point of tool to bottom of Holder		Each
		Straight Inches	Drop Inches	
A	$\frac{3}{8} \times \frac{3}{4}$	$1\frac{1}{16}$	$\frac{7}{8}$	\$1.80
B	$\frac{1}{2} \times 1$	$1\frac{3}{8}$	$1\frac{1}{8}$	2.00
C	$\frac{1}{2} \times 1$ $\frac{5}{16} \times 1\frac{1}{8}$ $\frac{5}{8} \times 1\frac{1}{4}$	...	$1\frac{1}{16}$ $1\frac{1}{4}$ $1\frac{5}{16}$	2.50
D	$\frac{3}{4} \times 1\frac{3}{8}$	$2\frac{1}{16}$	$1\frac{5}{8}$	4.00
E	$1 \times 1\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{3}{8}$	6.00
F	$1\frac{1}{4} \times 2$	$2\frac{5}{8}$	2	7.00
G	$1\frac{1}{2} \times 2$	$2\frac{3}{4}$	2	8.00
H	$1\frac{3}{4} \times 2\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{1}{2}$	10.00

The cut shows planer holder when used as a goose-neck holder, and also in a reversed position, when used as a straight holder.

We recommend the straight end of the double-ended planer holder when cutting steel, and also where it is necessary to get up close to a shoulder or for working into a pocket. For other uses we recommend the goose-neck end of the holder.

Standard Planer Sets



With Double End Holders

Number	Size Shank Inches	Contains	Set
C	$\frac{3}{4} \times 1\frac{1}{2} \times 12$	12 Tools, Nos. 11R, 11L, 20, 10R, 10L, 6, 5, 9, 17, 12, 1, 2.....	\$11.00
D	$1 \times 1\frac{3}{4} \times 15$	12 Tools, numbers as above	17.25
E	$1\frac{1}{4} \times 2 \times 18$	12 Tools, Nos. 11R, 11L, 20, 10R, 10L, 6A, 5A, 9, 17, 12, 1, 2.....	21.15
F	$1\frac{1}{2} \times 2\frac{1}{2} \times 24$	12 Tools, numbers 11R, 11L, 10R, 10L, 9, 12, 5, 6, 17, 22, R and L, 22 str. 11L.....	27.75
G	$1\frac{3}{4} \times 3 \times 24$	12 Tools, numbers as above in Size F.....	36.75
H	$2 \times 3\frac{1}{2} \times 24$	12 Tools, numbers as above in Size F.....	45.75

Planer Holders Only

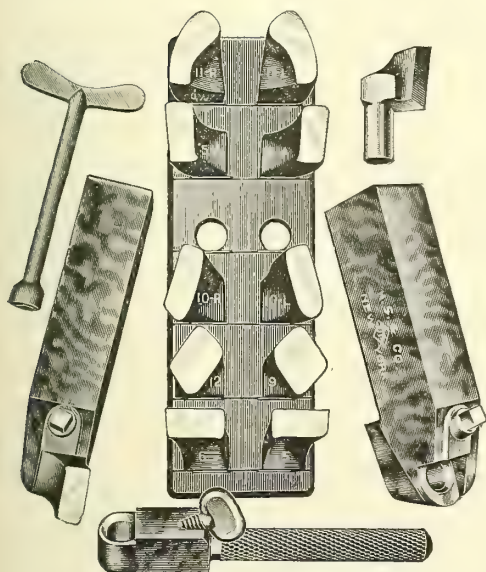
Number	Size Shank Inches	Double End Each	Straight Each
C	$\frac{3}{4} \times 1\frac{1}{2} \times 12$	\$6.00	\$4.50
D	$1 \times 1\frac{3}{4} \times 15$	8.00	6.00
E	$1\frac{1}{4} \times 2 \times 18$	10.00	7.00
F	$1\frac{1}{2} \times 2\frac{1}{2} \times 24$	12.00	8.00
G	$1\frac{3}{4} \times 3 \times 24$	15.00	10.00
H	$2 \times 3\frac{1}{2} \times 24$	18.00	12.00

Special combinations furnished at special prices

Tool Holders and Tools

O K

Boring Mill Sets



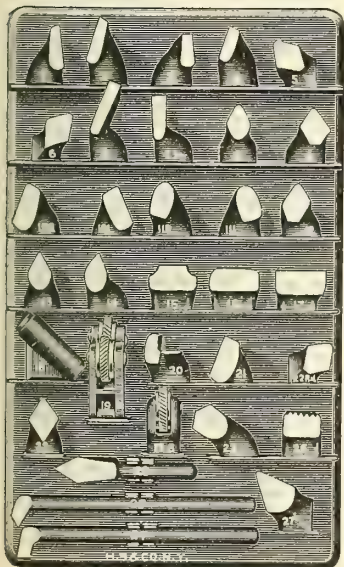
This type of Holder can be used on any boring mill. Care should be taken to give the proper dimensions for shank, that is, the width, height and length. These Holders have sufficient drop to bring the cutting edge of a new tool $\frac{1}{4}$ inch above the top of Holder. In ordering tools for these Holders be careful to specify for use in Type OKB Holders, as these tools are ground in a way that gives them a support both on the back and sides, and all tools are interchangeable on either the right or left hand side of Holder.

Type OKB, size F, $1\frac{1}{4} \times 1\frac{1}{4}$ inch, complete with pair of Holders, right and left, 12 tools and hand grinding Holder	\$28.00
Type OKB, size G, $1\frac{1}{2} \times 1\frac{1}{2}$ inch, complete with pair of Holders, right and left, 12 tools and hand grinding Holder	38.00
Type OKB, size H, $1\frac{3}{4} \times 2$ inch, complete with pair of Holders, right and left, 12 tools and hand grinding Holder	48.00
Holders only, Type OKB, Size F, per pair, $1\frac{1}{4} \times 1\frac{1}{4}$ inch	12.00
Holders only, Type OKB, Size G, per pair, $1\frac{1}{2} \times 1\frac{1}{2}$ inch	16.00
Holders only, Type OKB, Size H, per pair, $1\frac{3}{4} \times 2$ inch	20.00

Holders to hold sizes F, G and H Tools are made to fit any size boring mill at the same price as above.

Tools for O K Holders

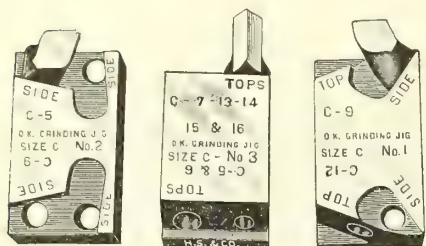
The cut shows the various tools supplied for O K Holders described on this and the preceding page. In ordering state whether they are for use on Lathe, Shaper, Planer or Boring Mill. Made from best High Speed Steel.



No.	Tools Size	A	B	C	D	E	F	G	H
1	Left Side Tool.....	\$.30	\$.33	\$.40	\$.75	\$.90	\$1.25	\$1.75	\$2.25
2	Right Side Tool, bent.....	.30	.33	.40	.75	.90	1.25	1.75	2.25
3	Left Side Brass Tool.....	.30	.33						
4	Right Side Brass Tool.....	.30	.33						
5	Left Offset Diamond Tool.....	.30	.33	.40	.75	.90	1.25	1.75	2.25
6	Right Offset Diamond Tool.....	.30	.33	.40	.75	.90	1.25	1.75	2.25
7	Right Side Parting Tool.....	.32	.35	.45	.90				
8	Straight Brass Tool.....	.30	.33	.40					
9	Left Diamond Point Tool.....	.30	.33	.40	.75	.90	1.25	1.75	2.25
10	Roughing Tool, right and left.....			.40	.75	.90	1.25	1.75	2.25
11	Hog Nose Tool, right and left.....		.33	.40	.75	.90	1.25	1.75	2.25
12	Right Diamond Point.....	.30	.33	.40	.75	.90	1.25	1.75	2.25
13	Straight Thread Tools.....	.35	.40	.50	.85	1.25			
14	Right Thread Tools.....	.35	.40	.50	.85	1.25			
15	Female Radius Tools $\frac{3}{32}, \frac{1}{8}, \frac{5}{32}$ inches.....	.55	.63	.75	1.25	2.00			
16	Male Radius Tools $\frac{3}{32}, \frac{1}{8}, \frac{5}{32}$ inches.....	.55	.63	.75	1.25	2.00			
17	Flat Nose Tool.....	.35	.40	.60	1.00	1.25	1.50	2.00	2.50
18	Inside Boring Fixture.....	.90	1.00	1.10					
19	Knurling Fixture.....	.90	1.00	2.00					
20	Steel Finishing Tool for Shaper and Planer.....			.50	.75	.90	1.25	1.75	2.25
21	Bull Nose Roughing Tool.....				.85	.90			
22	Round Nose Tool, right and left or Straight.....			.40	.75	1.25	1.50	2.00	2.50
23	Spotting Tool, solid.....			.40	.75				
23	Spotting Tool for No. 18.....	.20	.25	.30					
24	Inside Boring Tool.....	.20	.25	.30					
25	Inside Threading Tool.....	.20	.25	.30					
26	Thread Chasing Tool.....			1.50	2.00				
27	Dove-tail Tool.....			.50	.85	1.25			

Grinding Fixtures

For O K Tools

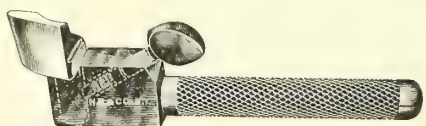


For Machine Grinding

These fixtures are intended for use on a disc grinder. All of these fixtures will grind a tool on the correct angle and maintain that angle until the tool is worn out, by simply placing them in their respective holes and sliding them along on the table up to the wheel. By the use of these fixtures all the grinding can be done by one man, the machine operators simply exchanging dull tools for sharp ones.

All sizes, each \$2.50

For Hand Grinding



This fixture is intended for use on emery wheel or grindstone, and one fixture will grind every shape that we make of same size. Made in all sizes.

All sizes, each \$1.50

Special combinations furnished at special prices

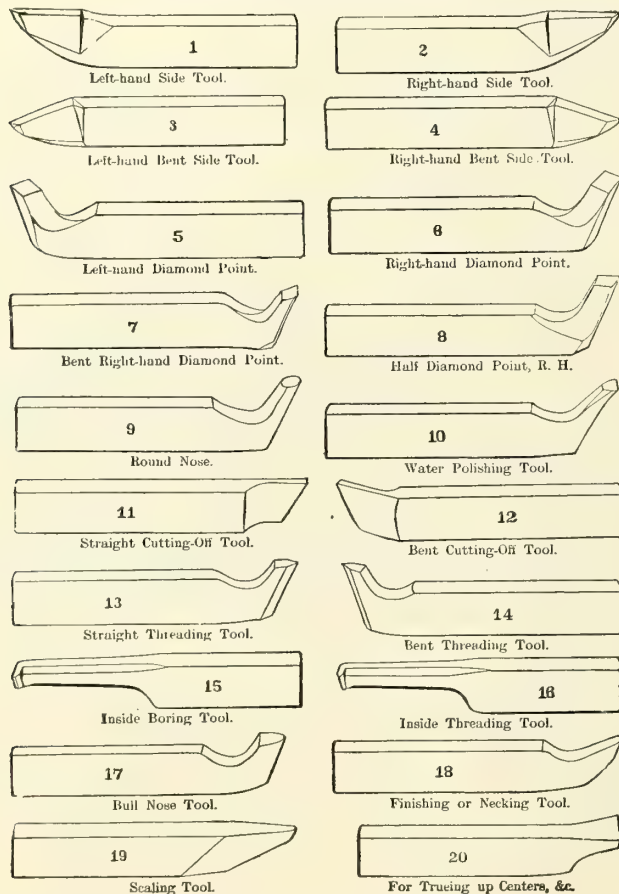
Lathe, Planer and Shaper Tools

H. S. & Co.

Of all the tools used in a machine shop, none perform so important a part in the earning of a profit as Lathe, Planer and Shaper Tools, for they are the connecting link between the machines and the work being done.

An inferior tool, imperfect as to shape or temper, may be the means of reducing your profit more than the price of the highest grade tool obtainable.

Set of Twenty Lathe Tools



Set of 16 contains Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16 and 19.
Set of 12 contains Nos. 1, 2, 4, 5, 6, 9, 11, 13, 14, 15, 16 and 19.
Set of 10 contains Nos. 1, 2, 5, 6, 9, 11, 13, 15, 16 and 19.
Set of 8 contains Nos. 1, 2, 6, 9, 11, 13, 16 and 19.

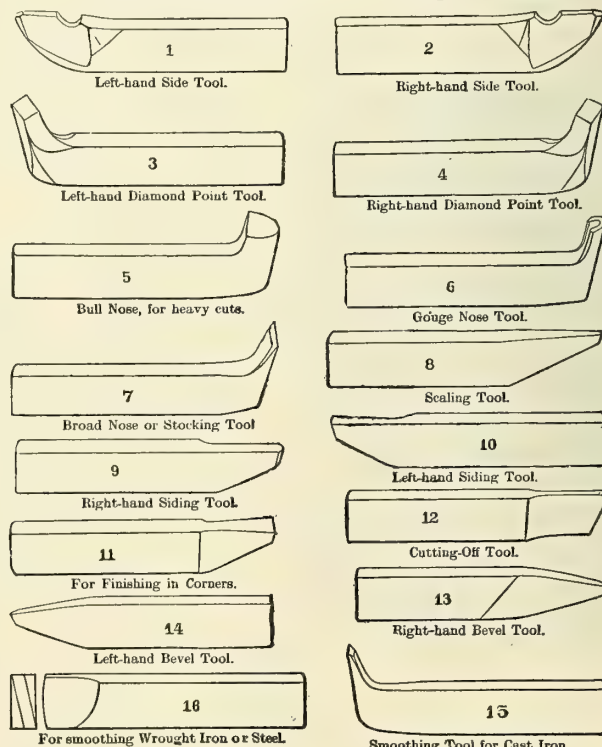
Many kinds of tools have been devised for this kind of work, but none yet which can beat the solid forged tool if properly made of the right material. We make two grades of these tools—carbon steel tools for all ordinary purposes, made of a special analysis crucible tool steel, and high-speed tools for the severest kind of work, made of the highest grade of high-speed steel.

The Lathe Tools are made in twenty different styles, assembled in sets of eight, ten, twelve, sixteen and twenty tools. The Planer and Shaper Tools are made in sixteen styles, assembled in sets of twelve and sixteen tools.

Each set is packed in a separate box, nicely labeled, but if full sets are not wanted, selections can be made of any particular styles.

Both grades are hammer forged at the proper heat, each tool shaped to a standard size by gauges and templets, tempered by a special process, and ground ready for use, the product of an up-to-date plant and years of experience in working tool steel.

Set of Sixteen Planer and Shaper Tools



Set of 12 contains Nos. 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13 and 14.

For prices see next page

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Lathe, Planer and Shaper Tools

H. S. & Co.

(For illustrations see preceding page)

Carbon Steel

Lathe Tools

Sets of	8	10	12	16	20
$\frac{1}{4} \times \frac{1}{2} \times 4$ long, per set	\$1.36	\$1.70	\$2.04	\$2.72	\$3.40
$\frac{5}{16} \times \frac{5}{8} \times 4\frac{1}{2}$ long, per set	1.36	1.70	2.04	2.72	3.40
$\frac{3}{8} \times \frac{5}{8} \times 5$ long, per set	2.00	2.50	3.00	4.00	5.00
$\frac{3}{8} \times \frac{3}{4} \times 6$ long, per set	2.00	2.50	3.00	4.00	5.00
$\frac{1}{2} \times 1 \times 8\frac{1}{2}$ long, per set	4.00	5.00	6.00	8.00	10.00
$\frac{5}{8} \times 1\frac{1}{4} \times 9\frac{1}{2}$ long, per set	6.00	7.50	9.00	12.00	15.00
$\frac{5}{8} \times 1\frac{1}{2} \times 11$ long, per set	8.00	10.00	12.00	16.00	20.00
$\frac{3}{4} \times 1\frac{1}{2} \times 12$ long, per set	8.80	11.00	13.20	17.60	22.00
$\frac{3}{4} \times 1\frac{3}{4} \times 13$ long, per set	10.80	13.50	16.20	21.60	27.00
$\frac{7}{8} \times 2 \times 14$ long, per set	14.00	17.50	21.00	28.00	35.00
$1 \times 2 \times 15$ long, per set	16.80	21.00	25.20	33.60	42.00
$1\frac{1}{8} \times 2\frac{1}{4} \times 16$ long, per set	22.00	27.50	33.00	44.00	55.00
$1\frac{1}{4} \times 2\frac{1}{2} \times 18$ long, per set	28.80	36.00	43.20	57.60	72.00

Planer and Shaper Tools

Sets of	12	16
$\frac{3}{8} \times \frac{3}{4} \times 6$ long, per set	\$3.00	\$4.00
$\frac{1}{2} \times 1 \times 9$ long, per set	6.00	8.00
$\frac{5}{8} \times 1\frac{1}{4} \times 11$ long, per set	9.00	12.00
$\frac{5}{8} \times 1\frac{1}{2} \times 13$ long, per set	13.50	18.00
$\frac{3}{4} \times 1\frac{1}{2} \times 14$ long, per set	15.00	20.00
$\frac{3}{4} \times 1\frac{3}{4} \times 15$ long, per set	18.00	24.00
$1 \times 2 \times 17$ long, per set	27.00	36.00
$1\frac{1}{4} \times 2\frac{1}{2} \times 20$ long, per set	48.00	60.00

The lengths given above are nearly correct, but vary slightly

High Speed Steel

Lathe Tools

Each	Each
$\frac{3}{8} \times \frac{3}{4}$	\$1.00
$\frac{1}{2} \times 1$	1.90
$\frac{5}{8} \times 1\frac{1}{4}$	3.00
$\frac{5}{8} \times 1\frac{1}{2}$	\$4.70
$\frac{3}{4} \times 1\frac{1}{2}$	5.80
1×2	11.00

Planer and Shaper Tools

Each	Each
$\frac{1}{2} \times 1$	\$2.00
$\frac{5}{8} \times 1\frac{1}{4}$	3.75
$\frac{5}{8} \times 1\frac{1}{2}$	5.25
$\frac{3}{4} \times 1\frac{1}{2}$	\$6.00
1×2	12.00

Special sizes and shapes of these tools made to order at special prices

Knurls and Knurling Tools

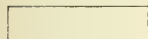
H. S. & Co.

Knurls



2

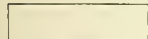
Indicate shape and width of face



4

Letters

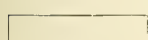
Indicate pattern and design



6

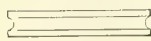
Examples

8-A is a wide flat face Knurl with fine straight lines

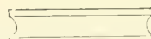


8

7-C is a wide concave face Knurl with coarse straight lines



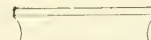
1



3



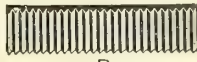
5



7



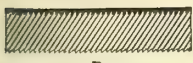
A



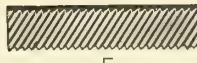
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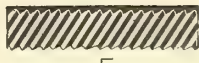
C



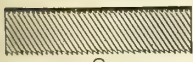
D



E



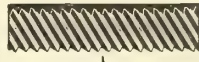
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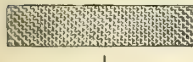
G



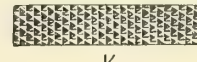
H



I



J



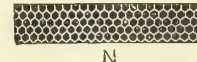
K



L



M

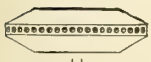


N

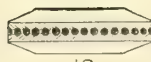


O

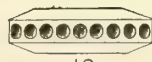
Fancy Knurls



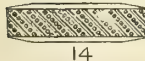
11



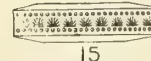
12



13



14

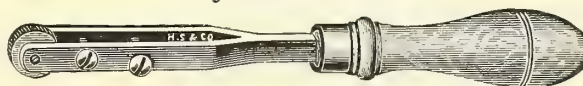


15



16

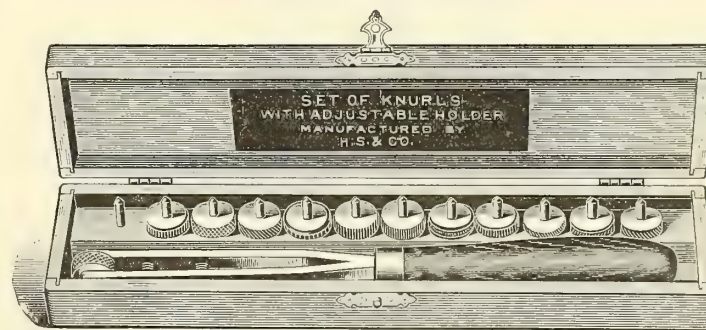
Adjustable Holders



Will hold Knurls any width up to $\frac{1}{2}$ inch

No. 20 Polished applewood handles, per dozen..... \$5.50

Sets of Knurls



Polished Hardwood Boxes

- No. 6 Contains 6 Knurls (No. 8-B, 8-E, 8-K, 4-A, 5-E, 7-B) and adjustable Knurl Holder; room for 18 Knurls more, set..... \$3.00
- No. 12 Contains 12 Knurls (No. 8-A, 8-B, 8-G, 8-H, 8-J, 8-K, 5-B, 7-E, 7-H, 8-N, 12, 15) and adjustable Holder; room for 12 Knurls more, set..... 5.00
- No. 24 Contains 24 Knurls (8-A, 8-B, 8-C, 8-E, 8-G, 8-H, 8-I, 8-J, 8-K, 8-L, 8-M, 8-N, 8-O, 3-G, 5-H, 7-A, 7-B, 7-C, 6-H, 11, 12, 14, 15, 16) and adjustable Knurl Holder, set..... 9.00

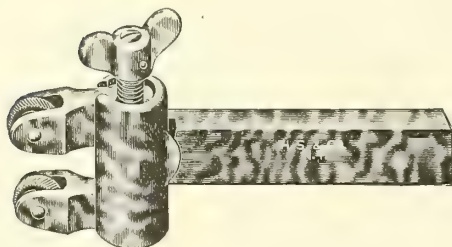
We can supply almost anything in the knurl line. Send sample or impression.

Nos. 11, 12 and 13, dozen..... \$5.00

Nos. 14, 15 and 16, dozen..... 4.00

Knurling Tools and Knurls

Billings and Spencer
Improved Lathe Tool

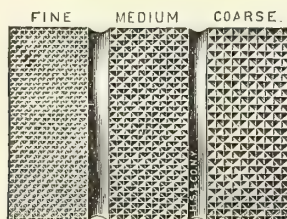


	Inches
Maximum opening between Knurls.....	1 3/8
Minimum opening between Knurls.....	3/16
Depth from center of Knurls.....	7/8
Width of Knurls.....	3/16
Diameter of Knurls.....	3/4

The movable arms holding the Knurls, in connection with the rocking joint, have a positive opening and closing movement in parallel lines, actuated by a right and left hand screw, moving the Knurls toward and from each other. The Knurls will center themselves to the work.

Holder only, 1 x 1/2 x 6 inches (without Knurls,) each \$4.25

Knurls for Above

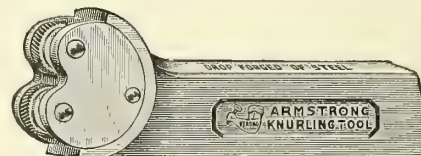


Actual Size

This cut shows the style of work produced by this tool—in ordering be sure to state whether fine, medium, or coarse Knurls are wanted.

Per pair.....\$.75

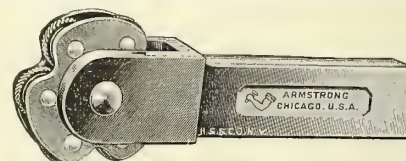
Armstrong
Lathe Tool



A good Knurling Tool should be self centering with as little lost motion as possible, and the knuckle or joint must have ample bearing to resist the severe strains of both end and side thrust. In both of these essentials as well as in general design and high quality of material and workmanship the Armstrong Knurling Tool is unexcelled.

Number	Size, Inches	Each Complete	Extra Knurls Per Pair
1-K	1/2x1 1/8x6 1/2	\$4.50	\$.75

Lathe Tool with Revolving Head



The advantages of this tool are apparent at a glance. The revolving head is fitted with three pairs of Knurls, fine, medium and coarse, either of which can be used without the inconvenience and loss of time incident to changing Knurls.

Number	Size, Inches	Each, Complete	Extra Knurls Per Pair
3-K	1/2x1 1/8x6 1/2	\$6.00	\$.75

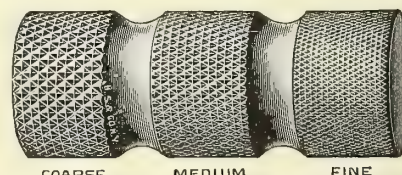
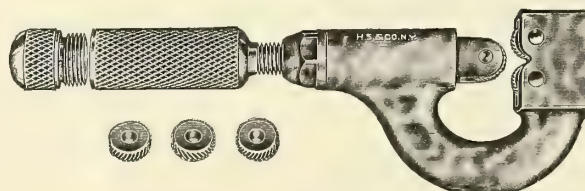


Illustration shows full size Diamond Knurling

Note—Knurls can be furnished coarse, medium and fine in either Straight line or Diamond pattern. Medium Diamond Knurls will be sent with tool when not otherwise specified.

Standard width of Knurl face is 1/4 inch, but Knurls with full width face (3/8 inch) will be furnished at regular price when required and so specified.

Wade
Hand Tool

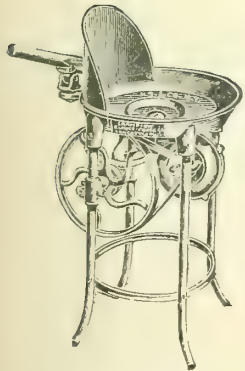


A small Knurling Tool, 7 inches in length, to be held in the hand, and is especially adapted for quick accurate knurling on the smallest possible piece required up to its full capacity of 3/4 of an inch in diameter, and is an addition to the kit that makes the eyes sparkle every time it is brought into use, for there is no limit to the length of the pieces which can be knurled, the work being well supported between the three Knurls. The handle from which adjustments are obtained is hollow and contains the extra set of three Knurls, a coarse and fine set being furnished with each Knurling Tool.

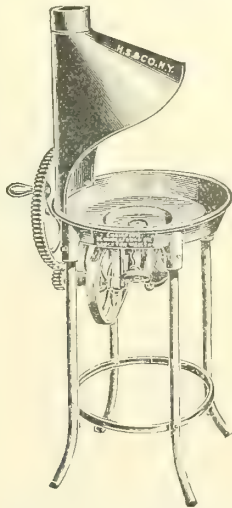
Each.....\$5.00

Forges Champion

Agricultural



With Lever and Shield

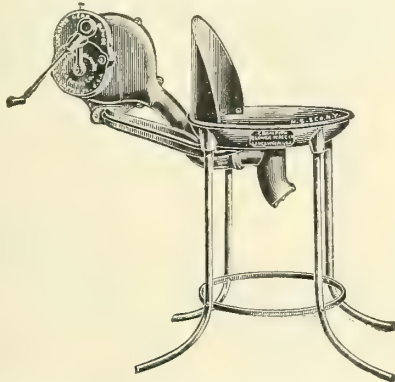


With Crank and Half-hood

Meets the demand of those who wish a strong and rigid forge, not too expensive, and suitable for all light repairing, etc. The size of hearth is 18 inches diameter; fan 8 inches diameter:

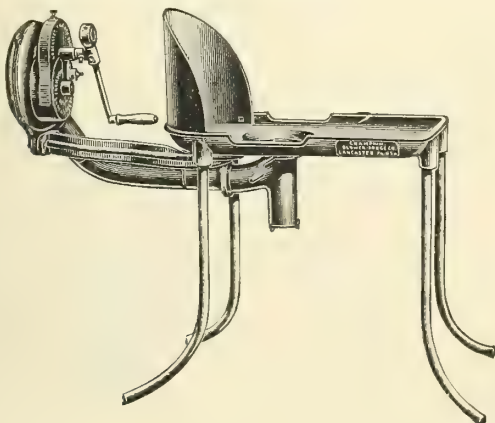
	Each
No. 150. With lever and shield, weight 75 pounds.....	\$14.00
No. 151. With lever and half-hood, weight 80 pounds.....	16.00
No. 152. With crank and shield, weight 75 pounds.....	14.00
No. 153. With crank and half-hood, weight 80 pounds.....	16.00

Geared Agricultural



A well-built, good blast producer, readily portable. Makes a splendid low-priced rivet forge. Hearth 22 inches diameter; 10-inch fan.

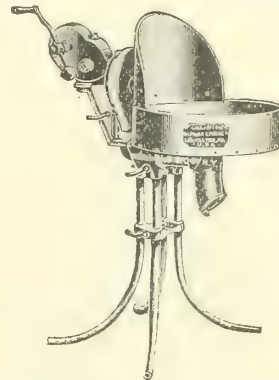
	Each
No. 45. With shield (as shown), weight 115 pounds.....	\$27.00
No. 46. With half-hood, weight 120 pounds.....	30.00



Similar to Nos. 45 and 46, with rectangular hearth 23 by 35 inches; 12-inch fan.

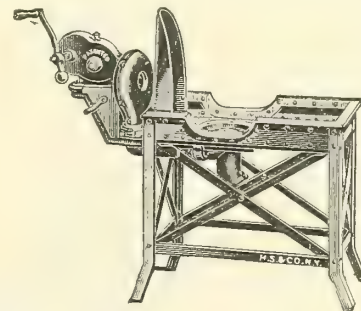
	Each
No. 42. With shield (as shown), weight 165 pounds.....	\$36.00
No. 43. With half-hood, weight 170 pounds.....	40.00

Steel Rivet or Toolmakers



This forge is constructed from structural steel and is very strong and durable. It has a patented high-speed spiral gearing, adjustable ball bearings and runs noiselessly. It will produce blasts to weld 3½ to 4 inches iron in ten minutes. The crank turns either way to produce the blast. The hearth is 18 inches in diameter; the fan 9 inches; height 30 inches.

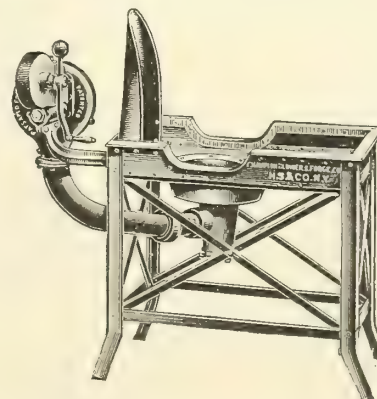
	Each
No. 401. With shield (as shown), weight 115 pounds.....	\$35.00
No. 402. With half-hood, weight 120 pounds.....	38.00
No. 403. With closed hood, weight 125 pounds.....	40.00



Special attention is called to the stiff and rigid, yet light, construction of these forges. It is a practical and serviceable forge for railroad, structural, bridge, boiler or toolmakers' work. The blower and gearing may be quickly taken off and boxed where it is necessary to transport the forge any distance. Has the same blower as described above. Hearth 24 by 24 inches; fan 9 inches diameter.

	Each
No. 404. With shield (as shown), weight 170 pounds.....	\$45.00
No. 405. With half-hood, weight 180 pounds.....	49.00

Boilermakers and Machinists



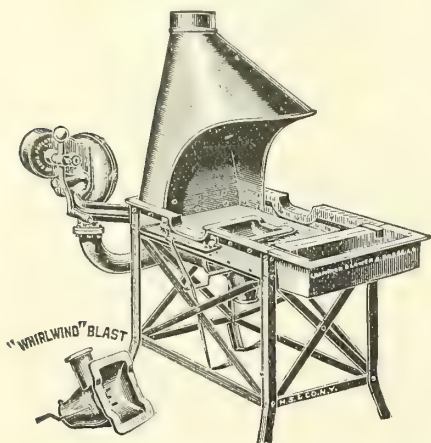
The general specifications of these forges is the same as Nos. 404 and 405. The hearth and fan are larger, the hearth measuring 30 by 30 inches and the fan 10 inches diameter.

	Each
No. 406. With shield (as shown), weight 230 pounds.....	\$55.00
No. 407. With half-hood, weight 240 pounds.....	60.00
Water Tank, \$5.00 extra	

Forges and Blowers

Champion

Blacksmiths Steel Forge

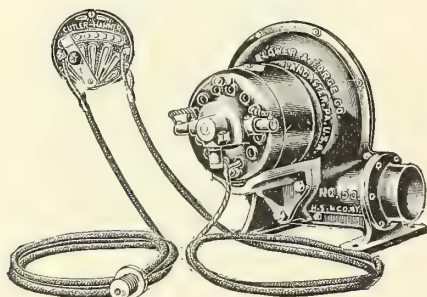


These Forges are equipped with the fan mechanism of the Nos 401, etc., and the "Whirlwind" Anti-Clinker Heavy Nest Tuyere Iron. This Tuyere Iron furnishes a true rotary blast, saving time and fuel and providing heat where it is wanted in the hearth. Fan 12 inches diameter

		Each
No. 408	Hearth 30 x 36 inches, weight 300 pounds.....	\$65.00
No. 409	Hearth 30 x 40 inches, weight 310 pounds.....	70.00

Water Tank, \$5.00 extra

Electric Blower

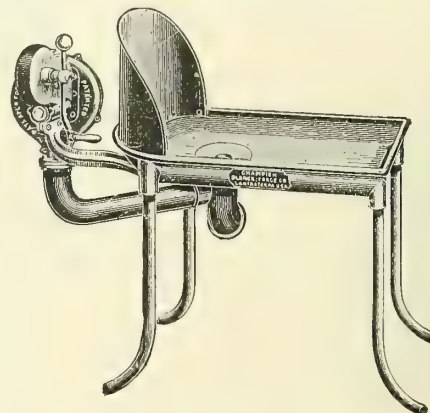


One-fire, variable speed, with Universal motor; detached rheostat giving six speeds, and steel pressure case.

This Blower is furnished with a Universal motor, wound for both alternating and direct current, either 110 or 220 volts. The detached rheostat can be placed wherever desired by the operator. The motor is generously designed, insuring capacity and endurance. They are guaranteed to run the blower at highest speed and greatest pressure open and away from the fire for eight to ten hours without a stop. Weight, 35 pounds.

No. 50	Complete with rheostat, but without cord and attachment plug.....	\$40.00
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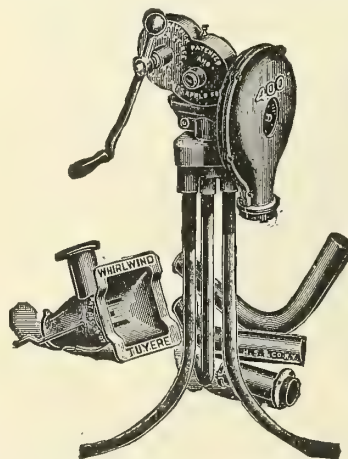
Machinists Cast Iron Hearth Forge



With the same fan mechanism of the Nos. 401, etc. A splendid forge, with the shield, for railroad bridge and boiler work, and, with the Half-hood, for tool dressing and general repair work. Guaranteed to furnish sufficient blast in ten minutes to weld a 4-inch iron with ease.

		Each
No. 434	With Shield (as shown), weight 195 pounds.....	\$40.00
No. 435	With Half-hood, weight 200 pounds.....	44.00

Blacksmiths Steel Blower



This Blower, with its high speed spiral gearing and adjustable ball bearings will produce a roaring white-heat pressure blast without injury to the gearing or the bearings. The phosphor bronze spiral gear and tool steel spiral shaft make the durability of the blower an absolute certainty even with the most careless handling.

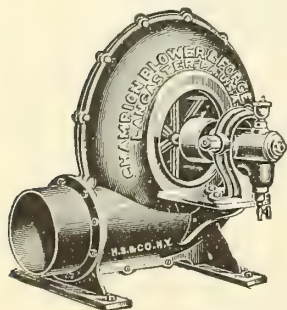
The ball bearings are made of the highest grade tool steel, with cups and cones hardened and ground.

With each blower is furnished a Whirlwind blast, Anti-clinker, Heavy Nest Tuyere Iron. It produces a rotary blast and heats iron one-third

quicker, as the heat is not blown through the fire, as in other tuyere irons. The saving in time and coal will pay for the cost of the blower in a short time. Furnished Right Hand (as shown) unless ordered Left Hand. Fan, 12 inches diameter.

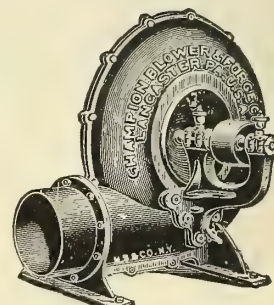
Weights, Blower, 100 pounds; Tuyere Iron, 60 pounds, complete. \$37.00

Blowers and Exhausters



Blower

No.	Each	Height, Inches	Inside Diam. of Inlet, Inches	Inside Diam. of Out-let, Inches	R. P. M. 2-ounce Blast for Boiler Fires	R. P. M. 4-ounce Blast for Forge Fires	Num-ber of Pulley, Inches	Blower Diam. Face of Pulley, Inches	Exhauster Diam. Face of Pulley, Inches
1/2	\$12.00	12	4 1/2	3 1/2	3,300	4,500	1	2 9/16	2 1/4
1	15.00	15	5	4	3,000	4,000	2	3	2 9/16
2	20.00	18	5 3/4	4 3/4	2,600	3,600	4	3	2 1/2
3	25.00	21 1/2	6 1/2	5 3/4	2,300	3,200	6	3 1/2	3 1/2
4	33.00	25 1/2	7 1/2	7 1/2	1,928	2,682	9	4 1/4	4 1/4
5	44.00	29 1/4	9	9	1,638	2,279	15	5 1/8	5 1/8
6	55.00	34	10 1/2	10 1/2	1,410	1,961	18	6	6
7	70.00	40	12	12	1,194	1,662	24	6 3/4	6 3/4
8	90.00	45	14	14	1,018	1,417	30	8	8
9	150.00	50	16	16	878	1,234	40	9	9
10	200.00	57	18	18	766	1,065	52	10	10

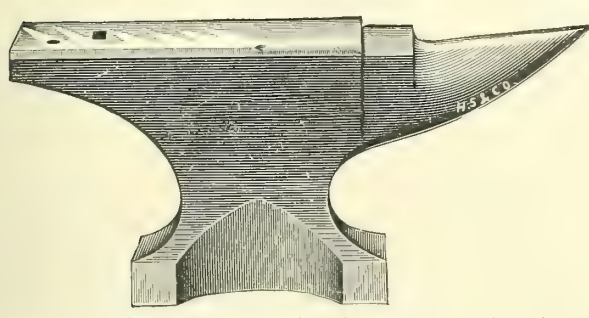


Exhauster

These Blowers and Exhausters are adapted for handling air in large volume and moderate pressure. Their uses are too numerous to detail. They are supplied with Bottom, Horizontal Discharge (as shown) either hand. They can also be furnished with Top Horizontal or Upward Discharge at 10 per cent. advance over price of Bottom Horizontal.

Anvils

Hay-Budden

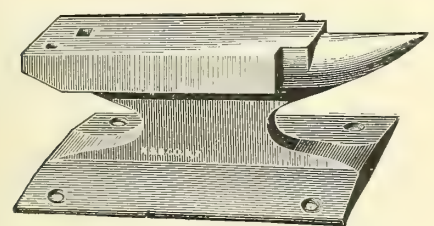


Hay-Budden Anvils are a solid forged steel top welded at the waist to a solid wrought iron base. The entire top being one piece of high grade forged steel, makes it impossible to have a loose face.

Dimensions given are approximate and are not guaranteed. Intermediate weights can be supplied, but we stock only listed weights.

Weight Pounds	Face Inches	Horn Inches	Hardie Hole Inches	Pritchel Hole -Inch	Add to Base Price Per Pound
10	2 x 6	3 1/2	1 1/2	5 1/8	15 Cents
20	2 1/4 x 7	4	5 8	3 3/8	8 Cents
30	2 1/8 x 8	5	5 8	3 3/8	5 Cents
40	2 3/4 x 9	6	3 4	7 1/8	3 Cents
50	3 x 9 1/2	6 1/2	3 4	7 1/8	2 Cents
60	3 1/4 x 10	7	3 4	7 1/8	1 Cent
70	3 3/8 x 11	7 1/2	3 4	7 1/8	1/2 Cent
80	3 1/2 x 12	8 1/2	3 4	7 1/8	Base
100	3 5/8 x 13 1/2	9	3 4	7 1/8	Base
125	3 3/4 x 15	10	7 8	9 1/8	Base
150	4 x 16 1/2	10 1/2	7 8	9 1/8	Base
175	4 1/4 x 17	11	1	9 1/8	Base
200	4 1/2 x 18	11 1/2	1 1/8	11 1/8	Base
250	4 3/4 x 20	12 1/2	1 1/8	11 1/8	Base
300	5 x 21	13	1 1/4	11 1/8	Base
350	5 1/2 x 22	13 1/2	1 1/4	11 1/8	Base
400	6 x 23	14 1/2	1 3/8	11 1/8	Base
450	6 1/2 x 24	15 1/2	1 3/8	11 1/8	1/2 Cent
500	6 3/4 x 25	16	1 1/2	13 1/8	1 Cent
600	7 x 26	17	1 1/2	13 1/8	1/2 Cent
626	7 x 26	17	1 1/2	13 1/8	2 Cents
700	7 1/2 x 27	18	1 3/4	16 7/8	2 Cents
800	8 x 28	19	1 3/4	17 7/8	2 Cents

Hill, Solid Steel



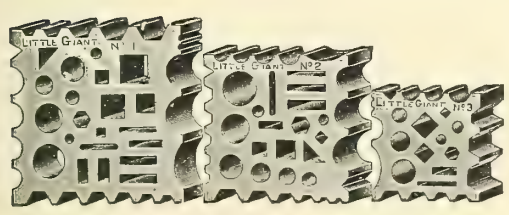
These Anvils are not cast into this shape, but are forged from solid steel, and have a suitable anvil temper throughout. The horn is two inches long, in addition to length of face; the face, sides and horns are polished, the base japanned.

Number	Length Inches	Width Inches	Weight Pounds	Each
1	5	1 1/2	4	\$2.00
2	6	2	5 1/2	2.50
3	7	2	9	3.00

Swage Blocks

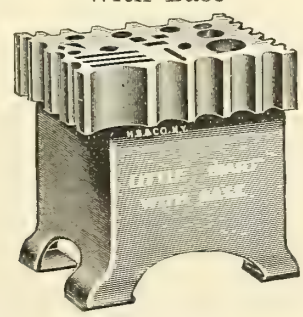
For Machine and Blacksmith Shops

Plain



		Not Planed Each	Planed Each
No. 1	18x18x4 inches.....	\$11.00	\$13.00
No. 2	15x15x4 inches.....	7.00	8.50
No. 3	11x11x4 inches.....	4.00	5.00

With Base



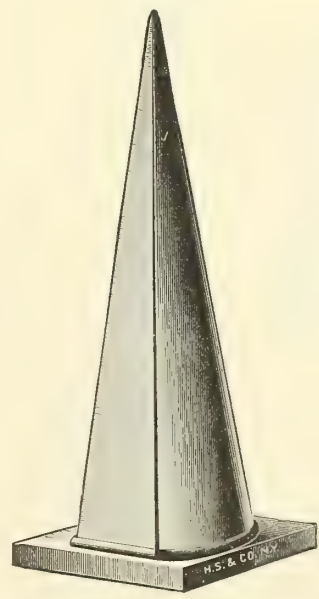
Swage Block and base are cast in one piece. When edges are used base can be tipped so that edge needed will come on upper side.

		Not Planed Each	Planed Each
No. 11	18x18x4x16 inches high.....	\$15.50	\$17.50
No. 12	15x15x4x16 inches high.....	12.00	13.50
No. 13	11x11x4x16 inches high.....	7.25	8.25

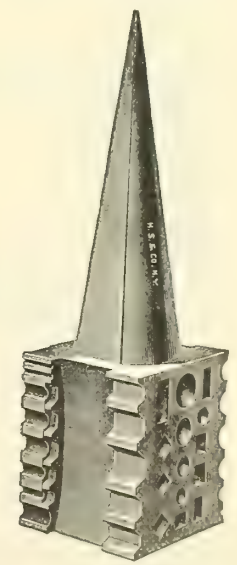
Unless ordered otherwise, Swage Blocks will be sent not planed.

Blacksmith Mandrels

Plain



With Swage Base



Plain

Number	Size of Base Inches	Height Inches	Weight Pounds	Each
1	10	36	90	\$6.00
2	10	46	120	7.75
3	12	48	170	11.00
4	16	62	285	16.00

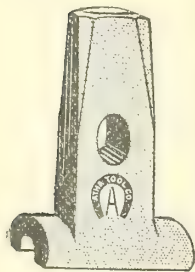
With Swage Base

Upwards of 70 forms and shapes are contained in the Swage Block. Base is 15x15x18 inches, mandrel 35 inches high, making total height 53 inches. Mandrel is flattened one side to permit tongs to grasp work.

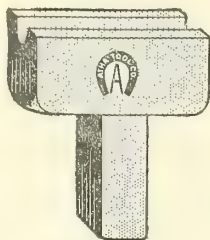
Weight, 450 pounds, each.....\$25.00

Blacksmiths Anvil Tools

Under this heading are classed such tools as are mainly used in connection with anvils. Those set in a hole in the anvil are termed bottom tools and are made to fit a 1-inch square hole, unless otherwise specified.
All anvil tools have a black japan finish unless otherwise noted.
All weights given are approximate only.



No. 1190



No. 1200

Swages

These are used for shaping, sizing and smoothing round forgings. The sizes given are the diameters of round bars to which the Swages will finish. The length of working groove varies from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches. The groove in the Swage is the section of a circle less than a half.

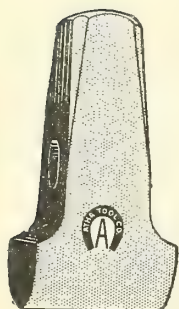
When specially ordered, No. 1200 in all sizes listed can be supplied with shanks $\frac{7}{8}$ inch without extra charge; and $1\frac{1}{4}$, $1\frac{1}{2}$, or $1\frac{3}{4}$ inches square at an extra charge.

Top No. 1190

Carried in stock, inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Weight, pounds.....	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$
Each.....	.75	.75	.75	.75	.75	.75	.85	1.00	1.00	1.15	1.15	1.30	1.30
Carried in stock, inches.....	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4
Weight, pounds.....	$4\frac{1}{4}$	$4\frac{3}{4}$	$4\frac{3}{4}$	$4\frac{3}{4}$	$4\frac{3}{4}$	5	$5\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	6	6	$6\frac{3}{4}$	$6\frac{3}{4}$
Each.....	\$1.30	1.45	1.45	1.45	1.60	1.60	1.75	1.80	1.95	2.10	2.10	2.25	2.25

Bottom No. 1200

Carried in stock, inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Weight, pounds.....	2	2	2	2	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	3	3	3	$3\frac{1}{2}$	$3\frac{1}{2}$
Each.....	.75	.75	.75	.75	.75	.75	.85	1.00	1.00	1.00	1.15	1.15	1.30
Carried in stock, inches.....	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4
Weight, pounds.....	4	4	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	7	7	7	7
Each.....	\$1.30	1.45	1.45	1.45	1.60	1.60	1.75	1.80	1.95	2.10	2.10	2.25	2.25



No. 1210



No. 1220

Fullers

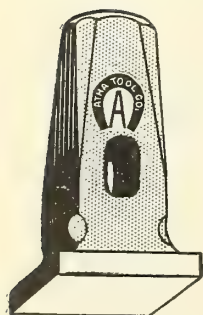
Fullers are used for necking and grooving forgings, and also for drawing down a forging to a smaller section. When specially ordered, No. 1220 in all sizes listed can be supplied with shanks $\frac{7}{8}$ inch without extra charge, and $1\frac{1}{4}$, $1\frac{1}{2}$ or $1\frac{3}{4}$ inches square at an extra charge. The sizes given are the diameters of the working edges. The length of working edge varies from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches.

Top No. 1210

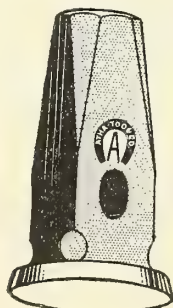
Carried in stock, inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Weight, pounds.....	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	3	3	3	$3\frac{1}{2}$	$3\frac{1}{2}$
Each.....	.75	.75	.85	.85	.85	.85	.85	.85	1.00	1.00	1.00	1.15	1.15
Carried in stock, inches.....	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4
Weight, pounds.....	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	4	4	$4\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	6	$6\frac{1}{2}$	$7\frac{1}{2}$
Each.....	\$1.05	1.05	1.20	1.20	1.30	1.30	1.45	1.65	1.75	1.95	1.95	2.10	2.10

Bottom No. 1220

Carried in stock, inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Weight, pounds.....	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	3	3	3	$3\frac{1}{2}$	$3\frac{1}{2}$
Each.....	.75	.75	.85	.85	.85	.85	.85	.85	1.00	1.00	1.00	1.15	1.15
Carried in stock, inches.....	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4
Weight, pounds.....	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	4	4	$4\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$	6	$6\frac{1}{2}$	$7\frac{1}{2}$
Each.....	\$1.05	1.05	1.20	1.20	1.30	1.30	1.45	1.65	1.75	1.95	1.95	2.10	2.10



No. 1230



No. 1240

Flatters

For smoothing and finishing flat forgings. No bottom tool is required, the anvil serving as such. The round flatters are available in certain places where the corner of a square flatter would be objectionable. The size given is the square of the face.

Square No. 1230

Carried in stock, inches.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4
Weight, pounds.....	$\frac{3}{4}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$	$4\frac{1}{2}$	5	6	7	8
Each.....	.75	.75	.75	.75	.90	1.05	1.20	1.35	1.50	1.80	2.10	2.70	3.00

Round No. 1240

The size given is the diameter of the face.													
Carried in stock, inches.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4
On special order, inches.....	$\frac{1}{2}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{3}{4}$	$3\frac{1}{2}$	4
Weight, pounds.....	$\frac{1}{2}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{3}{4}$	$3\frac{1}{2}$	4
Each.....	.75	.75	.75	.75	.90	1.05	1.20	1.35	1.50	1.80	2.10	2.70	3.00

Hardies

A Hardie is a tool which sets in the anvil and is used for cutting off forgings. The first sizes given are the sizes of the shanks, which are always square.

Regular No. 1310

Carried in stock, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Width of bit, inches.....	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
Weight, pounds.....	$\frac{5}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{4}$	2	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$
Each.....	.40	.40	.45	.55	.60	.75	.75	.85

Straight No. 1310A

Carried in stock, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Width of bit, inches.....	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
Weight, pounds.....	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	3
Each.....	.40	.40	.45	.55	.60	.75	.75	.85



No. 1310



No. 1310A

Blacksmiths Anvil Tools

Punches

Square No. 1260

The first sizes given are the sizes of the punch faces.

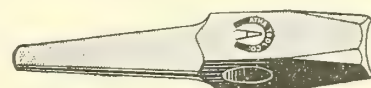
Carried in stock, inches.....	1 $\frac{1}{4}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$	1
Stock at eye, inches.....	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$
Length, inches.....	7 $\frac{3}{8}$	7 $\frac{1}{4}$	6 $\frac{3}{4}$	6 $\frac{3}{4}$	6 $\frac{3}{4}$	6	6 $\frac{3}{8}$	6 $\frac{1}{2}$	6 $\frac{7}{8}$
Weight, pounds.....	2	2	2	2	2	2	2 $\frac{3}{4}$	3	3 $\frac{1}{2}$
Each.....	\$.60	.60	.60	.60	.60	.75	.85	.90	1.05



No. 1260—2 lbs.

Round No. 1270

Carried in stock, inches.....	1 $\frac{1}{4}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$	1
Stock at eye, inches.....	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$
Length, inches.....	7 $\frac{3}{8}$	7 $\frac{1}{4}$	7 $\frac{1}{4}$	7 $\frac{1}{4}$	7 $\frac{1}{2}$	7	8	7 $\frac{1}{8}$	7 $\frac{3}{8}$
Weight, pounds.....	1 $\frac{3}{4}$	1 $\frac{3}{4}$	1 $\frac{3}{4}$	2	2	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$
Each.....	\$.60	.60	.60	.60	.60	.75	.85	.90	1.05



No. 1270—1 $\frac{3}{4}$ lbs.

Center No 1181A

Carried in stock, length inches.....	5
Weight, pound.....	7 $\frac{7}{8}$
Each.....	\$1.15



No. 1181-A.



No. 1180-A.

Countersink

No. 1180A

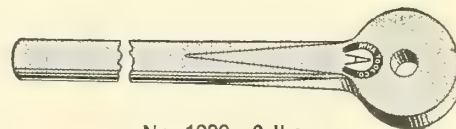
Carried in stock, length inches.....	5
Weight, pound.....	7 $\frac{7}{8}$
Each.....	\$1.15

Heading

No. 1280

Used for holding bolts while forming the head. The first sizes given are the diameters of the holes.

Carried in stock, inch.....	1 $\frac{1}{4}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$	1
Length, inches.....	15	15	15	15	15	15	18 $\frac{1}{2}$	18 $\frac{1}{2}$	18 $\frac{1}{2}$
Weight, pounds.....	3	3	3	3	3	3	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{3}{4}$
Each.....	\$1.00	1.00	1.00	1.00	1.30	1.30	1.30	1.50	1.50



No. 1280—3 lbs.

Pritchels

No. 1420

For making or enlarging the nail holes in a horseshoe. Used also for handling the shoe.

Carried in stock, $\frac{5}{8}$ -inch octagon steel, 12 inches long, weight 1 pound.

Each.....	\$.50
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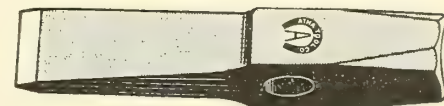
No. 1420.

Chisels

The first sizes given are the widths of the cutting edges.

Hot No. 1300

Carried in stock, inches.....	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	2	2 $\frac{1}{8}$	2 $\frac{1}{4}$	2 $\frac{1}{2}$
Stock at eye, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{8}$	1 $\frac{3}{4}$	2
Length, inches.....	6	6 $\frac{3}{4}$	7 $\frac{3}{4}$	7 $\frac{3}{4}$	8 $\frac{1}{4}$	9	9 $\frac{3}{4}$	10 $\frac{1}{4}$
Weight, pounds.....	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	4	5	6
Each.....	\$.45	.55	.60	.75	.90	1.20	1.50	1.80



No. 1300—3 lbs.

Cold No. 1290

Carried in stock, inches.....	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$
Stock at eye, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{8}$	1 $\frac{3}{4}$	2
Length, inches.....	4 $\frac{7}{8}$	5 $\frac{1}{4}$	5 $\frac{7}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{4}$	6 $\frac{7}{8}$	7 $\frac{3}{8}$	7 $\frac{3}{8}$
Weight, pounds.....	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	4	5	6
Each.....	\$.45	.55	.60	.75	.90	1.20	1.50	1.80



No. 1290—3 lbs.

Set Hammers

For setting down the metal in a forging to form a square corner at a point where the section changes.

The first size given is the square of the face.

No. 1250

Carried in stock, inches.....	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{8}$	1 $\frac{1}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{2}$	3
Weight, pounds.....	1	1 $\frac{1}{4}$	2	2 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$	10	15
Each.....	\$.60	.70	.75	.85	1.00	1.05	1.20	1.35	1.50	2.85	4.65



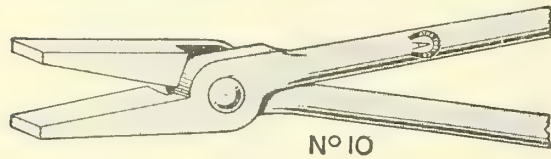
No. 1250—3lbs.

SINCE
1848

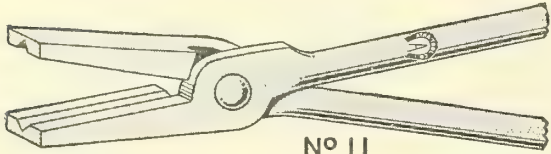
HAMMACHER SCHLEMMER & Co. NEW YORK

Tongs

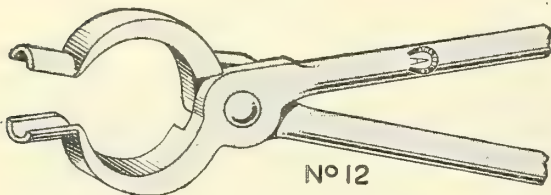
All Atha Tongs are made of solid steel. The weights are approximate only. The sizes given are the lengths over all. In the cuts the handles are broken so as to show the heads sufficiently large to clearly indicate the variations in the different numbers.



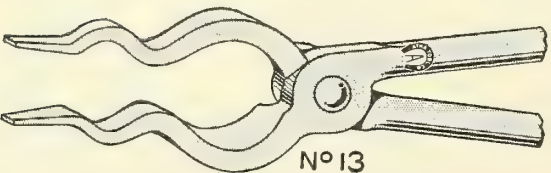
No 10



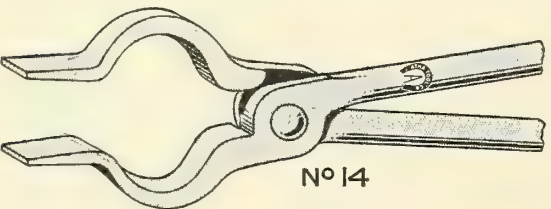
No 11



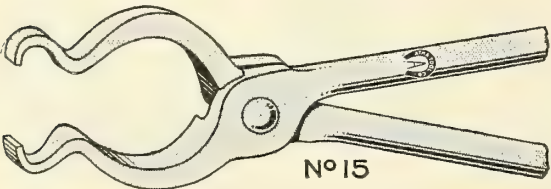
No 12



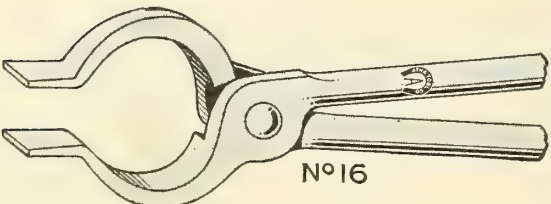
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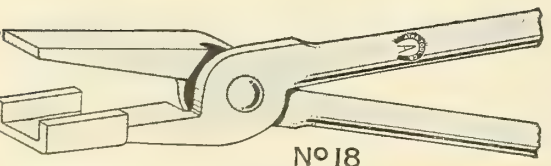
No 14



No 15



No 16



No 18

Straight Lip

Used for holding thin flat work. On account of the heavy stock in the jaws, they may be shaped by the blacksmith to suit his individual needs.

No. 10

Carried in stock, inches.....	14	16	18	20	22	24	26	28	30
Weight per dozen, pounds.....	27	30	33	35	38	40	43	45	48
Dozen.....	\$6.90	7.20	7.50	7.95	8.55	9.60	10.20	10.80	11.40

Straight Lip, to Hold Squares

These Tongs have a "V" notch in each jaw so that they can firmly hold square or round work, though ordinarily meant for squares. All sizes of this style of Tong are known as Number 11, the letter following the number designating the size of square the jaws will hold.

The sizes shown in the table below are carried in stock.
Any combination of length and jaw capacity shown in the table below, as well as squares larger than 2 inches, or Tongs with over all length of 14, 16, 23 or 30 inches, can be furnished on special order, for which prices will be quoted on application.

In ordering, give number, letter and length required.

No. 11A to 11L

Number	To Hold Squares Inch	Over All Length Inches	Weight Per Dozen Pounds	Dozen	Number	To Hold Squares Inches	Over All Length Inches	Weight Per Dozen Pounds	Dozen
11-A	$\frac{1}{4}$	18	32	\$9.00	11-G	$\frac{7}{8}$	24	39	\$12.75
11-B	$\frac{1}{2}$	18	32	9.00	11-H	1	24	39	12.75
11-C	$\frac{3}{8}$	20	34	9.75	11-I	$1\frac{1}{4}$	24	39	12.75
11-D	$\frac{1}{2}$	20	34	9.75	11-J	$1\frac{1}{2}$	26	42	14.25
11-E	$\frac{5}{8}$	22	37	11.25	11-K	$1\frac{3}{4}$	26	42	14.25
11-F	$\frac{3}{4}$	22	37	11.25	11-L	2	26	42	14.25

Curved Lip, Fluted Jaws

These are sometimes called Bolt Tongs. They are used for holding bolts or other round work. The opening between the jaws and the hinge allows ample space for the head of a bolt. All sizes of this style of tong are known as Number 12, the letter following the number designating the size of round the jaws will hold.

The sizes shown in the table below are carried in stock.
Any combination of length and jaw capacity shown in the table below as well as rounds larger than 2 inches, or Tongs with over all length of 14, 16, 23 or 30 inches can be furnished on special order for which prices will be quoted on application.

In ordering give Number, letter and length required.

No. 12A to 12L

Number	To Hold Rounds Inch	Over All Length Inches	Weight Per Dozen Pounds	Dozen	Number	To Hold Rounds Inches	Over All Length Inches	Weight Per Dozen Pounds	Dozen
12-A	$\frac{1}{4}$	18	32	\$9.00	12-G	$\frac{7}{8}$	24	39	\$12.75
12-B	$\frac{1}{2}$	18	32	9.00	12-H	1	24	39	12.75
12-C	$\frac{3}{8}$	20	34	9.75	12-I	$1\frac{1}{4}$	24	39	12.75
12-D	$\frac{1}{2}$	20	34	9.75	12-J	$1\frac{1}{2}$	26	42	14.25
12-E	$\frac{5}{8}$	22	37	11.25	12-K	$1\frac{3}{4}$	26	42	14.25
12-F	$\frac{3}{4}$	22	37	11.25	12-L	2	26	42	14.25

Double Pick Up

Used for picking up hot work, either flat or round.

No. 13

Carried in stock, inches.....	—	—	18	20	22	24	—	—	—
On special order, inches.....	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds.....	25	28	31	33	36	38	41	43	46
Dozen.....	\$10.50	11.25	12.00	12.75	13.50	15.00	16.50	18.00	20.25

Single Pick Up

For similar use as No. 13. The jaws are larger, consequently will handle heavier work.

No. 14

Carried in stock, inches.....	—	—	18	20	22	24	—	—	—
On special order, inches.....	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds.....	25	28	31	33	36	38	41	43	46
Dozen.....	\$10.50	11.25	12.00	12.75	13.50	15.00	16.50	18.00	20.25

Rivet

Used for handling hot rivets.

No. 15

Carried in stock, inches.....	—	—	18	20	22	24	—	—	—
On special order, inches.....	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds.....	25	28	31	33	36	38	41	43	46
Dozen.....	\$21.00	22.50	24.00	25.50	27.75	30.00	32.25	34.50	36.75

Gad, Flat Jaws

For general forging purposes.

No. 16

Carried in stock, inches.....	—	—	18	20	22	24	—	—	—
On special order, inches.....	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds.....	25	28	31	33	36	38	41	43	46
Dozen.....	\$9.00	9.00	9.00	9.75	11.25	12.75	14.25	15.75	18.00

Lathe Tool

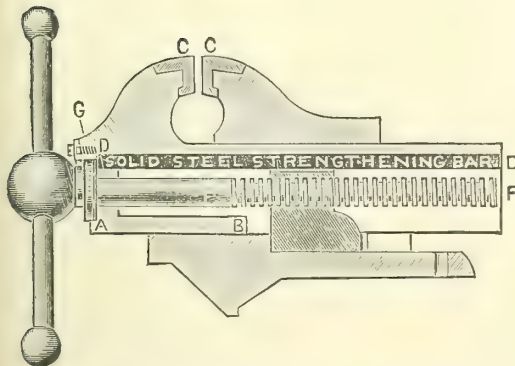
For holding bar stock when forging lathe tools.

No. 18

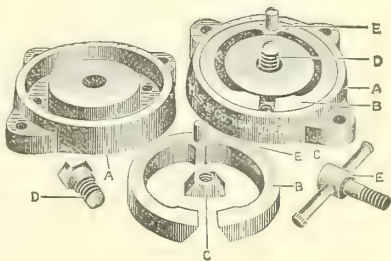
Carried in stock, inches.....	—	—	18	20	22	24	—	—	—
On special order, inches.....	14	16	—	—	—	—	26	28	30
To hold stock, inches.....	$\frac{3}{4} \times \frac{3}{8}$	$\frac{3}{4} \times \frac{3}{8}$	$\frac{3}{4} \times \frac{3}{8}$	$1 \times \frac{1}{2}$	$1 \times \frac{1}{2}$	$1 \frac{1}{4} \times \frac{3}{8}$	$1 \frac{1}{2} \times \frac{3}{8}$	$1 \frac{1}{2} \times \frac{3}{4}$	$1 \frac{1}{2} \times \frac{3}{4}$
Weight per dozen, pounds.....	26	29	32	34	37	39	42	44	48
Dozen.....	\$21.00	22.50	24.00	25.00	27.75	30.00	32.25	34.50	36.75

Vises

Parker Reinforced Slide



The Vises shown on this page are the strongest and most durable on the market. They are made from a mixture of Bessemer steel and gray iron. This semi-steel is the best material for vise purposes, giving considerably more strength than the ordinary vise castings. All parts are carefully machined. The cut on the left, representing a half section of vise, shows (D to D) a solid steel strengthening bar inserted the entire length of slide, rendering same practically unbreakable.



Removable and renewable jaw faces (C C) are made of the best tool steel, milled and fitted to the jaws. The solid under portion on front jaw (A to D) which is open in other vises, adds materially to the strength, as does also the one-piece collar and vise screw (G F).

As will be noted from illustration, base "A" is designed with recess to receive expansion ring "B," also has hole in center to receive bolt "D," which is screwed into threaded hole in center of vise flange. The duty of this bolt is to hold base to vise. The expansion ring "B" is split at one side with wedge shape opening to receive steel wedge "C," and on the other side has a stud "E" perpendicular to face of ring; this stud serving the double duty of keeping the dirt out of recess in base and also centering the wedge "C" in position to receive draw bolt "F."

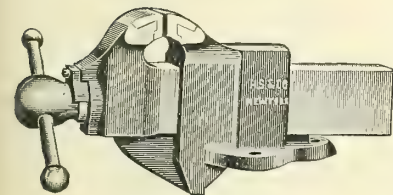
This bolt "F" is operated by small lever on top of vise flange, which turns bolt into wedge "C"; the wedge is drawn up, expanding the ring "B" against the wall of the base "A," forming a positive grip.

This swivel can be operated either from the right or left side of vise by turning out the center bolt "D," lifting vise off base and turning the ring "B" around so that the stud "E" enters the hole on the opposite side, then put draw bolt "F" in hole and turn into wedge "C," after securing base to vise with center bolt "D."

Solid Jaw

The very strong low Jaws are a distinctive feature of this line and have given them the name of Never Break

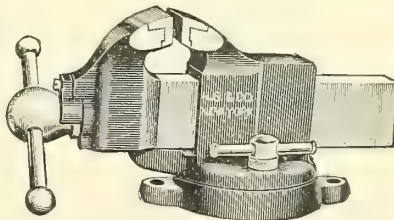
Stationary Base



Stationary Base

Number.....	29	39	49	59	69	79
Jaws, inches.....	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches.....	4	6¼	7	8	9	9½
Weight, pounds...	31	47	66	81	123	150
Each.....	\$6.25	7.00	9.00	11.75	16.25	24.00

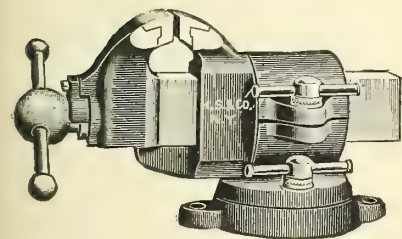
Swivel Base



Swivel Base

Number.....	229	239	249	259	269	279
Jaws, inches.....	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches.....	4	6¼	7	8	9	9½
Weight, pounds...	36	54	75	95	143	185
Each.....	\$7.00	8.75	11.00	14.50	20.50	30.00

Double Swivel



Made of ample weight and strength for the most severe work. It is the best general toolmakers vise on the market. It is not necessary to remove the work from the vise jaws; the vise can be swivelled on base, or turned in barrel without touching the vise screw or lever, and is held in position by a turn of the tightening studs.

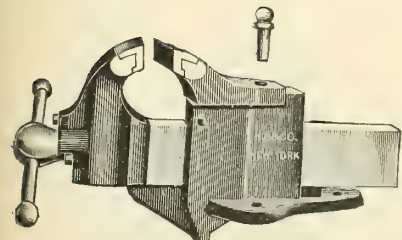
Number.....	429	439	449
Jaws, inches.....	3¼	3¾	4¼
Opens, inches.....	3¾	6	7¼
Weight, pounds.....	45	69	86
Each.....	\$12.50	14.50	16.50

Victor

With Self-adjusting Back Jaws

Similar to the line above but somewhat lighter in construction and with higher Jaws, permitting a deeper grip

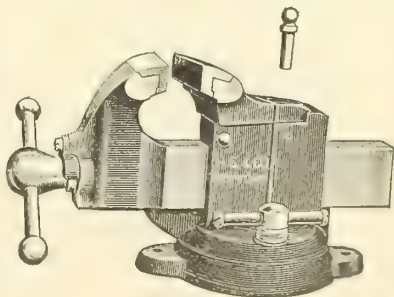
Stationary Base



Stationary Base

Number....	370	371	371½	372	373	374	375
Jaws, inches.	3¼	3⅝	4	4½	5	5½	6¼
Opens, inches	3⅝	5	5	6	7	9	9¾
Weight, pounds....	25	40	43	59	73	98	150
Each.....	\$6.50	7.00	9.00	10.00	14.00	17.00	24.00

Swivel Base



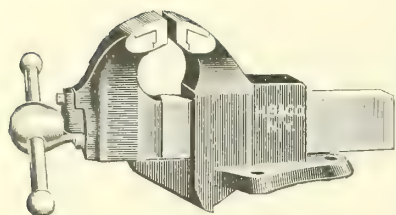
Swivel Base

Number....	270	271	271½	272	273	274	275
Jaws, inches.	3¼	3⅝	4	4½	5	5½	6¼
Opens, inches	3⅝	5	5	6	7	9	9¾
Weight, pounds...	32	49	51	69	86	117	170
Each.....	\$7.00	8.50	10.50	12.50	16.00	19.00	27.00

Vises

Parker Improved Semi-Steel

Built the same as Solid Jaw line on preceding page but without steel strengthening bar, and somewhat lighter. The jaws are higher, which permit a deeper grip.

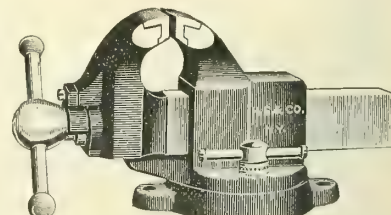


Stationary Base

Number.....	3-0X	1X	2X	3X	4X	5X
Jaws, inches...	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches...	4¼	5½	6½	8¼	9½	10½
Weight, pounds	29	45	58	76	112	150
Each.....	\$6.25	7.00	9.00	11.75	16.25	24.00

Patent Swivel Base (See preceding page)

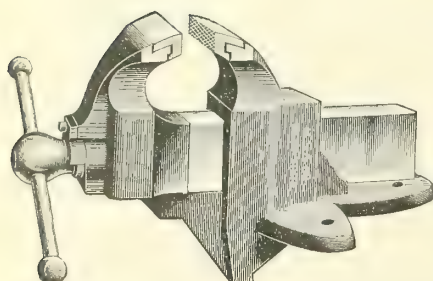
Number.....	21X	22X	23X	24X	25X	26X
Jaws, inches...	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches...	4¼	5½	6½	8¼	9½	10½
Weight, pounds	33	52	69	88	129	176
Each.....	\$7.00	8.75	11.00	14.50	20.50	30.00



Swivel Base

Parker Eclipse

Similar to line above, somewhat lighter in construction and made of high grade gray iron castings, instead of semi-steel; unequalled at the price

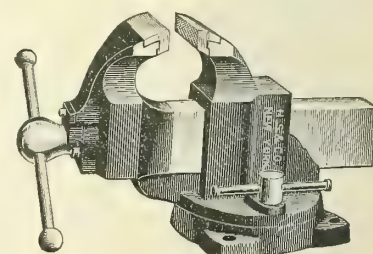


Stationary Base

Number.....	102	103	104	105	106	107
Jaws, inches...	3	3½	4	4½	5	6
Opens, inches...	4	5	6	6½	7½	10
Weight, pounds	23	35	43	61	82	133
Each.....	\$6.00	7.00	8.50	10.00	13.00	25.00

Patent Swivel Base (See preceding page)

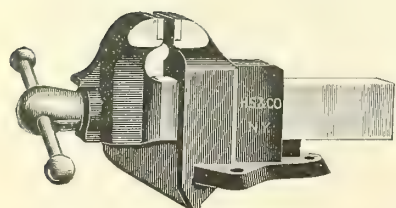
Number.....	201	202	203	204	205	206	207
Jaws, inches...	2½	3	3½	4	4½	5	6
Opens, inches...	3	4	5	6	6½	7½	10
Weight, pounds	18½	27	42	58	76	104	158
Each.....	\$5.25	7.50	8.75	10.50	12.50	16.00	30.00



Swivel Base

Parker Trojan

A low cost line, made of good material, unfinished

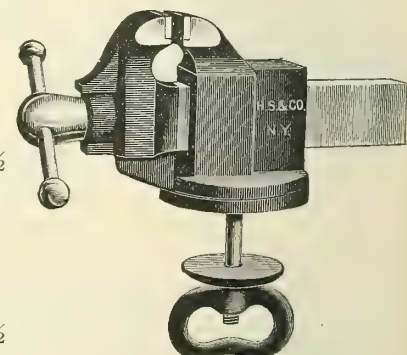


Stationary Base

Number...	700	701	702	703	704	705	706	707	708
Jaws, inches	2	2½	3	3½	4	4½	5	5½	6
Opens, in...	3	3½	4½	4¾	5¼	6½	7	8	8½
Weight, lbs.	5¾	11¾	24½	28½	41	56	68	93	126
Each.....	\$4.00	5.00	6.00	7.00	8.50	10.00	13.00	18.50	25.00

Swivel Base

Number...	720	721	722	723	724	725	726	727	728
Jaws, inches	2	2½	3	3½	4	4½	5	5½	6
Opens, in...	3	3½	4½	4¾	5¼	6½	7	8	8½
Weight, lbs.	6½	14	26	33	47	64	76	101	135
Each.....	\$4.50	5.50	7.50	8.75	10.50	12.50	16.00	22.00	30.00



Swivel Base

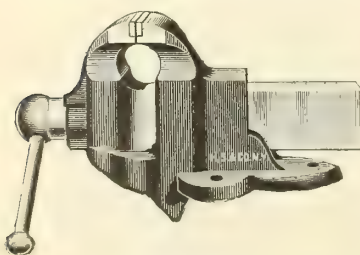
Starrett Improved

With Check or Smooth-Faced Tempered Steel Jaws

The handle does not slide through the screw-head. The handle, after the jaws are tightened onto the work, may be turned to any position out of the way, without turning the screw. A workman, on duplicate parts, will appreciate the value of this improvement. The jaws also may be tightened more firmly on the work, as the operator can select the position of greatest leverage.

The Swivel Base Vise has all the improved features of the Solid Base Vise and has in addition the improved swivel locking device which consists of a corrugated headed bolt engaging correspondingly corrugated base fastened to the bench. Loosening the nut on the bolt and pressing down against a weak spring one-eighth inch or so will release the corrugated connection, when the vise can be swiveled to any desired angle and quickly locked by turning the nut connected with a lever handle. Holding the lever upright, the nut can be speedily rotated by thumb and finger, then dropped and used to give the locking grip which will hold firmly.

The swivel base cannot be slipped after the clamp nut is tightened by the hand. The bolts can be pulled out of the bench or the ears broken off the sides of the vise, and even then the swivel will not slip. This swivel vise is as rigid as a stationary base vise.

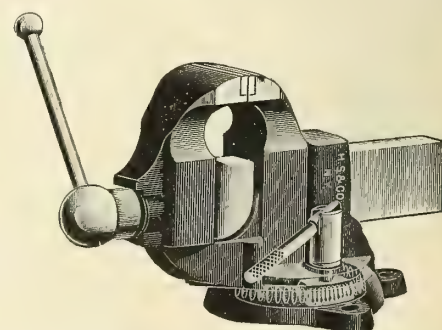


Stationary Base

Number.....	705	707	709	711	713	715	717
Jaws, inches...	2½	2½	3	3½	4	4½	5
Opens, inches...	2	2¾	3½	4	5	6	7
Weight, pounds...	6	10	16½	27	40	54	68
Each.....	\$3.75	4.50	5.50	7.00	8.50	10.00	13.00

Swivel Base

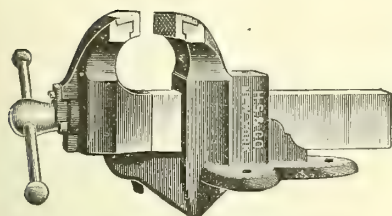
Number.....	704	706	708	710	712	714	716
Jaws, inches...	2½	2½	3	3½	4	4½	5
Opens, inches...	2	2¾	3½	4	5	6	7
Weight, pounds...	7½	11½	19	31	49	66	85
Each.....	\$4.25	5.50	7.00	8.75	10.50	12.50	16.00



Swivel Base

Vises

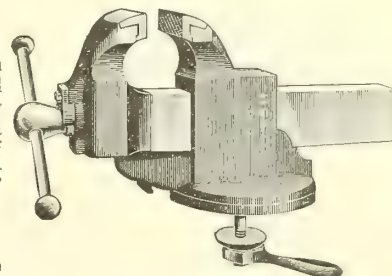
Parker Extra Heavy Railway



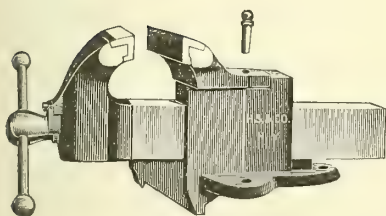
Stationary Base

Have removable and renewable jaw faces, solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183. Nos. 600 and 160 are specially adapted for use by railways and machine shops requiring a dependable vise for extra heavy work. Nicely proportioned and very strongly made of high grade gray iron castings. Do not have steel strengthening bar.

	Number	Jaws Inches	Opens Inches	Weight Pounds	Each
Stationary Base.....	600	8 $\frac{1}{8}$	12 $\frac{1}{2}$	240	\$45.00
Swivel Base.....	160	8 $\frac{1}{8}$	12 $\frac{1}{2}$	250	50.00



Swivel Base

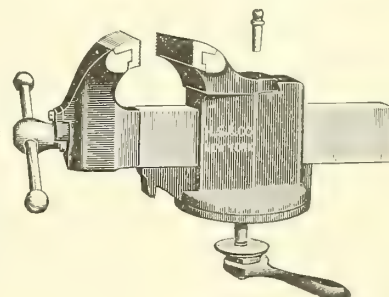


Stationary Base

Victor—With Self-adjusting Back Jaws

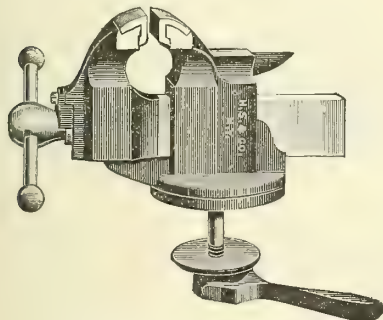
Semi-steel castings, steel strengthening bar, removable and renewable jaw faces, solid under portion on front jaw and one piece collar and vise screw, as explained on page 183.

	Number	Jaws Inches	Opens Inches	Weight Pounds	Each
Stationary Base.....	340	7 $\frac{1}{2}$	12	185	\$30.00
Swivel Base.....	240	7 $\frac{1}{2}$	12	200	35.00



Swivel Base

Parker Swivel with Anvil

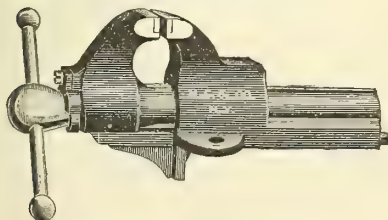


Semi-Steel, Cast Steel Anvil

Nos. 19 and 20 have inserted steel jaw faces; Nos. 21 and 22 have removable and renewable jaw faces, and the entire line have solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183.

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
19	2	2 $\frac{1}{4}$	8	\$4.00
20	2 $\frac{1}{4}$	2 $\frac{1}{4}$	8 $\frac{1}{2}$	5.00
21	3 $\frac{1}{8}$	4	23	7.00
22	3 $\frac{5}{8}$	4 $\frac{1}{4}$	35	8.75

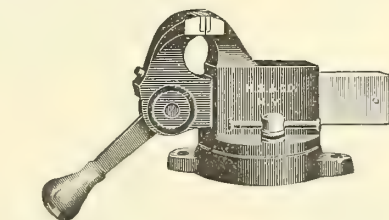
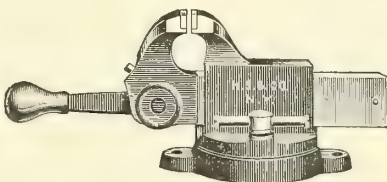
Parker Oval Slide



Hard Steel Inserted Jaw Faces

Low priced. Fair quality

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
030	2 $\frac{3}{8}$	2 $\frac{3}{4}$	8	\$2.25
30	2 $\frac{5}{8}$	3 $\frac{3}{4}$	8 $\frac{1}{2}$	2.50
31	3	4	13	3.00
32	3 $\frac{1}{4}$	4	19	4.25
33	3 $\frac{1}{2}$	4	22	4.75
34	4	4	28	6.50
35	4 $\frac{3}{4}$	4 $\frac{1}{4}$	35	9.50
36	5 $\frac{1}{4}$	5	62	12.00



These Vises are the most convenient and quick working ever devised. The only Vises that grasp any size work by one motion of the hand and which can be used with either right or left hand with equal facility.

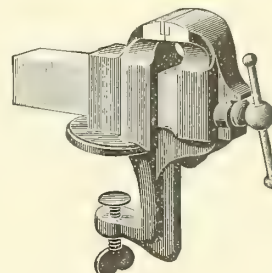
The jaws are moved by simply raising the lever to the horizontal position as shown in upper cut. The work is grasped by depressing the lever.

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
90	2	2	8	\$5.00
92	3	3 $\frac{1}{8}$	25	8.50
94	4	4 $\frac{3}{4}$	43	12.50
98	4	7 $\frac{3}{4}$	48	14.00

Note—No. 98 has Coachmakers Jaws

Standard Clamp

With Smooth Faced Tempered Steel Jaws

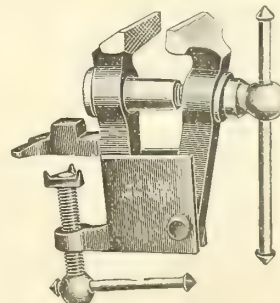


An exceptionally good Vise for very light work

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
3	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$	\$1.40
5	2 $\frac{1}{8}$	2	5 $\frac{3}{4}$	3.15
*6	1 $\frac{5}{8}$	1 $\frac{3}{4}$	2 $\frac{3}{4}$	2.00

*No. 6 has special deep clamp, which can be used on bench tops 2 $\frac{1}{4}$ inches thick.

Imported Clamp

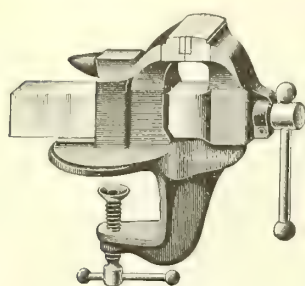


Solid Steel

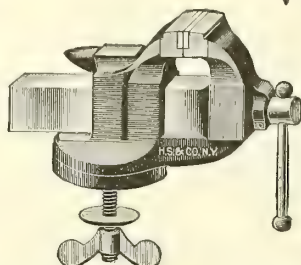
Number	Jaw Inches	Opens Inches	Weight Pounds	Each
171	2 $\frac{3}{4}$	1 $\frac{3}{4}$	1	\$2.90

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK



Clamp Base



Swivel Base

"Jersey" Vises are made especially for light work and makers of small tools. They are strong and substantial. Only the best materials are employed in their construction, great care being taken to see that all parts fit accurately.

The Screw (body, head and collar) is turned from one piece of cold rolled steel and has a square, lathe-cut thread. The jaws are ground to insure that they meet squarely when tightened. Both back and front jaws are filed to a fit.

The Clamp Base permits the Vise to be clamped to benches of varying thicknesses up to 2 inches, and the Swivel Base is permanently screwed to the bench, but allows the Vise to be turned to the right or left as desired, and firmly locked by means of a clamping nut.

Clamp Base; Hardened Tool Steel Jaws. Deep Throat

Number	Jaws Inches	Weight Pounds	Each
662	1 3/4	3 1/2	\$1.60
663	2	4 1/2	1.75
664	2 1/4	6	2.25
665	2 1/2	9 1/4	2.75

Clamp Base; Plain Iron Jaws

Number	Jaws Inches	Weight Pounds	Each
741	1 1/2	3	\$.70

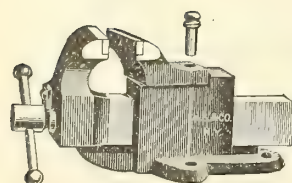
Clamp Base; Hardened Tool Steel Jaws

Number	Jaws Inches	Weight Pounds	Each
761	1 1/2	3	\$.95
762	1 3/4	3 1/4	1.15
763	2	3 1/2	1.30
764	2 1/4	4	1.55
765	2 1/2	5	1.85
766	3	8 3/4	2.50

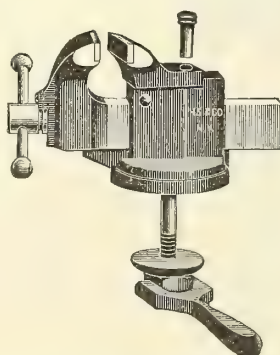
Swivel Base; Hardened Tool Steel Jaws

Number	Jaws Inches	Weight Pounds	Each
772	1 3/4	3	\$1.25
773	2	3 1/2	1.45
774	2 1/4	4 1/2	1.75
775	2 1/2	5 1/2	2.10
776	3	9 1/2	2.85

Victor, Semi-Steel



Stationary Base



Swivel Base

These Vises meet the demand for a small, convenient Vise of high grade construction. They have self-adjusting back jaws for irregular shaped work. Inserted hard steel jaw faces.

Stationary Base

Number	Jaws Inches	Opens Inches	Weight Pounds	Plain Each	Nickel-plated Each
316	1 7/8	2	4	\$3.50	\$5.75
318	2 1/8	2 1/4	5	4.00	6.50

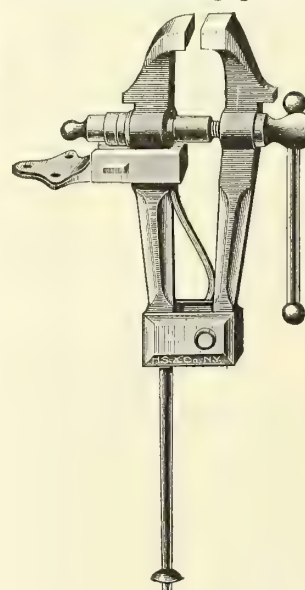
Swivel Base

Number	Jaws Inches	Opens Inches	Weight Pounds	Plain Each	Nickel-plated Each
216	1 7/8	2	4 1/2	\$4.50	\$6.75
218	2 1/8	2 1/4	6	5.00	7.50

Vises

Solid Box Blacksmith

These Vises are of wrought steel, with jaws forged from one piece of special ingot steel and faced with high-grade crucible tool steel.



Number	Length of Jaws Inches	Opens Inches	Each
25	3 1/4	3 3/4	\$12.00
30	3 3/8	3 3/4	11.00
35	3 3/4	3 3/4	10.00
40	4	4	10.50
45	4 1/4	4 1/4	11.00
50	4 1/2	4 1/2	11.50
55	4 3/4	4 3/4	12.00
60	5	5	13.00
65	5	5	14.00
70	5 1/4	5 1/4	15.00
75	5 1/4	5 1/4	16.00
80	5 1/2	5 1/2	17.50
85	5 1/2	5 1/2	18.50
90	5 3/4	5 3/4	20.00
95	5 3/4	5 3/4	21.00
100	6	6	22.00
110	6	6	24.00
120	6 1/2	6 1/2	26.00
130	6 1/2	6 1/2	29.00
140	7	6 3/4	33.00
150	7	7	36.00
160	7 1/4	7 1/2	41.50
170	7 1/4	8	44.50
180	7 1/2	8	47.00
200	8	8	56.00

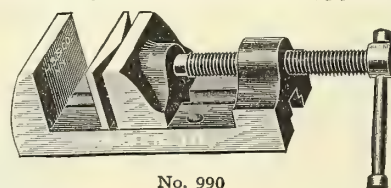
The above numbers also express approximate weights of Vises

Yankee

The body and sliding jaw are of cast iron, accurately machined to hold work square when used either flat or on sides. The sliding jaw has a T-shaped block screwed to its under side, sliding in a T-shaped slot 1/8 inch wide, insuring parallel movement of jaw.

A removable swivel jaw is provided to hold taper work, and is made of steel, case hardened. The stem has a friction spring to hold jaw in position. The adjusting screw is of steel 1/2 inch diameter with 3/4 inch head to receive sliding bar. The boss on end of body in which screw works is 3/4 inch long. Two countersink holes are provided in base to screw vise to bench if desired.

The base of vise is 6 inches long and 2 3/4 inches wide. Extreme height 2 inches. The opening of jaws, without swivel jaw, is 3 inches, with swivel jaw 2 3/4 inches. Depth of jaws 1 3/8 inches. Weight of vise 3 3/4 pounds.



No. 990

Packed one in paper box measuring

7 3/8 x 3 1/8 x 2 1/8

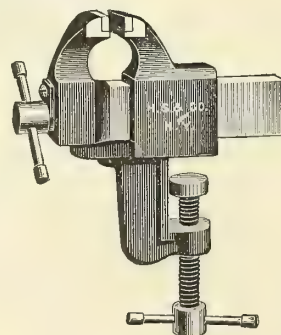
Net weight, 4 pounds

Gross weight, 4 pounds

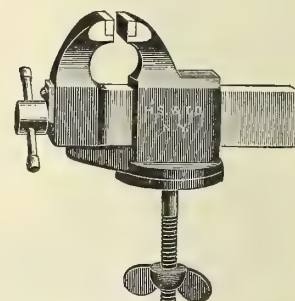
3 ounces

Each \$2.80

Parker Jewelers



No. 16. With Clamp and Stationary Base



No. 18. With Clamp and Swivel Base

Number	Jaws Inches	Opens Inches	Weight Pounds	Each
16	1 1/2	1 3/4	2 3/4	\$3.00
18	1 1/2	1 3/4	2 3/4	3.50

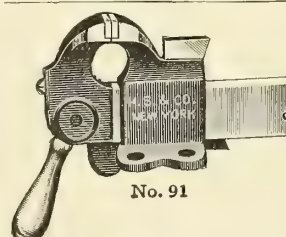
Quick Action

Construction and operation the same as Quick Action series on page 185, except they have anvil with polished right angle for bending—a feature invaluable to watch makers and jewelers and which is not found on other vises. Inserted hard steel jaw faces.

Jaw 2 inches

Opens 2 inches. Weight 2 1/2 pounds

Each \$4.00

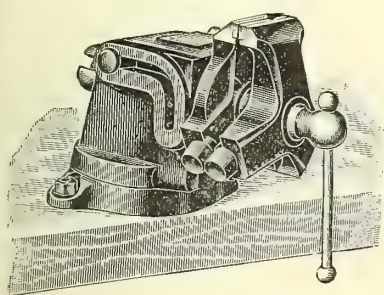


No. 91

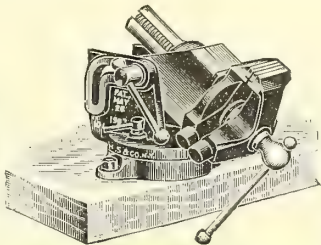
Machinists and Tool Makers Vises

Emmert Universal

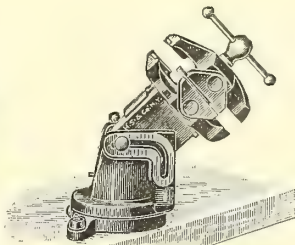
This Vise is so constructed as to be used in any conceivable position, and readily conforms itself to hold irregular-shaped pieces. It is supplied with five pairs of holding jaws: one pair for filing and fitting; one for round or finish work; one for rings, segments, hollow parts or irregular shapes; one for tapers, round or square, and for smaller metal rods; one for holding cylinders, etc. Three of these jaws are shaped on the vise head, any pair of which may be brought into service singly or together in pairs.



In natural position for holding rough castings



At angle, one of the most convenient positions for the tool maker and impossible to obtain in any other vise on the market.

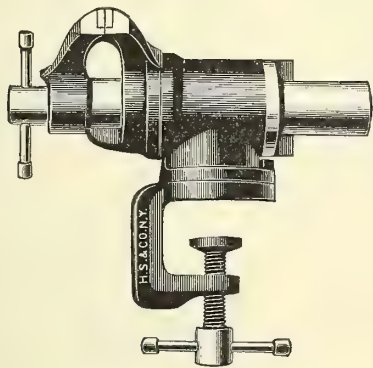


In position to hold tapered work of all descriptions.

Number	Size of Jaws Inches	Opens Inches	Weight Pounds	Each
5A	2	4	15	\$7.00
6A	3	5	55	10.00
4A	4	6	100	12.50
10A	6	9	230	22.50

Auto and Motor Boat Vise

F. & R.

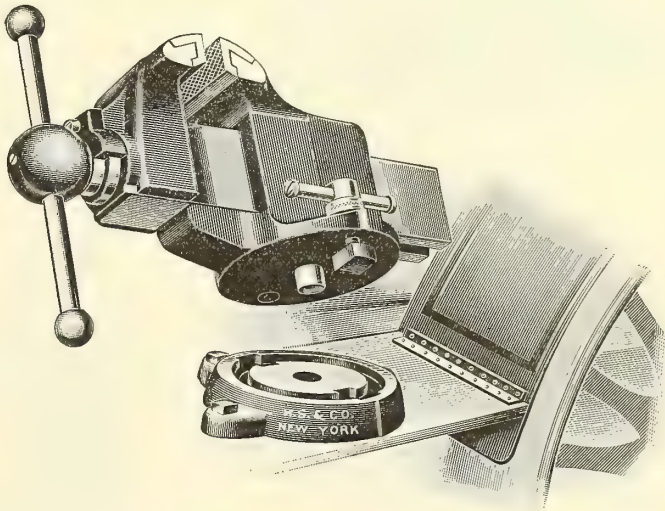


Designed to be quickly fastened to the running board of an automobile or the deck of a boat. It has a combination swivel, giving the most desirable positions for the use of a mechanic. The Vise is locked at any angle by two separate methods, one by clamping the work within the jaws and so tightening the friction, and the other by the use of the position pins. Both methods positively lock the vise in any position.

Width of Jaws Inches	Jaws Open Inches	Weight Pounds	Each
2	2	7½	
			Painted, Jaws and Finished Parts, plain..... \$8.50
			Painted, Jaws and Finished Parts, nicked..... 10.00

Special Automobile Vises

Parker

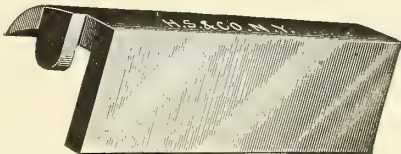


The illustration shows Vise with base bolted to running board of automobile, and with Vise over the base in position for quick adjustment. The adjustment is made by bringing line on vise flange even with line on base, lowering side bolt into base opening and turning vise to position desired. A turn of the tightening stud is all that is necessary to secure the Vise. Exactly the same as 229 line on page 183, except removable swivel.

Auto Number	Jaws Inches	Opens Inches	Weight Pounds	Each
229	3¼	4	36	\$7.00
239	3¾	6¼	54	8.75

Finishing Caps for Vise Jaws

Made to cover rough jaw faces, and will not mar or injure finished work that may require clamping in a Vise, but which would be injured by the ordinary face of a Vise. When ordering caps for Vise Jaws, give size of jaw and number of Vise. Highly polished.

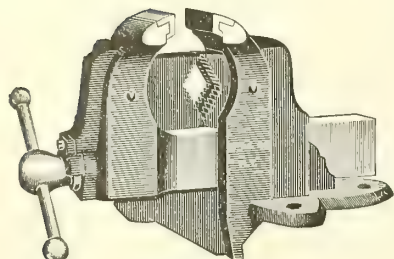


Length of Caps to Fit Vise Jaws, Inches			Brass Pair	Copper Pair
2	2⅛	2¼	\$.50	\$.55
3	3⅛	3¼	.55	.60
3½	3⅝	3¾	.60	.70
4	4⅛	4¼	.75	.85
4½	4⅝	4¾	.80	.90
5	5¼	5⅜	1.00	1.15
	5½		1.50	1.65
6	6⅛	6¼	2.00	2.25
	6½		2.50	2.75

Combination Pipe Vises

Parker Reinforced Slide

Semi-steel casting, steel strengthening bar, removable and renewable jaw faces, solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183.



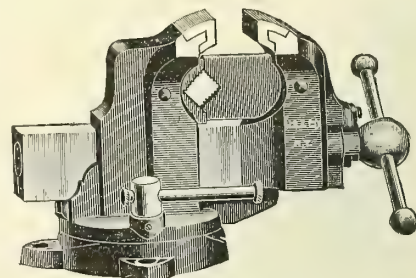
Stationary Base

Stationary Base

Number	Weight Pounds	Jaw Inches	Open Inches	Holds Pipe Inches	Each
88 1/2	94	4 3/4	6 1/2	4	\$28.00
89 1/2	141	5 3/8	9 1/2	6	35.00

Patent Swivel Base. (See page 183)

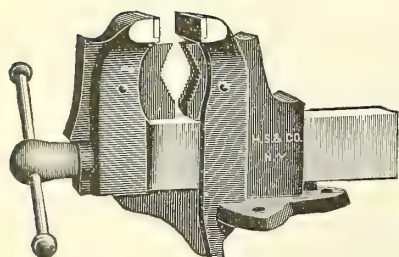
Number	Weight Pounds	Jaw Inches	Opens Inches	Holds Pipe Inches	Each
87	41	3 5/8	4 3/4	2	\$16.00
88	59	4 1/8	6	3	20.00
288 1/2	105	4 3/4	6 1/2	4	28.00



Swivel Base

Parker Competitive

A low cost line made of good material, unfinished



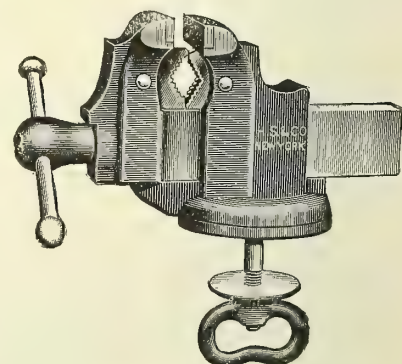
Stationary Base

Stationary Base

Number	Weight Pounds	Jaw Inches	Opens Inches	Holds Pipe Inches	Each
8 1/2	75	4 3/4	7 1/2	4	\$28.00
9 1/2	129	5 3/8	10	6	35.00

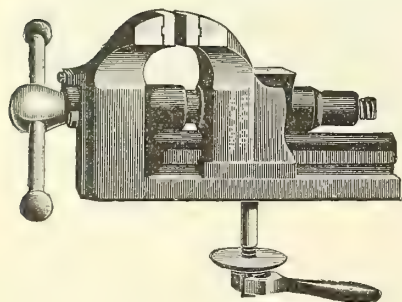
Swivel Base

Number	Weight Pounds	Jaw Inches	Opens Inches	Holds Pipe Inches	Each
7	39	3 5/8	5	2	\$16.00
8	57	4 1/8	6	3	20.00



Swivel Base

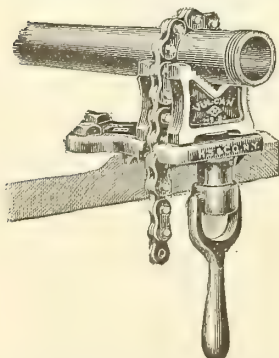
Parker No. 650



Swivels on the Bench

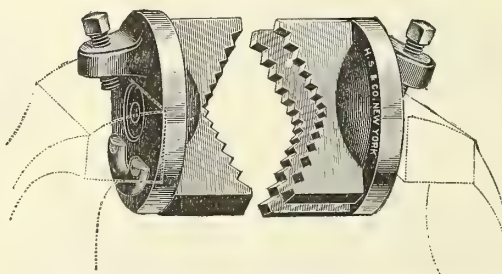
The faces of these Vise Jaws are made coarse, and will be found equally serviceable for holding all common work, in addition to its use as a Pipe Vise. Removable and renewable tool steel jaw face.

No. 650. Jaw, 5 inches; opens 7 1/2 inches; weight 80 pounds; holds pipe 7 inches. Each..... \$12.00



Pipe Grips

Standard



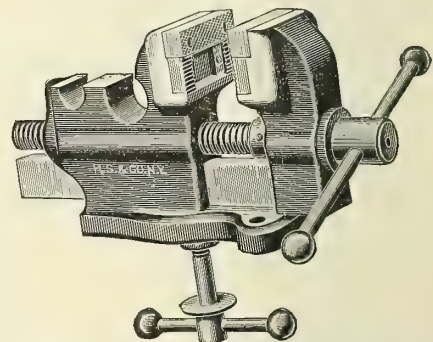
These Grips can be quickly fitted to an ordinary vise, where an occasional pipe job has to be done.

No. 150A. Fits any 3 to 4 3/4-inch vise, holds 1/4 to 2 1/2-inch pipe, per set..... \$2.50

No. 150B. Fits any 5 to 6 1/2-inch vise, holds 1/4 to 5-inch pipe, per set..... 2.75

No. 150C. Fits any 7 to 8 1/2-inch vise, holds 1/4 to 6-inch pipe, per set..... 3.00

Vanderman



Combines an ordinary vise, pipe vise, anvil and bending form. Jaws may be quickly removed or reversed. Constructed with steel sliding bar.

No.	Holds Pipe Inches	Bends Pipe Inches	Width Jaws Inches	Weight Pounds	Each
0	1/8 to 2 1/2	1/8 to 1	4	49	\$15.00
1	1/8 to 7	1/8 to 1 1/2	5	95	20.00
3	1/8 to 10	1/8 to 2	6	155	30.00

Chain Pipe Vises

Vulcan

Drop-forged steel. For holding pipe, bolts, bars, shafts, etc.

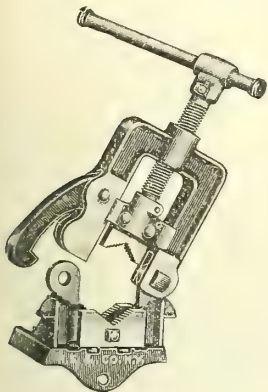
This Vise is unbreakable, compact, rapid in action and positive in gripping pipe. It especially replaces the bulky, heavier tools commonly used for service away from work-shop.

Adjustment is quickly effected by slightly turning the screw, and further quick adjustment is gained by engaging the projecting rivets of chain with a series of bosses on base.

It is made entirely of wrought steel. The drop-forged jaws are of saw-temper for file sharpening. The hand-made chains are of unexcelled quality. All parts are fully guaranteed and interchangeable.

Number	For Pipe Inches	Size Folded Inches	Weight Pounds	Each
1	1/8 to 2	4x 5x 6	4	\$3.50
2	1/4 to 4	6x 8x 8	10	6.50
3	3/4 to 8	8x10x12	30	18.00

Armstrong Hinged Vises



Made of best malleable iron, with steel jaws; all parts interchangeable.

Pipe Vises and Fixtures

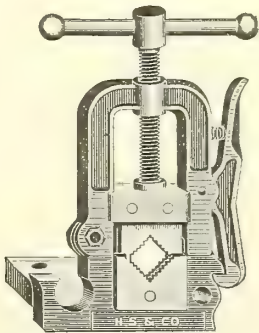
Armstrong

Number	Holds Pipe Inches	Weight Pounds	Each
Junior	1/8 to 1 1/4	3	\$5.00
0	1/8 to 2 1/2	11	8.00
1	1/8 to 2 1/2	16	10.00
2	1/2 to 4 1/2	30	20.00
3	1 to 6	35	30.00

Vanderman

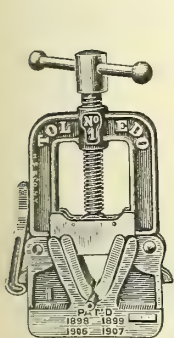
Number	Holds Pipe Inches	Weight Pounds	Each
1	1/8 to 1 1/4	6	\$8.00
2	1/8 to 2	10	9.00
3	1/8 to 2 1/2	18	10.00

Vanderman Hinged Vises

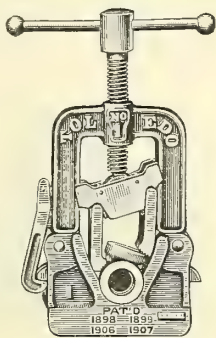


Malleable iron, with tool steel jaws. All parts interchangeable. With bending forms and hammering plate.

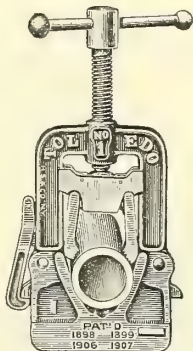
Toledo Vises



Holding 1/8-inch Pipe



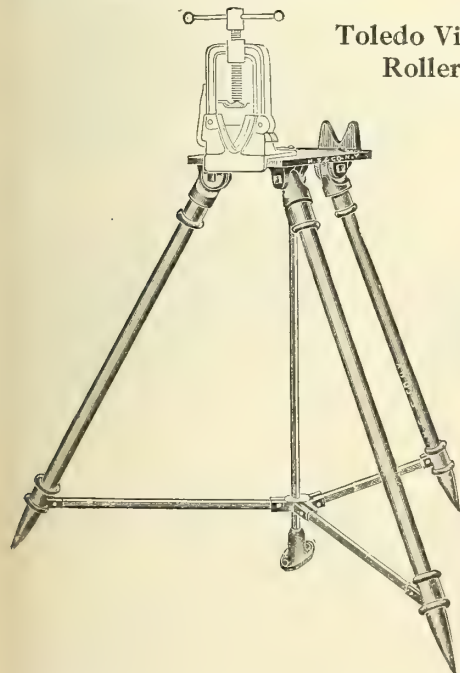
Holding 1-inch Elbow



Holding 2 1/2-inch Pipe

Toledo Vises will hold anything that will go between the jaws—pipe, fittings or valves—will not crush or mar the pipe and will grip absolutely tight with half the pressure required on ordinary vises.

- No. 1. Capacity 1/8 to 2 1/2-inch pipe..... \$10.00
- No. 2. Capacity 1/8 to 4 1/2-inch pipe..... 20.00



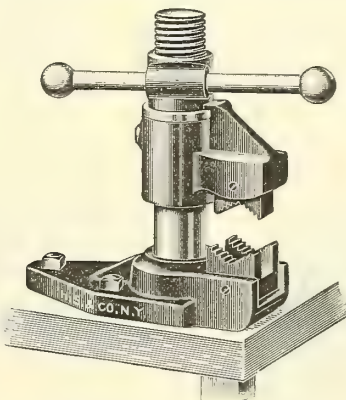
Toledo Vise Mount and Roller Supports



A most acceptable addition to a plumber's or steamfitter's outfit. It folds up and may be thrown in the wagon, taken to the job, and set up in a minute's time, saving the time required to build a bench. The roller support may be fastened to the mount by a length of 3/4-inch pipe through sockets provided.

- No. 0. For pipe up to 1 1/4 inches..... Each \$12.00
- No. 1. For pipe up to 2 inches..... 15.00
- No. 2. For pipe up to 4 inches..... 18.00
- Roller Support for Nos. 1 and 2, made to fit any vise. Price does not include vise..... 5.00

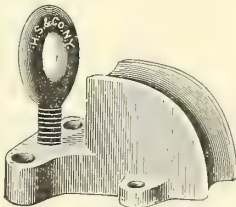
Twentieth Century Open Side Vises



A strong, convenient Vise, which can be fastened to a bench, post or cart in any position. Made of best materials.

Number	Holds Pipe Inches	Weight Pounds	Each
285	1/8 to 2	8	\$5.00
286	1/8 to 3	18	7.50
288	1/8 to 4	40	14.00

Vanderman Bending Forms

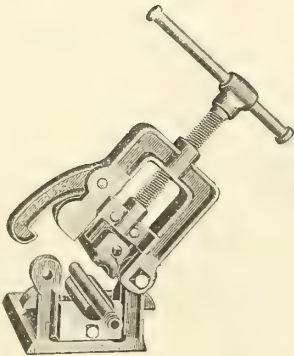


A handy fixture for a pipe bench, indestructible. The extension eyebolt holds work close to form, making a close and accurate bend.

- No. 1. Takes 1/8 to 1 1/4-inch pipe... \$3.50
- No. 2. Takes 1 to 2-inch pipe..... 4.50

Armstrong Brass Pipe Jaws

For No. 1 Hinged Pipe Vise



The Jaws are intended for holding brass pipe without marring the work.

Size	Each
5/8, 3/4 or 7/8 O. D.	\$.75
1/8, 1/4 or 3/8 I. P. size	
1, 1 1/8 or 1 1/4 O. D.	1.00
1 3/8, 1 1/2 or 1 5/8 O. D.	1.25
1/2, 3/4 or 1 I. P. size	
1 3/4, 1 7/8 or 2 O. D.	1.50
2 1/8, 2 1/4 or 2 3/8 O. D.	1.75
1 1/4, 1 1/2 or 2 I. P. size	

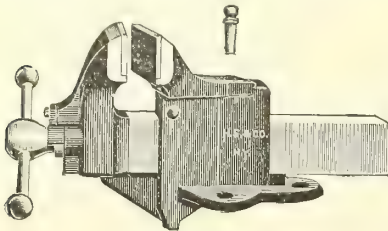
Cut shows Jaw placed in vise

Woodworkers Vises

Parker

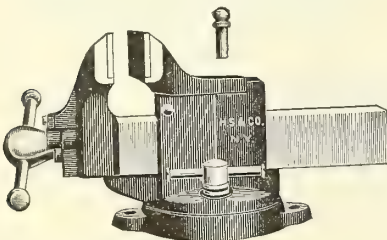
Victor, with Self-adjusting Back Jaws

Semi-steel castings. Steel strengthening bar. Solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183. Inserted steel jaw.



Stationary Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
376	4	7½	35	\$8.00
377	4½	9½	59	11.00

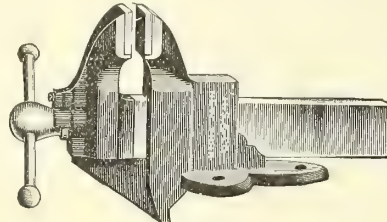


Patent Swivel Base (See Page 182)

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
276	4	7½	40	\$9.50
277	4½	9½	65	13.00

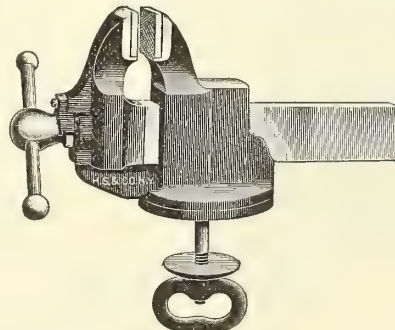
Heavy Coachmakers

Solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183. Strongly made of high grade gray iron castings. Inserted hard steel jaw faces.



Stationary Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
4000	4	8	37	\$10.00

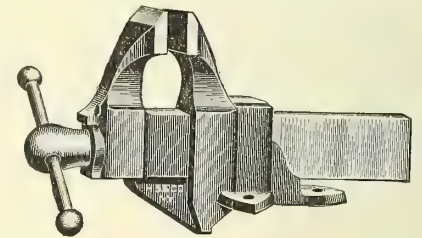


Swivel Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
4600	4	8	43	\$12.50

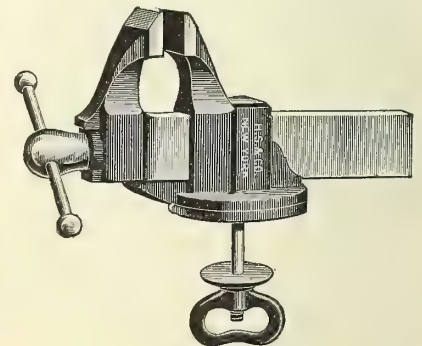
Trojan Coachmakers

A low cost line made of good material, unfinished



Stationary Base

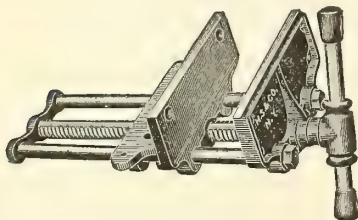
Number	Jaw Inches	Opens Inches	Weight Pounds	Each
740	4½	9¾	47	\$10.00



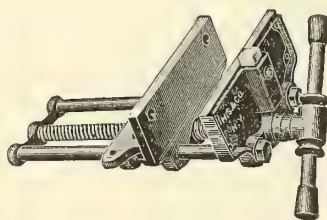
Swivel Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
746	4½	9¾	49	\$12.50

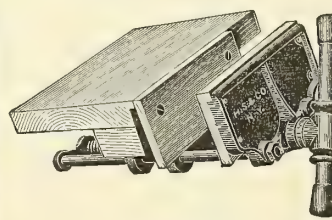
Toles Rapid Acting



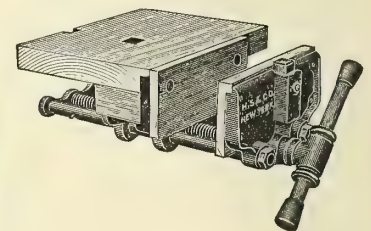
No. 20



No. 45



No. 50



No. 60

Holes through jaws permit wooden faces to be easily attached to Nos. 20 and 45.

The screw of these Vises disengages when the lever is held vertically, making it possible to open or close the Vise instantly, tightening up in the usual manner after the jaws are in contact with the work. The only part that can wear out is the bronze nut, which can be instantly replaced.

No. 20.	Length of jaws 10 inches; depth of jaws 4 inches; opens 12 inches; weight 36 pounds.....	Each \$6.50
No. 50.	Length of jaws 10 inches; depth of jaws with facing 4½ inches; opens 12 inches; weight 37 pounds. The jaws are faced with maple, which prevents "edged" tools from being damaged by careless pupils, where used in manual training work.....	8.75

No. 45.	Length of jaws 10 inches; depth of jaws 4 inches; opens 12 inches; weight 37 pounds; brass dog 1 inch square in front jaw.....	Each \$8.75
No. 60.	Length of jaws 10 inches; depth of jaws with facing 4½ inches; opens 12 inches; weight 39 pounds; brass dog 1 inch square in front jaw, the jaws are faced with maple.....	9.00

These Vises can be furnished every 2-inch opening from 12 to 24 inch. For each additional 2-inch opening add 50 cents to list

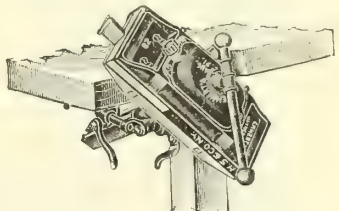
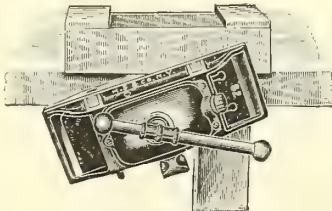
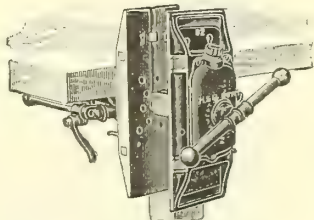
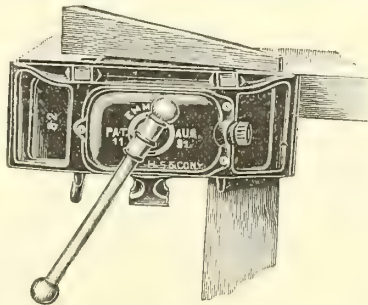
Woodworkers and Pattern Makers Vises

Emmert Pattern Makers Universal

This Vise, when in natural position on the side of the bench, is just flush with the top of the bench. In this position it can be unlocked in an instant and changed into a variety of fixed positions, always presenting the work in a position to enable the mechanic to work with comfort.

The No. 1 has seven pairs of jaws, any pair of which may be instantly adjusted to the position wanted. One pair of these jaws is 18 inches wide; three other pairs are each 7 inches wide; two others are each 1 inch wide; one 3 inches wide steel faced and slightly roughed for holding metal work. The No. 2 has one pair less of holding dogs so arranged that they may be secreted when not required for service.

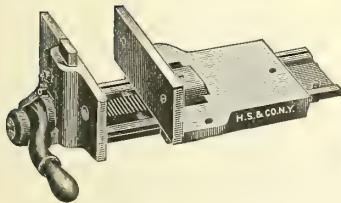
Number	Size of Jaw Inches	Opens Inches	Weight Pounds	Each
1	7x18½	14	86	\$15.00
2	5x14	12	56	12.50



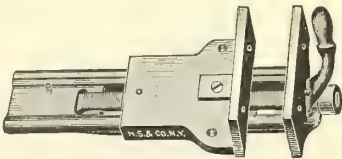
A very convenient position to hold boxes or drawers

Vise holding odd-shaped work in a form at an angle

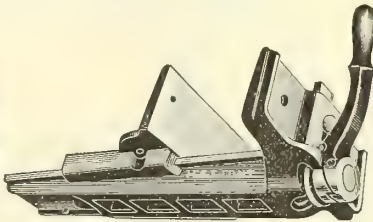
Sheldon Woodworkers, Rapid Acting



No. 3



Nos. 4 and 5

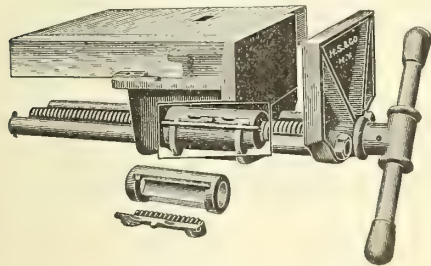


No. 6

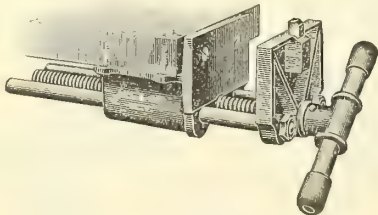
This Vise is constructed on the principle of a Machinists' Vise, the outer jaw and slide being in one piece. When the vise jaw is brought in contact with the work, the first part of the movement of the handle raised the milled rack into engagement with a fourteen-tooth steel section. The following part of the movement draws the front jaw against the work by means of the cam in front of the handle. The movement of the slide is absolutely free when the handle is in a vertical position. Holes through jaws permit wooden faces to be easily attached.

Number	Opens Inches	Jaws Inches	Weight Pounds	Each
3	8½	3x7½	27	\$7.00
4	9	3x7½	25	6.00
6	12	4x9	35	9.00

Richards-Wilcox Woodworkers, Rapid Acting



No. 430. Head or Side Vise



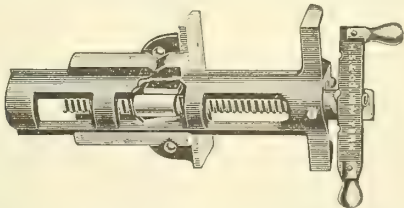
No. 430-S Tail Vise with Brass Stop in Front Jaw

Number	Size	Jaws Inches	Opens Inches	Weight Pounds	Each
430	1	4x7	10	29½	\$5.00
430	2	5x10	12	39½	6.00
430-S	1	4x 7	10	29½	5.50
430-S	2	5x10	12	39½	6.50
530	..	2x 3½	5	3¾	3.00

Jaws are furnished with maple faces if desired

This Vise provides instantaneous adjustment, and is continuous in action. Phosphor Bronze Nut engages entire circumference of screw and operates entire length. No pawls, racks or triggers to break or wear. Nut is released and completely disengaged when pressure on work is removed by slight reverse movement of handle. No stripping or cutting of threads. When pressure is applied it causes the nut to engage and lock the screw more firmly and is not held in position by any external mechanism. Screw is 1-inch diameter and has single thread, four to inch, except No. 530, which is ½ inch, 8 threads. Guides are of cold rolled steel. Jaws of best grey iron with working surfaces ground and finished. Special design of ribs on jaw secures minimum deflection under pressure without great weight.

Sheldon Woodworkers, Continuous Screw

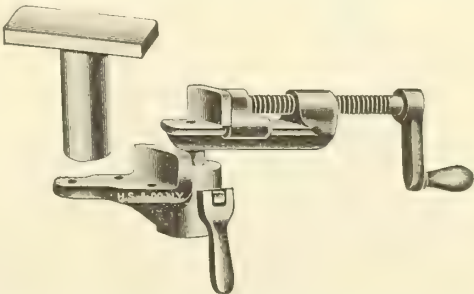


With heavy phosphor bronze nut. Crank of tempered spring steel, with polished malleable iron handles, sliding through a malleable iron collar. The crank can be instantly set to a central position for rapid turning, or to either of the outer positions for great pressure.

Number	Opens Inches	Jaws Inches	Weight Pounds	Each
10	8½	3x7½	27	\$7.00
12	12	4x9	35	9.00

Maple facings attached, 25 cents extra. Rabbetted maple facings, protecting the top as well as the face, 75 cents extra. Allow ¾ inch to the bench top for this facing.

Sheldon Woodworkers, Swivel Tail

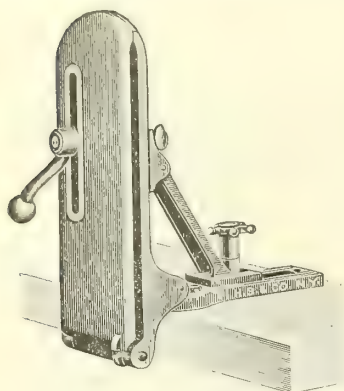


Sliding head ¾ inch high, 3 inches long, held true and rigid by T-slide. Screw 7 inches long with square thread cut from ⅝-inch cold rolled steel. Malleable iron crank. Sliding head can be raised from below to ¼ inch above surface of bench top, or can be swung around against end of bench, entirely out of the way. Weight 8 pounds. Price includes steel bench dog as shown.

Each \$1.75

Saw Vises

Adjustable Circular



Vertical Position

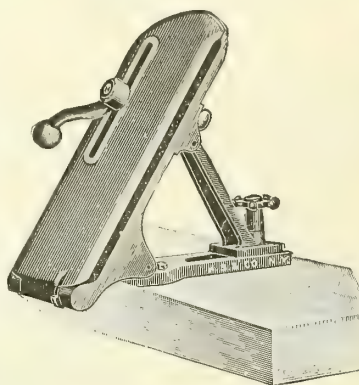
This vise is suitable for either straight or bevel filing, and is especially adapted for saws requiring a nice deep bevel, such as Groover or Dado Heads, Box Board, Matcher Cutters, Novelty Tooth Circular Saws, Mitre Saws, Trimmer Cutters, etc.

It is a very substantial tool, is rigid and firm, and will be appreciated by any one using circular saws or cutters requiring an extra bevel.

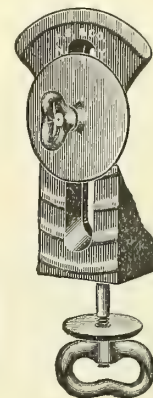
Can be used in either a vertical or tilted position, and the adjustment from one position to the other is made quickly.

For all diameters up to 18 inches.

Each \$6.00



Tilted Position



Parker Circular

Will file from five to twenty-four-inch saws and is easily and quickly adjusted to different sizes.

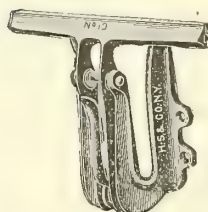
Weight 21 pounds.

No. 47, each.... \$2.00

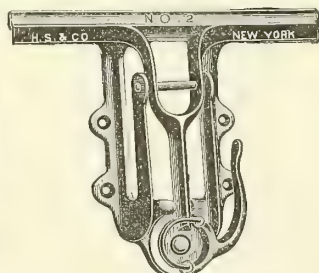
To Screw On



Stearns No. 0



Stearns No. 10



Wentworth No. 2

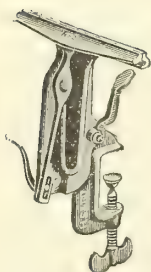
Each

Stearns No. 0. Japanned, 9½-inch jaws, adjustable..... \$.90

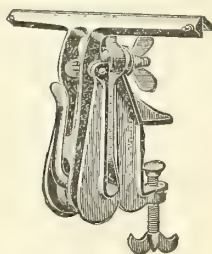
Stearns No. 10. Japanned, 9½-inch jaws, adjustable, planed jaw and extra rubber cushioned jaw 1.80

Wentworth No. 2. 15-inch jaws, slightly concave, with rubber cushion or muffler 1.50

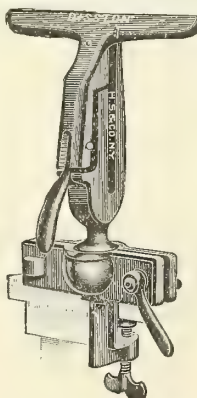
To Clamp On



Stearns No. 3



Stearns No. 33



Disston No. 1

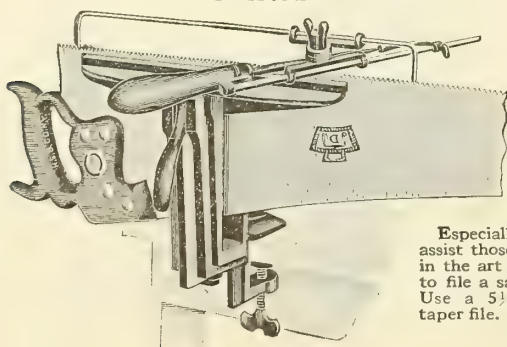
Each

Stearns No. 3. Japanned, 9½-inch jaws, adjustable..... \$1.20

Stearns No. 33. Japanned, 10-inch jaws, planed jaw and extra rubber cushioned jaw, ball and socket joint for adjustment, to any angle..... 2.50

Disston No. 1. Japanned, 9½-inch jaws, ball and socket joint; swivels to any angle..... 1.60

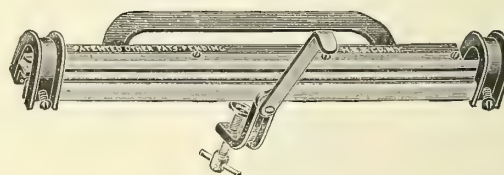
With Saw-Filing Guide Disston



Especially designed to assist those not skilled in the art of saw-filing to file a saw correctly. Use a 5½-inch slim taper file.

No. D 3. Each..... \$2.50

All-Steel Folding



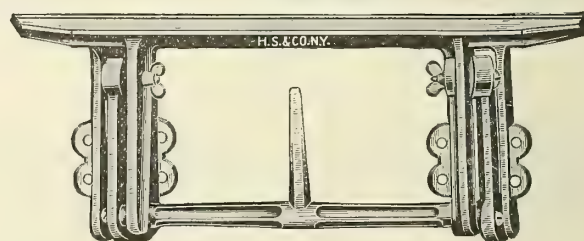
Front View—Ready for use



Back View—Folded

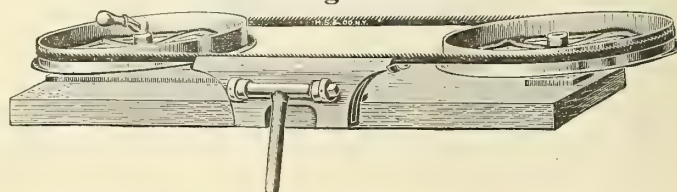
No. 77. 11½-inch jaw, black enamel and polished nickel; rubber pad under the back jaw, very compact, light and strong, suitable for use in portable chest or tool box, each \$1.50

H. S. & Co.



No. 31. 23-inch jaws; for filing hand, band or any other saw, from ⅜ to 7 inches in width, each..... \$9.00

Wright Band



Adjustable for saws of all lengths in widths up to 202½ inches. Rubber-covered wheels, 16½-inch vise.

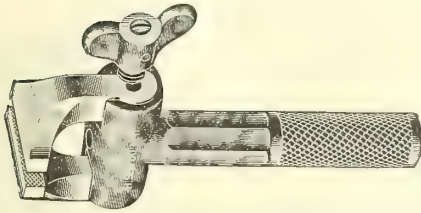
Vise only, each..... \$9.00

With tool steel jaws, each..... 11.00

Vise complete with wheels, standard, etc., each..... 18.00

Hand Vises

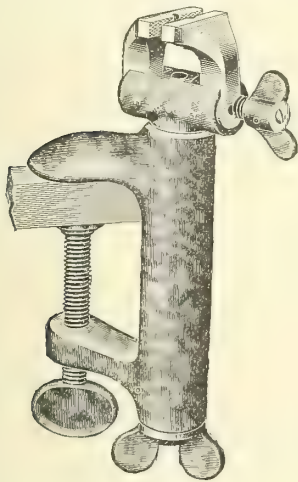
Billings and Spencer



All parts drop-forged; jaws have a positive and parallel closing and opening movement. Has hole through handle and will grasp and hold central round wire from $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter; 6 inches long.

Model BK, opens $\frac{3}{4}$ inch, each..... \$4.00

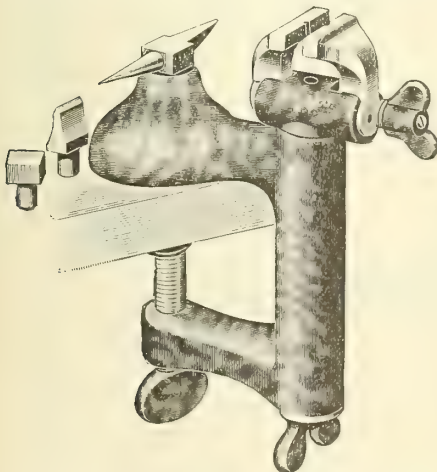
Billings and Spencer Clamp



This tool comprises the Hand Vise BK shown above, and plain clamp. The Vise is easily adjusted to and removed from the clamp. Handsomely finished.

Model BKM, complete, each..... \$6.00
Model BM, Clamp only, each..... 2.00

Billings and Spencer Anvil Clamp



Same as Model BKM, with the addition of anvil base, two anvils and hardy. Anvils and hardy are polished.

Each
Model BKD, complete..... \$9.00
Model BD, without Vise..... 5.00

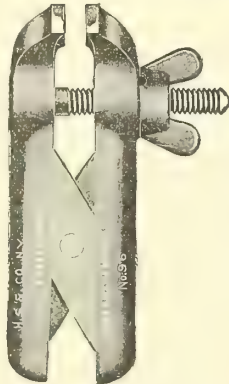
Lowell Pattern



The octagon handle can be clamped in a Vise. Pins and wire $\frac{3}{16}$ -inch and smaller can be passed through the handle.

No. 50, hardened steel jaws opening $\frac{3}{8}$ inch. Carbon finish, each..... \$1.50

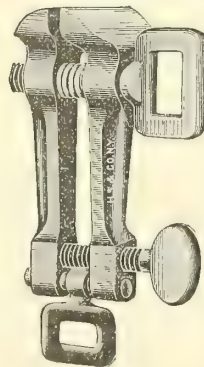
Parallel Jaw



This Vise is made from drop forgings; the faces of the jaws are scored and case-hardened. They are $1\frac{3}{8}$ inches long, $\frac{3}{8}$ inch wide and open $1\frac{3}{8}$ inches. Tool is $4\frac{1}{2}$ inches long.

No. 96, each..... \$1.50

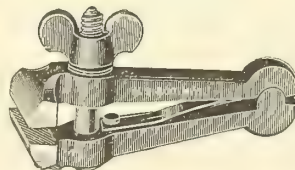
Billings and Spencer Lineman



Drop-forged from bar steel; jaws specially hardened. Movement is parallel. An opening is left in head of thumbscrew for extra purchase with lever if desired.

Each
No. 1, with Loop... \$2.50
No. 2, without Loop 2.25

German



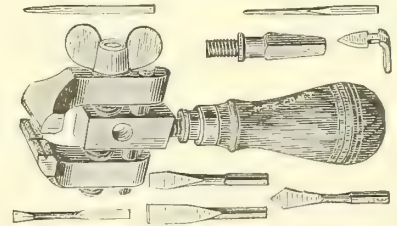
Length overall, ins.	3 1/2	4	4 1/2	5
No. 1230 1/2, black per dozen.....	\$7.50	7.50	7.50	9.00
No. 1230AY black best quality, per dozen.....	9.60	9.60	9.60	14.00

Boss



No. 540A, polished, $1\frac{1}{4}$ -inch jaws; opens $\frac{3}{4}$ inch, each..... \$.75

Alford



No. 1

Length, $6\frac{3}{4}$ inches; width of jaws, $1\frac{1}{4}$ inches; jaws open, $1\frac{1}{8}$ inches; packed one in a pasteboard box; each..... \$1.75

Cocobolo handle; jaws of forged and tempered steel; screw of steel; exposed metal surfaces polished and nicked. Detachable, hollow handle, with screw cap, containing chisel, screw-driver, countersink, square reamer, brad awl, scratch awl, and washer cutter. Handle may be screwed into the Vise at right angles. Bit shank to be screwed into the tool either in the position of the handle, as shown in the illustration, or at right angles, permitting the vise to be used in a bit brace.

Bullock



No. 748A, 3 inches, black, $\frac{13}{16}$ -inch jaws, $6\frac{1}{4}$ inches over all, each..... \$.60

Pin Vises

Starrett



Powerful jaws, hardened. Hole entirely through handle.

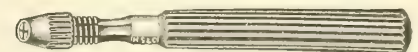
	Each
No. 162A, 0 to .040 inch.....	\$.55
No. 162B, .030 to .062 inch.....	.55
No. 162C, .050 to .125 inch.....	.55
No. 162D, .115 to .187 inch.....	.75



Billings

Drop-forged. Parallel movement. Hole through handle. Opens $\frac{3}{16}$ inch. Model BKK, each..... \$2.00

H. S. & Co. Ebony



Fluted Ebony Handle. Polished Steel Chucks
Length $3\frac{1}{2}$ inches; diameter of handle $\frac{1}{16}$ -inch; holds drills No. 60 and smaller, each..... \$.40
Length $4\frac{1}{4}$ inches; diameter of handle $\frac{1}{16}$ inch; holds drills No. 54 and smaller, each..... .50

Lowell-Regular



Nickel-plated Forged Jaws; hole through handle, each..... \$1.25

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

Drop-Forged Wrenches

Williams



Semi-finished forgings are milled, case-hardened (no color) all over and have heads ground bright. Unless otherwise specified Finished Wrenches will be supplied.



Finished forgings are milled, polished all over; case-hardened (mottled) and lacquered—heads bright.



Unfinished forgings are milled only.

Stock Milling. All wrenches are milled somewhat larger than stated in tables, to allow for proper clearance and variation.

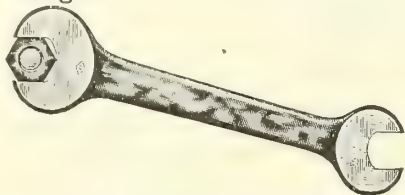
Special Milling to order, without extra charge in lots of 50 or more of a size. A sample nut or screw, as gauge, should accompany orders.

Special Wrenches made to order. Prices will be quoted upon receipt of models or drawings and specifications stating kind of finish (see above description) and quantity required.

Whitworth standard, metric measure or special openings milled to order.

When ordering please use numbers and state whether Unfinished, Semi-finished or Finished Wrenches are desired.

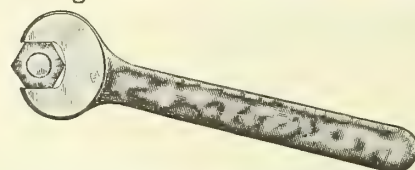
Engineers. For Standard Nuts



15-Degree Angle. Double Head

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
21	$\frac{1}{8}$ & $\frac{3}{16}$	$\frac{1}{16}$ & $\frac{1}{32}$	$3\frac{1}{2}$	$\frac{3}{16}$ & $\frac{3}{16}$	\$.12	\$.18	\$.24
22	$\frac{1}{8}$ & $\frac{1}{4}$	$\frac{1}{16}$ & $\frac{1}{2}$	4	$\frac{1}{16}$ & $\frac{1}{4}$	.13	.20	.26
23	$\frac{1}{8}$ & $\frac{1}{4}$	$\frac{1}{16}$ & $\frac{1}{2}$	4	$\frac{1}{16}$ & $\frac{1}{4}$	.14	.21	.28
24	$\frac{3}{16}$ & $\frac{5}{16}$	$\frac{1}{32}$ & $\frac{1}{16}$	$4\frac{7}{8}$	$\frac{1}{4}$ & $\frac{9}{32}$	.16	.24	.32
25	$\frac{3}{16}$ & $\frac{5}{16}$	$\frac{1}{32}$ & $\frac{1}{16}$	$4\frac{7}{8}$	$\frac{3}{32}$ & $\frac{9}{32}$	.18	.27	.36
26	$\frac{1}{4}$ & $\frac{3}{8}$	$\frac{1}{16}$ & $\frac{1}{8}$	$5\frac{1}{8}$	$\frac{3}{32}$ & $\frac{5}{16}$	.20	.30	.40
27	$\frac{1}{4}$ & $\frac{3}{8}$	$\frac{1}{16}$ & $\frac{1}{8}$	$5\frac{1}{8}$	$\frac{5}{16}$ & $\frac{5}{16}$	.22	.33	.44
28	$\frac{5}{16}$ & $\frac{7}{16}$	$\frac{1}{32}$ & $\frac{25}{32}$	$6\frac{7}{8}$	$\frac{5}{16}$ & $\frac{11}{32}$	.24	.36	.48
29	$\frac{3}{8}$ & $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{25}{32}$	$6\frac{7}{8}$	$\frac{11}{32}$ & $\frac{11}{32}$	.26	.39	.52
30	$\frac{3}{8}$ & $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{7}{8}$	$7\frac{3}{4}$	$\frac{1}{32}$ & $\frac{1}{32}$	.28	.42	.56
31	$\frac{1}{2}$ & $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{7}{8}$	$7\frac{3}{4}$	$\frac{1}{32}$ & $\frac{1}{32}$	.30	.45	.60
32	$\frac{1}{2}$ & $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{7}{8}$	$8\frac{3}{4}$	$\frac{1}{32}$ & $\frac{7}{16}$	.32	.48	.64
33	$\frac{1}{2}$ & $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{7}{8}$	$8\frac{3}{4}$	$\frac{1}{16}$ & $\frac{1}{16}$	.36	.54	.72
34	$\frac{1}{2}$ & $\frac{5}{8}$	$\frac{1}{8}$ & $1\frac{1}{16}$	$9\frac{3}{4}$	$\frac{1}{16}$ & $\frac{1}{2}$	.40	.60	.80
35	$\frac{9}{16}$ & $\frac{5}{8}$	$\frac{1}{32}$ & $1\frac{1}{16}$	$9\frac{3}{4}$	$\frac{1}{2}$ & $\frac{1}{2}$	.44	.66	.88
36	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{1}{32}$ & $1\frac{1}{4}$	$11\frac{1}{2}$	$\frac{1}{2}$ & $\frac{9}{16}$	.51	.77	1.02
37	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{1}{16}$ & $1\frac{1}{4}$	$11\frac{1}{2}$	$\frac{9}{16}$ & $\frac{1}{16}$	.58	.87	1.16
38	$\frac{5}{8}$ & $\frac{7}{8}$	$\frac{1}{16}$ & $1\frac{1}{16}$	$13\frac{1}{2}$	$\frac{1}{16}$ & $\frac{3}{32}$	.65	.98	1.30
39	$\frac{3}{4}$ & $\frac{7}{8}$	$\frac{1}{16}$ & $1\frac{1}{16}$	$13\frac{1}{2}$	$\frac{21}{32}$ & $\frac{21}{32}$	.76	1.14	1.52
40	$\frac{3}{4}$ & 1	$\frac{1}{4}$ & $1\frac{5}{8}$	$15\frac{1}{2}$	$\frac{3}{4}$ & $\frac{3}{4}$	.88	1.32	1.76
41	$\frac{7}{8}$ & 1	$\frac{1}{16}$ & $1\frac{5}{8}$	$15\frac{1}{2}$	$\frac{3}{4}$ & $\frac{3}{4}$	1.00	1.50	2.00
42	$\frac{7}{8}$ & $1\frac{1}{8}$	$\frac{1}{16}$ & $1\frac{13}{16}$	17	$\frac{3}{4}$ & $\frac{27}{32}$	1.18	1.77	2.36
43	1 & $1\frac{1}{8}$	$\frac{1}{8}$ & $1\frac{13}{16}$	17	$\frac{3}{4}$ & $\frac{27}{32}$	1.36	2.04	2.72
44	1 & $1\frac{1}{4}$	$\frac{1}{8}$ & 2	19	$\frac{27}{32}$ & $\frac{29}{32}$	1.55	2.33	3.10
45	$1\frac{1}{8}$ & $1\frac{1}{4}$	$\frac{1}{16}$ & 2	19	$\frac{27}{32}$ & $\frac{29}{32}$	1.80	2.70	3.60
46	$1\frac{1}{8}$ & $1\frac{3}{8}$	$\frac{1}{16}$ & $2\frac{1}{16}$	21	$\frac{27}{32}$ & 1	2.05	3.08	4.10
47	$1\frac{1}{4}$ & $1\frac{3}{8}$	2 & $2\frac{3}{16}$	21	$\frac{29}{32}$ & 1	2.30	3.45	4.60
48	$1\frac{1}{4}$ & $1\frac{1}{2}$	2 & $2\frac{3}{8}$	23	$\frac{29}{32}$ & $1\frac{1}{16}$	2.65	3.98	5.30
49	$1\frac{3}{8}$ & $1\frac{1}{2}$	$2\frac{3}{16}$ & $2\frac{3}{8}$	23	1 & $1\frac{1}{16}$	3.00	4.50	6.00
50	$1\frac{3}{8}$ & $1\frac{5}{8}$	$2\frac{3}{16}$ & $2\frac{1}{16}$	25	1 & $1\frac{1}{8}$	3.35	5.03	6.70
51	$1\frac{1}{2}$ & $1\frac{5}{8}$	$2\frac{3}{8}$ & $2\frac{9}{16}$	25	$1\frac{1}{16}$ & $1\frac{1}{8}$	3.80	5.70	7.60
52	$1\frac{1}{2}$ & $1\frac{3}{4}$	$2\frac{3}{8}$ & $2\frac{3}{4}$	27	$1\frac{1}{16}$ & $1\frac{7}{32}$	4.25	6.38	8.50
53	$1\frac{5}{8}$ & $1\frac{3}{4}$	$2\frac{9}{16}$ & $2\frac{3}{4}$	27	$1\frac{1}{8}$ & $1\frac{7}{32}$	4.70	7.05	9.40
53A	$1\frac{5}{8}$ & $1\frac{7}{8}$	$2\frac{9}{16}$ & $2\frac{15}{16}$	29	$1\frac{1}{8}$ & $1\frac{3}{32}$	5.30	7.95	10.60
54	$1\frac{5}{8}$ & 2	$2\frac{1}{16}$ & $3\frac{1}{8}$	31	$1\frac{1}{8}$ & $1\frac{3}{8}$	5.90	8.85	11.80
55	$1\frac{3}{4}$ & 2	$2\frac{3}{4}$ & $3\frac{1}{8}$	32	$1\frac{7}{16}$ & $1\frac{3}{8}$	6.50	9.75	13.00
55A	$1\frac{7}{8}$ & 2	$2\frac{15}{16}$ & $3\frac{1}{8}$	33	$\frac{1}{32}$ & $1\frac{3}{8}$	7.35	11.03	14.70
56	$1\frac{3}{4}$ & $2\frac{1}{4}$	$2\frac{3}{4}$ & $3\frac{1}{2}$	34	$\frac{1}{32}$ & $1\frac{1}{2}$	8.20	12.30	16.40
56A	$1\frac{7}{8}$ & $2\frac{1}{4}$	$2\frac{15}{16}$ & $3\frac{1}{2}$	35	$\frac{1}{32}$ & $1\frac{1}{2}$	9.05	13.58	18.10
57	2 & $2\frac{1}{4}$	$3\frac{1}{8}$ & $3\frac{1}{2}$	36	$\frac{1}{8}$ & $1\frac{3}{32}$	10.25	15.38	20.50
57A	2 & $2\frac{1}{2}$	$3\frac{1}{8}$ & $3\frac{7}{8}$	37	$\frac{1}{8}$ & $1\frac{5}{8}$	11.50	17.25	23.00
58	$2\frac{1}{4}$ & $2\frac{1}{2}$	$3\frac{1}{2}$ & $3\frac{7}{8}$	38	$\frac{1}{32}$ & $1\frac{5}{8}$	12.75	19.13	25.50
59	$2\frac{1}{4}$ & $2\frac{3}{4}$	$3\frac{1}{2}$ & $4\frac{1}{4}$	39	$\frac{1}{16}$ & $1\frac{5}{8}$	14.50	21.75	29.00
60	$2\frac{1}{2}$ & $2\frac{3}{4}$	$3\frac{7}{8}$ & $4\frac{1}{4}$	40	$\frac{1}{8}$ & $1\frac{5}{8}$	16.25	24.38	32.50
61	$2\frac{1}{2}$ & 3	$3\frac{7}{8}$ & $4\frac{5}{8}$	42	$\frac{1}{8}$ & $1\frac{7}{8}$	18.00	27.00	36.00
62	$2\frac{3}{4}$ & 3	$4\frac{1}{4}$ & $4\frac{5}{8}$	44	$\frac{1}{8}$ & $1\frac{7}{8}$	20.50	30.75	41.00
63	$2\frac{3}{4}$ & $3\frac{1}{2}$	$4\frac{1}{4}$ & $5\frac{3}{8}$	46	$\frac{1}{8}$ & $2\frac{1}{2}$	23.00	34.50	46.00
64	3 & $3\frac{1}{2}$	$4\frac{5}{8}$ & $5\frac{3}{8}$	48	$\frac{1}{8}$ & $2\frac{1}{2}$	25.50	38.25	51.00

Engineers. For Standard Nuts



15-Degree Angle. Single Head

The following Semi-finished and Finished Wrenches have hole in end of handle.

Number . . . 17 18 19 19A 20 20A 21A 21B 21C 22A 22B
Hole, inches . . $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ $\frac{7}{8}$ 1 1 $\frac{1}{8}$ $1\frac{1}{8}$ $1\frac{1}{8}$ $1\frac{1}{4}$ $1\frac{1}{4}$

Wrenches of this style but with handle tapered will be furnished on orders for the larger sizes, beginning with No. 11. Tapered handle wrenches of smaller sizes and flared handle wrenches of larger sizes can also be furnished if ordered in quantities.

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
00	$\frac{1}{8}$	$\frac{5}{16}$	3	$\frac{5}{32}$	\$.08	\$.12	\$.16
0	$\frac{1}{8}$	$\frac{13}{32}$	$3\frac{1}{2}$	$\frac{3}{16}$	.09	.13	.18
1	$\frac{1}{4}$	$\frac{1}{2}$	4	$\frac{9}{4}$	.10	.15	.20
2	$\frac{1}{8}$	$\frac{19}{32}$	$4\frac{3}{4}$	$\frac{5}{8}$	.12	.18	.24
3	$\frac{3}{8}$	$\frac{11}{16}$	$5\frac{5}{8}$	$\frac{5}{16}$	.14	.21	.28
4	$\frac{1}{2}$	$\frac{25}{32}$	$6\frac{1}{2}$	$\frac{1}{16}$	.17	.25	.34
5	$\frac{1}{2}$	$\frac{7}{8}$	$7\frac{1}{2}$	$\frac{1}{32}$	.20	.30	.40
6	$\frac{5}{8}$	$\frac{31}{32}$	$8\frac{3}{8}$	$\frac{7}{16}$	.26	.39	.52
7	$\frac{1}{2}$	$\frac{1}{16}$	$9\frac{1}{4}$	$\frac{1}{2}$	.32	.48	.64
8	$\frac{3}{4}$	$1\frac{1}{4}$	$11\frac{1}{8}$	$\frac{1}{16}$	.42	.63	.84
9	$\frac{7}{8}$	$1\frac{1}{16}$	13	$\frac{21}{32}$	.58	.87	1.16
10	1	$1\frac{5}{8}$	$14\frac{3}{4}$	$\frac{3}{4}$	.75	1.13	1.50
11	$1\frac{1}{8}$	$1\frac{1}{16}$	$16\frac{1}{2}$	$\frac{27}{32}$	1.00	1.50	2.00
12	$1\frac{1}{4}$	2	$18\frac{1}{2}$	$\frac{29}{32}$	1.25	1.88	2.50
13	$1\frac{3}{8}$	$2\frac{3}{8}$	20	1	1.62	2.43	3.24
14	$1\frac{1}{2}$	$2\frac{3}{8}$	22	$1\frac{1}{16}$	2.00	3.00	4.00
15	$1\frac{5}{8}$	$2\frac{9}{16}$	24	$1\frac{1}{8}$	2.50	3.75	5.00
16	$1\frac{3}{4}$	$2\frac{3}{4}$	$25\frac{1}{2}$	$1\frac{7}{8}$	3.00	4.50	6.00
16A	$1\frac{7}{8}$	$2\frac{5}{16}$	27	$1\frac{3}{2}$	3.70	5.55	7.40
17	2	$3\frac{1}{8}$	$29\frac{1}{2}$	$1\frac{3}{8}$	4.40	6.60	8.80
18	$2\frac{1}{4}$	$3\frac{1}{2}$	33	$1\frac{1}{2}$	6.00	9.00	12.00
19	$2\frac{1}{2}$	$3\frac{7}{8}$	37	$1\frac{5}{8}$	7.60	11.40	15.20
19A	$2\frac{3}{4}$	$4\frac{1}{4}$	39	$1\frac{5}{8}$	10.00	15.00	20.00
20	3	$4\frac{5}{8}$	41	$1\frac{7}{8}$	13.00	19.50	26.00
20A	$3\frac{1}{4}$	5	43	$1\frac{7}{8}$	16.00	24.00	32.00
21A	$3\frac{1}{2}$	$5\frac{3}{8}$	45	$2\frac{1}{2}$	22.00	33.00	44.00
21B	$3\frac{3}{4}$	$5\frac{3}{4}$	47	$2\frac{1}{2}$	25.00	36.00	47.00
21C	4	$6\frac{1}{8}$	49	$2\frac{1}{2}$	28.00	39.00	50.00
22A	$4\frac{1}{2}$	$6\frac{7}{8}$	51	3	40.00	60.00	80.00
22B	5	$7\frac{5}{8}$	53	3	45.00	65.00	85.00

Perfect Handle



No. 640. 15-Degree Angle

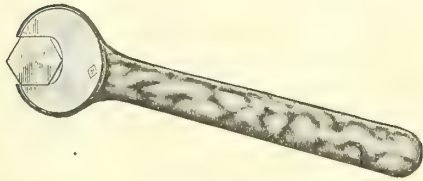
Drop-forged from one piece of steel, carefully case-hardened and finished. The opening is milled and the wooden handle locked in and waterproofed.

For United States Standard Nut Size Bolt Inch	Openings Milled Inches	Length Over all Inches	Thickness of Head Inch	Per Dozen
$\frac{1}{2}$	$\frac{7}{8}$	$7\frac{1}{2}$	$\frac{13}{32}$	\$5.00
$\frac{9}{16}$	$\frac{31}{32}$	$8\frac{3}{8}$	$\frac{27}{64}$	5.50
$\frac{5}{8}$	$1\frac{1}{16}$	9 $\frac{1}{4}$	$\frac{1}{2}$	6.50
$\frac{3}{4}$	$1\frac{1}{4}$	$11\frac{1}{8}$	$\frac{9}{16}$	8.50
$\frac{7}{8}$	$1\frac{7}{16}$	13	$\frac{21}{32}$	11.00
1	$1\frac{5}{8}$	$14\frac{7}{8}$	$\frac{3}{4}$	14.00

Drop-Forged Wrenches

Williams

15-Degree Angle. For Hexagon Head Cap Screws



Light. Single Head



Heavy. Single Head

Number	For Hexagon Head Cap Screws Diameter Inches	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfin- ished Each	Semi- finished Each	Fin- ished Each
700	$\frac{1}{8}$	$\frac{5}{16}$	3	$\frac{5}{32}$	\$.08	\$.12	\$.16
701	$\frac{3}{16}$	$\frac{7}{8}$	$3\frac{1}{2}$	$\frac{3}{16}$	.09	.13	.18
701A	$\frac{1}{4}$	$\frac{7}{16}$	4	$\frac{1}{4}$	.10	.15	.20
702	$\frac{5}{16}$	$\frac{1}{2}$	4	$\frac{3}{4}$	.10	.15	.20
703	$\frac{3}{8}$	$\frac{9}{16}$	$4\frac{3}{4}$	$\frac{9}{32}$	.12	.18	.24
704	$\frac{7}{16}$	$\frac{5}{8}$	$5\frac{5}{8}$	$\frac{5}{16}$	.14	.21	.28
705	$\frac{1}{2}$	$\frac{3}{4}$	$6\frac{1}{2}$	$\frac{11}{32}$	.17	.25	.34
705A	$\frac{9}{16}$	$\frac{13}{16}$	$7\frac{1}{2}$	$\frac{13}{32}$	.20	.30	.40
706	$\frac{5}{8}$	$\frac{7}{8}$	$7\frac{1}{2}$	$\frac{3}{2}$	.20	.30	.40
707	$\frac{3}{4}$	1	$8\frac{3}{8}$	$\frac{7}{16}$	.26	.39	.52
708	$\frac{7}{8}$	$1\frac{1}{8}$	$9\frac{1}{4}$	$\frac{1}{2}$	.32	.48	.64
708A	1	$1\frac{1}{4}$	$11\frac{1}{8}$	$\frac{9}{16}$	.42	.63	.84
709	$1\frac{1}{8}$	$1\frac{3}{8}$	$11\frac{1}{8}$	$\frac{1}{15}$	.42	.63	.84
710	$1\frac{1}{4}$	$1\frac{1}{2}$	13	$\frac{3}{32}$	.58	.87	1.16
711	$1\frac{3}{8}$	$1\frac{5}{8}$	$14\frac{3}{4}$	$\frac{3}{4}$	.75	1.13	1.50

Number	For Hexagon Head Cap Screws Diameter Inches	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfin- ished Each	Semi- finished Each	Fin- ished Each
1003	$\frac{3}{8}$	$\frac{9}{16}$	5	$\frac{5}{16}$	\$.14	\$.21	\$.28
1004	$\frac{7}{16}$	$\frac{5}{8}$	$5\frac{3}{4}$	$\frac{3}{8}$	.16	.24	.32
1005	$\frac{1}{2}$	$\frac{3}{4}$	$6\frac{1}{2}$	$\frac{7}{16}$	.19	.28	.38
1006	$\frac{9}{16}$	$\frac{13}{16}$	$7\frac{1}{4}$	$\frac{1}{2}$	.23	.35	.46
1007	$\frac{5}{8}$	$\frac{7}{8}$	8	$\frac{9}{16}$	.28	.42	.56
1008	$\frac{3}{4}$	1	$9\frac{1}{2}$	$\frac{5}{8}$	.35	.53	.70
1009	$\frac{7}{8}$	$1\frac{1}{8}$	11	$\frac{3}{4}$	.46	.69	.92
1010	1	$1\frac{1}{4}$	$12\frac{1}{2}$	$\frac{7}{8}$	.60	.90	1.20
1011	$1\frac{1}{8}$	$1\frac{3}{8}$	14	$\frac{15}{16}$	.76	1.14	1.52
1012	$1\frac{1}{4}$	$1\frac{1}{2}$	$15\frac{1}{2}$	$1\frac{1}{16}$	.96	1.44	1.92
1013	$1\frac{3}{8}$	$1\frac{5}{8}$	17	$1\frac{1}{8}$	1.20	1.80	2.40



Light. Double Head



Light. Double Head

	For Hexagon Head Cap Screws							
Number	Diameter Screws Inches		Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfin- ished Each	Semi- finished Each	Fin- ished Each
721	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{5}{16}$ & $\frac{3}{8}$	$3\frac{1}{2}$	$\frac{5}{32}$ & $\frac{3}{16}$	\$.12	\$.18	\$.24
722	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{5}{16}$ & $\frac{7}{16}$	4	$\frac{3}{32}$ & $\frac{1}{4}$	.13	.20	.26
723	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$ & $\frac{7}{16}$	4	$\frac{3}{16}$ & $\frac{1}{4}$	.14	.21	.28
723A	$\frac{3}{16}$	$\frac{5}{16}$	$\frac{3}{8}$ & $\frac{1}{2}$	4	$\frac{1}{16}$ & $\frac{1}{4}$	.14	.21	.28
725	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{7}{16}$ & $\frac{1}{2}$	$4\frac{7}{8}$	$\frac{1}{4}$ & $\frac{3}{32}$	.18	.27	.36
725A	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{7}{16}$ & $\frac{9}{16}$	$4\frac{7}{8}$	$\frac{1}{4}$ & $\frac{9}{32}$	.18	.27	.36
725B	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$ & $\frac{9}{16}$	$4\frac{7}{8}$	$\frac{1}{4}$ & $\frac{9}{32}$	.18	.27	.36
726	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{1}{2}$ & $\frac{5}{8}$	$5\frac{7}{8}$	$\frac{1}{4}$ & $\frac{5}{16}$	.20	.30	.40
727	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{9}{16}$ & $\frac{5}{8}$	$5\frac{7}{8}$	$\frac{3}{32}$ & $\frac{1}{16}$	.22	.33	.44
728	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{9}{16}$ & $\frac{3}{4}$	$6\frac{7}{8}$	$\frac{9}{32}$ & $\frac{11}{32}$	.24	.36	.48
729	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$ & $\frac{3}{4}$	$6\frac{7}{8}$	$\frac{5}{16}$ & $\frac{11}{32}$	.26	.39	.52
730	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{5}{8}$ & $\frac{13}{16}$	$7\frac{3}{4}$	$\frac{9}{16}$ & $\frac{13}{32}$	.28	.42	.56
731	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$ & $\frac{13}{16}$	$7\frac{3}{4}$	$\frac{11}{32}$ & $\frac{13}{32}$	.30	.45	.60
731A	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$ & $\frac{7}{8}$	$7\frac{3}{4}$	$\frac{11}{32}$ & $\frac{13}{32}$	.30	.45	.60
731B	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{13}{16}$ & $\frac{7}{8}$	$7\frac{3}{4}$	$\frac{11}{32}$ & $\frac{13}{32}$	.30	.45	.60
732	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{13}{16}$ & 1	$8\frac{3}{4}$	$\frac{11}{32}$ & $\frac{1}{16}$	.32	.48	.64
733	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$ & 1	$8\frac{3}{4}$	$\frac{13}{32}$ & $\frac{7}{16}$	.36	.54	.72
734	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{7}{8}$ & $1\frac{1}{8}$	$9\frac{3}{4}$	$\frac{13}{32}$ & $\frac{1}{2}$	.40	.60	.80
735	$\frac{3}{4}$	$\frac{7}{8}$	1 & $1\frac{1}{8}$	$9\frac{3}{4}$	$\frac{1}{16}$ & $\frac{1}{2}$	.44	.66	.88
736	$\frac{3}{4}$	1	1 & $1\frac{1}{4}$	$11\frac{1}{2}$	$\frac{7}{16}$ & $\frac{9}{16}$	.51	.77	1.02
737	$\frac{7}{8}$	1	$1\frac{1}{8}$ & $1\frac{1}{4}$	$11\frac{1}{2}$	$\frac{1}{2}$ & $\frac{9}{16}$	.58	.87	1.16
738	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$ & $1\frac{3}{8}$	$13\frac{1}{2}$	$\frac{1}{2}$ & $\frac{3}{2}$	.65	.98	1.30
739	1	$1\frac{1}{8}$	$1\frac{1}{4}$ & $1\frac{3}{8}$	$13\frac{1}{2}$	$\frac{9}{16}$ & $\frac{3}{2}$	.76	1.14	1.52
739A	1	$1\frac{1}{4}$	$1\frac{1}{4}$ & $1\frac{1}{2}$	$13\frac{1}{2}$	$\frac{9}{16}$ & $\frac{21}{32}$	.76	1.14	1.52
739B	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$ & $1\frac{1}{2}$	$13\frac{1}{2}$	$\frac{1}{16}$ & $\frac{3}{2}$	.76	1.14	1.52

	For Hexagon Head Cap Screws							
Number	Diameter Screws Inches	Opening Milled Inches	Extreme Length Inches	Thickness Head Inches	Unfin- ished Each	Semi- finished Each	Fin- ished Each	
1026	$\frac{1}{4}$ & $\frac{3}{8}$	$\frac{7}{16}$ & $\frac{9}{16}$	$5\frac{3}{8}$	$\frac{7}{32}$ & $\frac{5}{16}$	\$.20	\$.30	\$.40	
1027	$\frac{5}{16}$ & $\frac{3}{8}$	$\frac{1}{2}$ & $\frac{9}{16}$	$5\frac{3}{8}$	$\frac{1}{4}$ & $\frac{5}{16}$	.21	.32	.42
1028	$\frac{5}{16}$ & $\frac{7}{16}$	$\frac{1}{2}$ & $\frac{5}{8}$	$6\frac{1}{8}$	$\frac{1}{4}$ & $\frac{3}{8}$	.23	.35	.46
1029	$\frac{3}{8}$ & $\frac{7}{16}$	$\frac{9}{16}$ & $\frac{5}{8}$	$6\frac{1}{8}$	$\frac{5}{16}$ & $\frac{3}{8}$	.24	.36	.48
1030	$\frac{3}{8}$ & $\frac{1}{2}$	$\frac{9}{16}$ & $\frac{3}{4}$	7	$\frac{5}{16}$ & $\frac{7}{16}$	.26	.39	.52
1031	$\frac{7}{16}$ & $\frac{1}{2}$	$\frac{5}{8}$ & $\frac{3}{4}$	7	$\frac{3}{8}$ & $\frac{7}{16}$	.27	.40	.54
1032	$\frac{7}{16}$ & $\frac{9}{16}$	$\frac{5}{8}$ & $\frac{13}{16}$	$7\frac{3}{4}$	$\frac{3}{8}$ & $\frac{1}{2}$	.30	.45	.60
1033	$\frac{1}{2}$ & $\frac{9}{16}$	$\frac{3}{4}$ & $\frac{13}{16}$	$7\frac{3}{4}$	$\frac{7}{16}$ & $\frac{1}{2}$	.32	.48	.64
1034	$\frac{1}{2}$ & $\frac{5}{8}$	$\frac{3}{4}$ & $\frac{7}{8}$	$8\frac{5}{8}$	$\frac{7}{16}$ & $\frac{9}{16}$	.35	.52	.70
1035	$\frac{9}{16}$ & $\frac{5}{8}$	$\frac{13}{16}$ & $\frac{7}{8}$	$8\frac{5}{8}$	$\frac{1}{2}$ & $\frac{9}{16}$	.38	.57	.76
1036	$\frac{9}{16}$ & $\frac{3}{4}$	$\frac{13}{16}$ & 1	$10\frac{1}{8}$	$\frac{1}{2}$ & $\frac{5}{8}$	.43	.65	.86
1037	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{7}{8}$ & 1	$10\frac{1}{8}$	$\frac{5}{16}$ & $\frac{5}{8}$	.47	.70	.94
1038	$\frac{5}{8}$ & $\frac{7}{8}$	$\frac{7}{8}$ & $1\frac{1}{8}$	$11\frac{5}{8}$	$\frac{5}{16}$ & $\frac{3}{4}$	.55	.83	1.10
1039	$\frac{3}{4}$ & $\frac{7}{8}$	1 & $1\frac{1}{8}$	$11\frac{5}{8}$	$\frac{5}{8}$ & $\frac{3}{4}$	.61	.92	1.22
1040	$\frac{3}{4}$ & 1	1 & $1\frac{1}{4}$	$13\frac{1}{4}$	$\frac{5}{8}$ & $\frac{7}{8}$	.72	1.08	1.44
1041	$\frac{7}{8}$ & 1	$1\frac{1}{8}$ & $1\frac{1}{4}$	$13\frac{1}{4}$	$\frac{3}{4}$ & $\frac{7}{8}$	.79	1.19	1.58
1042	$\frac{7}{8}$ & $1\frac{1}{8}$	$1\frac{1}{8}$ & $1\frac{3}{8}$	$14\frac{3}{4}$	$\frac{3}{4}$ & $\frac{15}{16}$	.92	1.38	1.84
1043	1 & $1\frac{1}{8}$	$1\frac{1}{4}$ & $1\frac{3}{8}$	$14\frac{3}{4}$	$\frac{7}{8}$ & $\frac{15}{16}$	1.02	1.53	2.04	
1044	1 & $1\frac{1}{4}$	$1\frac{1}{4}$ & $1\frac{1}{2}$	$16\frac{1}{4}$	$\frac{7}{8}$ & $1\frac{1}{16}$	1.18	1.77	2.36	
1045	$1\frac{1}{8}$ & $1\frac{1}{4}$	$1\frac{3}{8}$ & $1\frac{1}{2}$	$16\frac{1}{4}$	$\frac{15}{16}$ & $1\frac{1}{16}$	1.30	1.95	2.60	

See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

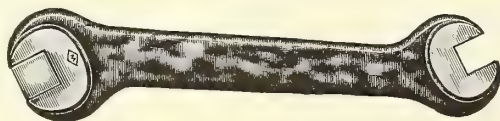
Williams

For Set Screws



22 1/2-Degree Angle. Single Head

Number	For Set Screw Size Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
500	3/16	3	3/16	.08	.12	.16
501	1/4	3 3/4	1/4	.10	.15	.20
502	5/16	4 1/2	5/16	.12	.18	.24
503	3/8	5 1/4	3/8	.15	.23	.30
504	7/16	6	7/16	.20	.30	.40
505	1/2	6 3/4	1/2	.25	.38	.50
506	5/8	7 5/8	5/8	.27	.41	.54
507	3/4	8 1/2	3/4	.30	.45	.60
508	7/8	9 1/2	7/8	.35	.53	.70
509	1	10 1/2	1	.42	.63	.84
510	1 1/8	11 1/2	1 1/8	.50	.75	1.00
511	1 1/4	12 1/2	1 1/4	.60	.90	1.20



22 1/2-Degree Angle. Double Head

Number	For Set Screws Size Inches	Extreme Length Inches	Thickness Head Inch	Unfinished Each	Semi-finished Each	Finished Each
523	3/16 & 1/4	3 3/8	3/16	.13	.20	.26
524	1/4 & 5/16	3 3/8	1/4	.13	.20	.26
525	5/16 & 3/8	4	5/16	.15	.23	.30
526	3/8 & 1/2	4	3/8	.15	.23	.30
527	1/2 & 5/8	5	1/2	.18	.27	.36
528	5/8 & 3/4	5	5/8	.18	.27	.36
529	3/4 & 7/8	5 7/8	3/4	.22	.33	.44
530	7/8 & 1	5 7/8	7/8	.22	.33	.44
531	1 & 1 1/8	6 5/8	1	.27	.41	.54
532	1 1/8 & 1 1/4	6 5/8	1 1/8	.27	.41	.54
533	1 1/4 & 1 1/2	7 1/2	1 1/4	.33	.50	.66
534	1 1/2 & 1 3/4	7 1/2	1 1/2	.33	.50	.66
535	1 3/4 & 2	8 3/8	1 3/4	.40	.60	.80
536	2 & 2 1/8	8 3/8	2	.40	.60	.80
537	2 1/8 & 2 1/4	10	2 1/8	.48	.72	.96
538	2 1/4 & 2 1/2	10	2 1/4	.48	.72	.96
539	2 1/2 & 2 3/4	11 3/8	2 1/2	.58	.87	1.16
540	2 3/4 & 3	11 3/8	2 3/4	.58	.87	1.16
541	3 & 3 1/8	12 5/8	3	.68	1.02	1.36
542	3 1/8 & 3 1/4	12 5/8	3 1/8	.68	1.02	1.36

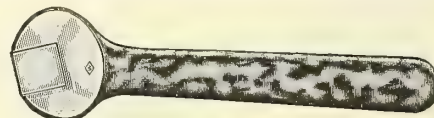
Short. For Check Nuts and Miscellaneous Uses



15-Degree Angle. Double Head

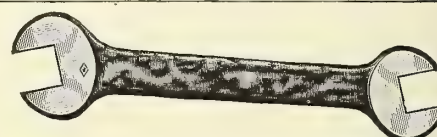
Number	For U. S. Standard Nut Size Bolts Inch	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
997	3/4 & 7/8	1 1/4 and 1 1/8	8	1/2 & 1/2	.43	.65	.86

Heavy. For Square Head Cap and Set Screws



15-Degree Angle. Single Head

Number	For Square Head Cap Screws Diameter Inches	For Set Screws Size Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
1000B	...	5/16	5/16	3 1/2	3/16	.09	.13	.18
1001A	1/4	3/8	3/8	4	1/4	.10	.15	.20
1002A	5/16	1/2	1/2	4 3/4	5/16	.12	.18	.24
1002B	3/8	1/2	1/2	4 3/4	3/8	.12	.18	.24
1003C	7/16	5/8	5/8	5 3/4	7/16	.14	.21	.28
1004C	1/2	3/4	3/4	5 3/4	1/2	.16	.24	.32
1005C	5/8	...	1 1/8	6 1/2	5/8	.19	.28	.38
1006C	3/4	3/4	3/4	7 1/4	3/4	.23	.35	.46
1007B	7/8	7/8	7/8	8	7/8	.28	.42	.56
1008C	...	1	1	9 1/2	7/8	.35	.53	.70
1009A	1 1/8	1 1/8	1 1/8	11	1 1/8	.46	.69	.92
1010A	1	...	1 1/4	12 1/2	1 1/4	.60	.90	1.20
1011A	1 1/8	...	1 3/8	14	1 3/8	.76	1.14	1.62
1012A	1 1/4	...	1 1/2	15 1/2	1 1/2	.96	1.44	1.92
1013A	1 3/8	...	1 5/8	17	1 5/8	1.20	1.80	2.40



15 Degree Angle. Double Head

Number	For Square Head Cap Screws Diameter Inches	For Set Screws Size Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
1025C	1/4 & 5/16	3/8 & 7/16	3/8 & 7/16	4 7/8	1/4 & 5/16	.18	.27	.36
1025D	1/4 & 3/8	3/8 & 1/2	3/8 & 1/2	4 7/8	1/4 & 3/8	.18	.27	.36
1026C	5/16 & 3/8	7/16 & 1/2	5/16 & 1/2	5 3/8	5/16 & 3/8	.20	.30	.40
1026D	3/8 & 1/2	1/2 & 5/8	3/8 & 1/2	5 3/8	3/8 & 1/2	.20	.30	.40
1027C	1/2 & 5/8	5/8 & 3/4	1/2 & 5/8	6 1/8	1/2 & 5/8	.21	.32	.42
1028C	5/8 & 3/4	3/4 & 7/8	5/8 & 3/4	6 1/8	5/8 & 3/4	.23	.35	.46
1029C	3/4 & 7/8	7/8 & 1	3/4 & 7/8	6 1/8	3/4 & 7/8	.24	.36	.48
1031D	1/2 & 5/8	5/8 & 3/4	1/2 & 5/8	7	1/2 & 5/8	.27	.41	.54
1034C	5/8 & 3/4	3/4 & 7/8	5/8 & 3/4	8 5/8	5/8 & 3/4	.35	.53	.70
1038C	5/8 & 7/8	7/8 & 1 1/8	5/8 & 7/8	11 5/8	5/8 & 7/8	.55	.83	1.10
1038D	3/4 & 7/8	7/8 & 1 1/8	3/4 & 7/8	11 5/8	3/4 & 7/8	.55	.83	1.10
1040C	3/4 & 1	7/8 & 1 1/4	3/4 & 1	13 1/4	3/4 & 1	.72	1.08	1.44
1041C	7/8 & 1	1 1/8 & 1 1/4	7/8 & 1	13 1/4	7/8 & 1	.79	1.19	1.58
1042C	7/8 & 1 1/8	...	1 1/8 & 1 1/4	14 3/4	7/8 & 1 1/8	.92	1.38	1.84
1043C	1 & 1 1/8	...	1 1/4 & 1 1/8	14 3/4	1 & 1 1/8	1.02	1.53	2.04

For U. S. Standard Nuts and Screws



Triple Head

Number	For U. S. Standard Nut Size Bolts Inch	For Set Screws Size Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
894A	5/16, 3/8, 1/2	...	5 5/8	3/8	.28	.42	.56
894B	5/16, 7/16, 1/2	...	5 5/8	3/8	.28	.42	.56
894C	3/8, 1/2, 5/8	...	5 5/8	3/8	.28	.42	.56
894D	...	1/2, 5/8, 3/4	5 5/8	3/8	.28	.42	.56
894E	...	5/16, 5/8, 3/4	5 5/8	3/8	.28	.42	.56

See page 194 for special conditions and styles of finish

SINCE
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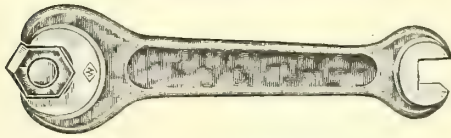
HAMMACHER SCHLEMMER & CO.

NEW
YORK

Drop-Forged Wrenches

Williams

Machine



Extra Heavy for Planers, Milling Machines, Lathes, Drill Presses, etc.

Number	Large Head for United States Standard Nut Size Bolt Inch	Opening Milled Inches	Small Head for Set Screw Size Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
595	3/8	1 1/16	3/8	6 1/2	1 1/2 & 9/16	.27	.41	.54
595B	3/8	1 1/16	7/16	6 1/2	1 1/2 & 9/16	.27	.41	.54
595C	3/8	1 1/16	1/2	6 1/2	1 1/2 & 9/16	.27	.41	.54
595D	7/16	2 1/16	3/8	6 1/2	1 1/2 & 9/16	.27	.41	.54
595E	7/16	2 1/16	7/16	6 1/2	1 1/2 & 9/16	.27	.41	.54
595F	7/16	2 1/16	1/2	6 1/2	1 1/2 & 9/16	.27	.41	.54
596	1/2	2 7/8	7/16	7 1/2	1 1/2 & 5/8	.33	.50	.66
596B	1/2	2 7/8	1/2	7 1/2	1 1/2 & 5/8	.33	.50	.66
596C	1/2	2 7/8	9/16	7 1/2	1 1/2 & 5/8	.33	.50	.66
596D	1/2	2 7/8	5/8	7 1/2	1 1/2 & 5/8	.33	.50	.66
596E	9/16	3 1/16	7/16	7 1/2	1 1/2 & 5/8	.33	.50	.66
596F	9/16	3 1/16	1/2	7 1/2	1 1/2 & 5/8	.33	.50	.66
596G	9/16	3 1/16	9/16	7 1/2	1 1/2 & 5/8	.33	.50	.66
596H	9/16	3 1/16	5/8	7 1/2	1 1/2 & 5/8	.33	.50	.66
597	5/8	1 1/16	9/16	8 1/2	1 1/2 & 11/16	.41	.62	.82
597B	5/8	1 1/16	5/8	8 1/2	1 1/2 & 11/16	.41	.62	.82
597C	5/8	1 1/16	3/4	8 1/2	1 1/2 & 11/16	.41	.62	.82
598	3/4	1 1/4	3/4	10	1 1/2 & 1 1/16	.52	.78	1.04
598B	3/4	1 1/4	7/8	10	1 1/2 & 1 1/16	.52	.78	1.04
598C	3/4	1 1/4	1	10	1 1/2 & 1 1/16	.52	.78	1.04
598D	7/8	1 7/16	3/4	10	1 1/2 & 1 1/16	.52	.78	1.04
598E	7/8	1 7/16	7/8	10	1 1/2 & 1 1/16	.52	.78	1.04
598F	7/8	1 7/16	1	10	1 1/2 & 1 1/16	.52	.78	1.04

Textile Machine

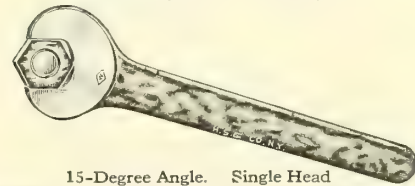


15-Degree Angle. Double Head

Number	For U. S. Standard Hexagon or Square Nuts Size Bolt Inch	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
760A	1/8 & 1/4	5/16 & 1/2	4 3/4	1/4	.15	.23	.30
760B	3/16 & 1/4	13/32 & 1/2	4 3/4	1/4	.15	.23	.30
760C	1/8 & 5/16	3/32 & 1/2	4 3/4	1/4	.15	.23	.30
761A	1/4 & 5/16	1/2 & 1/2	5 3/4	5/16	.20	.30	.40
761B	1/4 & 3/8	1/2 & 11/16	5 3/4	5/16	.20	.30	.40
761C	5/16 & 3/8	5/32 & 1/2	5 3/4	5/16	.20	.30	.40
762A	5/16 & 7/16	19/32 & 25/32	7	3/8	.25	.38	.50
762B	3/8 & 7/16	11/16 & 3/2	7	3/8	.25	.38	.50
762C	3/8 & 1/2	11/16 & 7/8	7	3/8	.25	.38	.50
763A	7/16 & 1/2	25/32 & 7/8	8 1/4	7/16	.30	.45	.60
763B	7/16 & 1/2	25/32 & 7/8	8 1/4	7/16	.30	.45	.60
763C	1/2 & 1/2	7/8 & 31/32	8 1/4	7/16	.30	.45	.60
764A	1/2 & 5/8	7/8 & 1 1/16	9 1/2	1/2	.38	.57	.76
764B	9/16 & 5/8	31/32 & 1 1/16	9 1/2	1/2	.38	.57	.76
764C	9/16 & 3/4	31/32 & 1 1/4	9 1/2	1/2	.38	.57	.76
765A	5/8 & 3/4	1 1/16 & 1 1/4	11	9/16	.50	.75	1.00
765B	5/8 & 7/8	1 1/16 & 1 7/8	11	9/16	.50	.75	1.00
765C	3/4 & 7/8	1 1/4 & 1 7/8	11	9/16	.50	.75	1.00

Check Nut or "Thin"

For Check, Jam or Lock Nuts, etc.



15-Degree Angle. Single Head

Number	For U. S. Standard Nuts Size Bolt Inch	Opening Milled Inches	Extreme Length Inches	Thickness Head Inch	Unfinished Each	Semi-finished Each	Finished Each
601	1/4	1 1/2	4	5/32	.10	.15	.20
602	5/16	1 3/2	4 1/2	11/64	.11	.17	.22
603	3/8	1 1/2	5 1/8	1/16	.13	.20	.26
604	7/16	2 1/2	5 7/8	3/32	.15	.23	.30
605	1/2	3 1/8	6 5/8	1/4	.18	.27	.36
606	9/16	3 1/2	7 1/2	5/32	.22	.33	.44
607	5/8	1 1/16	8 1/2	3/16	.28	.42	.56
608	3/4	1 1/4	10	3/8	.36	.54	.72
609	7/8	1 1/2	11 1/2	7/16	.46	.69	.92
610	1	1 3/8	13 1/4	1 1/2	.60	.90	1.20

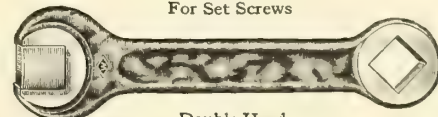


15 Degree Angle—Double Head

Number	For U. S. Standard Nuts Size Bolt Inches	Opening Milled Inches	Extreme Length Inches	Thickness Head Inch	Unfinished Each	Semi-finished Each	Finished Each
623	3/16 & 1/4	13/32 & 1/2	4 3/8	9/64 & 5/32	.14	.21	.28
624	3/16 & 5/16	13/32 & 1/2	4 3/8	9/64 & 5/32	.14	.21	.28
625	1/4 & 5/16	1 1/2 & 3/2	4 3/8	9/64 & 5/32	.14	.21	.28
626	1/4 & 3/8	1 1/2 & 1 1/16	5 1/2	3/32 & 1/16	.19	.29	.38
627	5/16 & 3/8	1 1/2 & 1 1/16	5 1/2	3/32 & 1/16	.19	.29	.38
628	5/16 & 7/16	1 1/2 & 3/2	5 1/2	3/32 & 1/16	.19	.29	.38
629	3/8 & 1/2	1 1/2 & 3/2	6 7/8	1/16 & 3/32	.25	.38	.50
630	3/8 & 1/2	1 1/2 & 7/8	6 7/8	3/16 & 7/32	.25	.38	.50
631	7/16 & 1/2	1 1/2 & 7/8	6 7/8	1/16 & 3/32	.25	.38	.50
632	7/16 & 5/8	1 1/2 & 3/2	8 1/2	3/32 & 9/32	.33	.50	.66
633	1/2 & 5/8	1 1/2 & 3/2	8 1/2	3/32 & 9/32	.33	.50	.66
634	9/16 & 5/8	1 1/2 & 1 1/16	8 1/2	3/32 & 9/32	.33	.50	.66
635	9/16 & 5/8	1 1/2 & 1 1/16	10 3/8	3/32 & 5/16	.44	.66	.88
636	9/16 & 3/4	1 1/2 & 1 1/4	10 3/8	3/32 & 5/16	.44	.66	.88
637	5/8 & 3/4	1 1/2 & 1 1/4	10 3/8	3/32 & 5/16	.44	.66	.88
638	5/8 & 7/8	1 1/2 & 1 7/8	12 5/8	5/16 & 7/16	.60	.90	1.20
639	3/4 & 7/8	1 1/4 & 1 7/8	12 5/8	5/16 & 7/16	.60	.90	1.20
640	3/4 & 1	1 1/4 & 1 3/8	12 5/8	5/16 & 7/16	.60	.90	1.20

Tool Post

For Set Screws



Double Head

Number	Open End for Set Screw Size Inch	Closed End for Set Screw Size Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
554	7/16	7/16	5 1/2	1/8 & 1/2	.21	.32	.42
555	1/2	1/2	6	9/16 & 9/16	.23	.35	.46
555B	1/2	1/2	6	9/16 & 9/16	.23	.35	.46
555C	9/16	9/16	6	9/16 & 9/16	.23	.35	.46
556	5/8	5/8	6 3/4	5/8 & 5/8	.30	.45	.60
556B	11/16	11/16	6 3/4	5/8 & 5/8	.30	.45	.60
556C	11/16	11/16	6 3/4	5/8 & 5/8	.30	.45	.60
557	3/4	3/4	7 1/2	1 1/8 & 1 1/8	.35	.52	.70

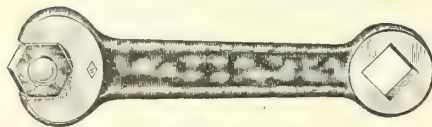
See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

Williams

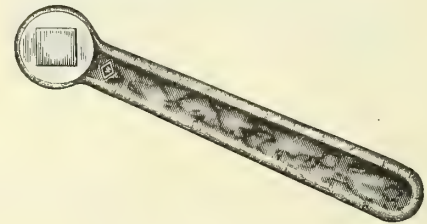
Tool Post

For U. S. Standard Nuts and Set Screws



Double Head

Square Box, for Set Screws



22½-Degrees Angle Single Head

Number	Open End for U. S. Standard Nut Size Bolt Inches	Opening Milled Inches	Closed End for Set Screw Size Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi- finished Each	Finished Each
562	3/8	1 1/16	9/16	6 1/2	1/2 & 5/8	.25	.38	.50
563	1/2	1 7/8	1 1/2	7	1/2 & 5/8	.30	.45	.60
563B	1/2	1 7/8	1 1/2	7	1/2 & 5/8	.30	.45	.60
563C	1/2	1 7/8	1 1/2	7	1/2 & 5/8	.30	.45	.60
563D	1/2	1 7/8	1 1/2	7	1/2 & 5/8	.30	.45	.60
564	5/8	1 11/16	5/8	7 1/2	1/2 & 5/8	.35	.52	.70
565	5/8	1 11/16	3/4	8	1/2 & 5/8	.40	.60	.80
566	3/4	1 11/4	3/4	9	3/4 & 3/4	.50	.75	1.00
566B	3/4	1 11/4	7/8	9	3/4 & 3/4	.50	.75	1.00
567	3/4	1 11/4	1	10	7/8 & 7/8	.60	.90	1.20
567B	7/8	1 7/16	7/8	10	7/8 & 7/8	.60	.90	1.20
567C	7/8	1 7/16	1	10	7/8 & 7/8	.60	.90	1.20
568	1	1 5/8	7/8	11	1 1/16 & 1 1/16	.75	1.13	1.50
568B	1	1 5/8	1	11	1 1/16 & 1 1/16	.75	1.13	1.50
568C	1 1/8	1 11/8	1	11	1 1/16 & 1 1/16	.75	1.13	1.50
568D	1 1/4	2	1	11	1 1/16 & 1 1/16	.75	1.13	1.50

Number	For Set Screw Size Inch	Extreme Length Inches	Head Thick- ness Inch	Head Outside Diameter Inches	Unfin- ished Each	Semi- finished Each	Finished Each
580	3/16	3	1/4	17/32	.09	.12	.18
581	1/4	3 3/8	3/32	5/8	.10	.15	.20
582	5/16	3 3/4	5/16	23/32	.11	.17	.22
583	3/8	4 1/4	3/8	27/32	.13	.20	.26
584	7/16	4 7/8	7/16	31/32	.16	.24	.32
585	1/2	5 1/2	15/32	1 3/32	.19	.28	.38
586	9/16	6 1/4	1/2	1 7/32	.22	.33	.44
587	5/8	7	9/16	1 11/32	.26	.39	.52
588	3/4	8	5/8	1 15/16	.30	.45	.60
589	7/8	9	11/16	1 3/4	.36	.54	.72
590	1	10	3/4	2	.44	.66	.88

Hexagon Box Wrenches

For U. S. Standard Nuts



15-Degree Angle. Single Head



15-Degree Angle. Double Head

Number	For U. S. Standard Nut Size Bolt Inches	Short Diameter Opening Broached Inches	Extreme Length Inches	Head Thickness Inches	Head Outside Diameter Inches	Unfin- ished Each	Semi- finished Each	Fin- ished Each
801	1/4	1/2	4	1/4	29/32	.10	.15	.20
802	5/16	3/8	4 7/8	1/4	1 3/32	.12	.18	.24
803	3/8	1/2	5 7/8	1/4	1 1/4	.14	.21	.28
804	7/16	5/8	6 7/8	1/4	1 3/8	.17	.25	.34
805	1/2	3/4	7 3/4	1/2	1 1/2	.20	.30	.40
806	5/8	7/8	8 3/4	1/2	1 5/8	.26	.39	.52
807	3/4	1 1/8	9 7/8	1/2	1 3/4	.32	.48	.64
808	7/8	1 1/4	11 1/2	1/2	2 1/8	.42	.63	.84
809	1	1 1/2	13 1/4	1/2	2 3/8	.58	.87	1.16
810	1 1/8	1 3/4	15	3/4	2 5/8	.75	1.13	1.50
811	1 1/4	2	17	1 1/8	2 7/8	1.00	1.50	2.00
812	1 1/2	2 1/4	19	1 1/4	3 1/4	1.25	1.88	2.50
813	1 3/4	2 3/4	21	1 1/2	3 1/2	1.62	2.43	3.24
814	1 7/8	2 7/8	23	1 5/8	3 3/4	2.00	3.00	4.00
815	2	3	25	1 3/4	4	2.50	3.75	5.00
816	2 1/4	3 1/2	27	1 7/8	4 1/4	3.00	4.50	6.00
817	2 1/2	3 3/4	30 1/2	1 7/8	4 3/4	4.40	6.60	8.80
818	2 3/4	4	34	1 7/8	5 1/4	6.00	9.00	12.00
819	2 7/8	4 1/4	38	1 7/8	5 7/8	7.60	11.40	15.20
819A	2 3/4	4 1/4	42	1 7/8	6 1/2	10.00	15.00	20.00
820	3	4 1/2	46	1 7/8	7	13.00	19.50	26.00

Number	For U. S. Standard Nuts Size Bolts Inches	Short Diameter Opening Broached Inches	Extreme Length Inches	Thickness Heads Inch	Unfin- ished Each	Semi- finished Each	Fin- ished Each
825	1/4 & 5/16	1/2 & 3/8	4 7/8	1/4 & 9/32	.18	.27	.36
826	1/4 & 3/8	1/2 & 5/8	5 7/8	1/4 & 5/16	.20	.30	.40
827	5/16 & 3/8	3/4 & 5/8	6 7/8	5/16 & 11/32	.22	.33	.44
828	5/16 & 7/16	3/4 & 1 1/8	6 7/8	5/16 & 11/32	.24	.36	.48
829	3/8 & 7/16	7/8 & 1 1/4	6 7/8	3/8 & 1 1/32	.26	.39	.52
830	3/8 & 1/2	7/8 & 1 1/2	7 3/4	3/8 & 1 1/32	.28	.42	.56
831	7/16 & 1/2	1 & 1 1/4	7 3/4	7/16 & 1 1/32	.30	.45	.60
832	7/16 & 9/16	1 & 1 1/2	8 3/4	7/16 & 1 1/32	.32	.48	.64
833	1/2 & 9/16	1 1/4 & 1 3/4	8 3/4	1 & 1 1/32	.36	.54	.72
834	1/2 & 5/8	1 1/2 & 1 3/4	9 7/8	1 1/2 & 1 1/32	.40	.60	.80
835	9/16 & 5/8	1 3/4 & 1 7/8	9 7/8	1 1/2 & 1 1/32	.44	.66	.88
836	9/16 & 3/4	1 3/4 & 1 7/8	11 1/2	1 1/2 & 1 1/32	.51	.77	1.02
837	5/8 & 3/4	1 3/4 & 1 7/8	11 1/2	1 1/2 & 1 1/32	.58	.87	1.16
838	5/8 & 7/8	1 5/8 & 1 7/8	13 1/4	1 1/2 & 1 1/32	.65	.98	1.30
839	3/4 & 7/8	1 7/8 & 2	13 1/4	1 3/4 & 1 1/32	.76	1.14	1.52
840	3/4 & 1	1 7/8 & 2	15	1 3/4 & 1 1/32	.88	1.32	1.76
841	7/8 & 1	2 & 2 1/8	15	2 & 1 1/32	1.00	1.50	2.00
842	7/8 & 1 1/8	2 1/8 & 2 1/4	17	2 1/8 & 1 1/32	1.18	1.77	2.36
843	1 & 1 1/8	2 1/4 & 2 1/2	17	2 1/4 & 1 1/32	1.36	2.04	2.72
844	1 & 1 1/4	2 1/2 & 2 3/4	19	2 3/4 & 1 1/32	1.55	2.33	3.10
845	1 1/8 & 1 1/4	2 3/4 & 3	19	3 & 1 1/32	1.80	2.70	3.60

See page 194 for special conditions and styles of finish

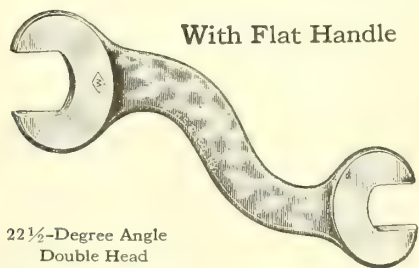
SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

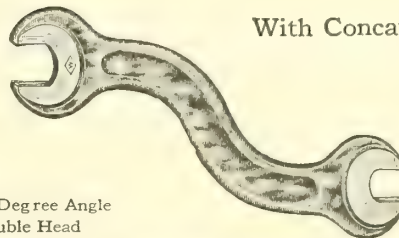
Drop-Forged Wrenches

Williams "S"



With Flat Handle

For U. S. Standard Nuts

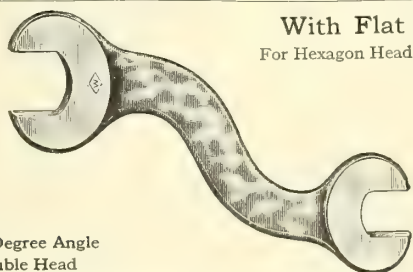


With Concave Handle

22½-Degree Angle
Double Head

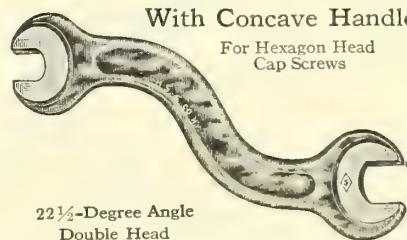
Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thick- ness Heads Inch	Unfin- ished Each	Semi- finished Each	Fin- ished Each
661A	1/8 & 3/16	5/16 & 1/2	4	9/32	.13	.20	.26
661B	1/8 & 1/4	5/16 & 1/2	4	9/32	.13	.20	.26
661C	3/16 & 1/4	5/16 & 1/2	4	9/32	.13	.20	.26
662A	3/16 & 5/16	5/16 & 1/2	5	5/16	.17	.26	.34
662B	1/4 & 5/16	5/16 & 1/2	5	5/16	.17	.26	.34
662C	1/4 & 3/8	5/16 & 1/2	5	5/16	.17	.26	.34
663A	5/16 & 3/8	5/16 & 1/2	6 1/4	3/8	.22	.33	.44
663B	5/16 & 1/2	5/16 & 1/2	6 1/4	3/8	.22	.33	.44
663C	3/8 & 1/2	5/16 & 1/2	6 1/4	3/8	.22	.33	.44
664A	3/8 & 1/2	5/16 & 1/2	7 1/2	7/16	.28	.42	.56
664B	1/2 & 1/2	5/16 & 1/2	7 1/2	7/16	.28	.42	.56
664C	1/2 & 9/16	5/16 & 1/2	7 1/2	7/16	.28	.42	.56
665A	1/2 & 5/8	5/16 & 1/2	9	1/2	.36	.54	.72
665B	1/2 & 5/8	5/16 & 1/2	9	1/2	.36	.54	.72
665C	9/16 & 5/8	5/16 & 1/2	9	1/2	.36	.54	.72
666A	9/16 & 3/4	5/16 & 1/2	10 1/2	9/16	.48	.72	.96
666B	5/8 & 3/4	5/16 & 1/2	10 1/2	9/16	.48	.72	.96
666C	5/8 & 7/8	5/16 & 1/2	10 1/2	9/16	.48	.72	.96
667A	3/4 & 1	5/16 & 1/2	12	5/8	.72	1.08	1.44
667B	3/4 & 1	5/16 & 1/2	12	5/8	.72	1.08	1.44
667C	7/8 & 1	5/16 & 1/2	12	5/8	.72	1.08	1.44
668A	7/8 & 1 1/8	5/16 & 1/2	14	3/4	1.10	1.65	2.20
668B	1 & 1 1/8	5/16 & 1/2	14	3/4	1.10	1.65	2.20
668C	1 & 1 1/4	5/16 & 1/2	14	3/4	1.10	1.65	2.20

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thick- ness Heads Inch	Unfin- ished Each	Semi- finished Each	Fin- ished Each
860A	1/8 & 3/16	5/16 & 1/2	3 5/8	9/32	.13	.20	.26
861A	1/8 & 1/4	5/16 & 1/2	4 7/8	9/32	.18	.27	.36
861B	3/16 & 1/4	5/16 & 1/2	4 7/8	9/32	.18	.27	.36
861C	3/16 & 5/16	5/16 & 1/2	4 7/8	9/32	.18	.27	.36
861X	1/4 & 5/16	5/16 & 1/2	4 7/8	9/32	.18	.27	.36
862A	1/4 & 3/8	5/16 & 1/2	5 3/4	5/16	.21	.32	.42
863A	5/16 & 3/8	5/16 & 1/2	6 1/2	3/8	.25	.38	.50
863B	5/16 & 1/2	5/16 & 1/2	6 1/2	3/8	.25	.38	.50
864A	3/8 & 1/2	5/16 & 1/2	7 1/4	7/16	.30	.45	.60
864B	3/8 & 1/2	5/16 & 1/2	7 1/4	7/16	.30	.45	.60
865A	1/2 & 1/2	5/16 & 1/2	8	1/2	.38	.57	.76
865B	1/2 & 9/16	5/16 & 1/2	8	1/2	.38	.57	.76
865C	1/2 & 5/8	5/16 & 1/2	8	1/2	.38	.57	.76
865X	1/2 & 5/8	5/16 & 1/2	8	1/2	.38	.57	.76
866A	9/16 & 5/8	5/16 & 1/2	10	9/16	.50	.75	1.00
866B	9/16 & 3/4	5/16 & 1/2	10	9/16	.50	.75	1.00
866C	5/8 & 3/4	5/16 & 1/2	10	9/16	.50	.75	1.00
867A	5/8 & 7/8	5/16 & 1/2	11 1/2	5/8	.75	1.13	1.50
867B	3/4 & 1	5/16 & 1/2	11 1/2	5/8	.75	1.13	1.50
868A	3/4 & 1	5/16 & 1/2	14 1/2	3/4	1.15	1.73	2.30
868B	7/8 & 1	5/16 & 1/2	14 1/2	3/4	1.15	1.73	2.30
868C	7/8 & 1 1/8	5/16 & 1/2	14 1/2	3/4	1.15	1.73	2.30



With Flat Handle
For Hexagon Head Cap Screws

22½-Degree Angle
Double Head



With Concave Handle
For Hexagon Head
Cap Screws

22½-Degree Angle
Double Head

Number	For Hexagon Head Cap Screws, Diameter Screws, Inches	Openings Milled Inches	Extreme Length Inches	Thick- ness Heads Inch	Unfin- ished Each	Semi- finished Each	Fin- ished Each
661D	1/8 & 3/16	5/16 & 3/8	4	9/32	.13	.20	.26
661E	1/8 & 1/4	5/16 & 3/8	4	9/32	.13	.20	.26
661F	3/16 & 1/4	5/16 & 3/8	4	9/32	.13	.20	.26
661G	3/16 & 5/16	5/16 & 3/8	4	9/32	.13	.20	.26
662D	1/4 & 5/16	5/16 & 3/8	5	5/16	.17	.26	.34
662E	1/4 & 3/8	5/16 & 3/8	5	5/16	.17	.26	.34
662F	5/16 & 3/8	5/16 & 3/8	5	5/16	.17	.26	.34
662G	5/16 & 1/2	5/16 & 3/8	5	5/16	.17	.26	.34
663D	3/8 & 1/2	5/16 & 3/8	6 1/4	3/8	.22	.33	.44
663E	3/8 & 1/2	5/16 & 3/8	6 1/4	3/8	.22	.33	.44
663F	7/16 & 1/2	5/16 & 3/8	6 1/4	3/8	.22	.33	.44
663G	7/16 & 1/2	5/16 & 3/8	6 1/4	3/8	.22	.33	.44
664D	1/2 & 1/2	5/16 & 3/8	7 1/2	7/16	.28	.42	.56
664E	1/2 & 9/16	5/16 & 3/8	7 1/2	7/16	.28	.42	.56
664F	9/16 & 5/8	5/16 & 3/8	7 1/2	7/16	.28	.42	.56
665D	9/16 & 3/4	5/16 & 3/8	9	1/2	.36	.54	.72
665E	5/8 & 3/4	5/16 & 3/8	9	1/2	.36	.54	.72
665F	5/8 & 7/8	5/16 & 3/8	9	1/2	.36	.54	.72
665G	3/4 & 7/8	5/16 & 3/8	9	1/2	.36	.54	.72
666D	3/4 & 1	5/16 & 3/8	10 1/2	9/16	.48	.72	.96
666E	7/8 & 1	5/16 & 3/8	10 1/2	9/16	.48	.72	.96
666F	7/8 & 1 1/8	5/16 & 3/8	10 1/2	9/16	.48	.72	.96
667D	1 & 1 1/8	5/16 & 3/8	12	5/8	.72	1.08	1.44
667E	1 & 1 1/4	5/16 & 3/8	12	5/8	.72	1.08	1.44
667F	1 1/8 & 1 1/4	5/16 & 3/8	12	5/8	.72	1.08	1.44

Number	For Hexagon Head Cap Screws, Diameter Screws, Inches	Openings Milled Inches	Extreme Length Inches	Thick- ness Heads Inch	Unfin- ished Each	Semi- finished Each	Fin- ished Each
861D	1/8 & 1/4	3/8 & 1/2	4 7/8	9/32	.18	.27	.36
862D	3/8 & 1/2	3/8 & 1/2	5 3/4	5/16	.21	.32	.42
862E	1/4 & 5/16	3/8 & 1/2	5 3/4	5/16	.21	.32	.42
862F	1/4 & 3/8	3/8 & 1/2	5 3/4	5/16	.21	.32	.42
863D	1/4 & 3/8	3/8 & 1/2	5 3/4	5/16	.21	.32	.42
863E	5/16 & 3/8	3/8 & 1/2	6 1/2	3/8	.25	.38	.50
864D	5/16 & 1/2	3/8 & 1/2	6 1/2	3/8	.25	.38	.50
864E	3/8 & 1/2	3/8 & 1/2	7 1/4	7/16	.30	.45	.60
864F	3/8 & 1/2	3/8 & 1/2	7 1/4	7/16	.30	.45	.60
865D	1/2 & 1/2	3/8 & 1/2	8	1/2	.38	.57	.76
865E	1/2 & 9/16	3/8 & 1/2	8	1/2	.38	.57	.76
865F	1/2 & 5/8	3/8 & 1/2	8	1/2	.38	.57	.76
865G	1/2 & 5/8	3/8 & 1/2	8	1/2	.38	.57	.76
866D	1/2 & 3/4	3/8 & 1/2	10	9/16	.50	.75	1.00
866E	9/16 & 3/4	3/8 & 1/2	10	9/16	.50	.75	1.00
866F	5/8 & 3/4	3/8 & 1/2	10	9/16	.50	.75	1.00
866G	5/8 & 3/4	3/8 & 1/2	10	9/16	.50	.75	1.00
867D	5/8 & 7/8	3/8 & 1/2	11 1/2	5/8	.75	1.13	1.50
867E	3/4 & 7/8	3/8 & 1/2	11 1/2	5/8	.75	1.13	1.50
867F	3/4 & 1	3/8 & 1/2	11 1/2	5/8	.75	1.13	1.50
867G	7/8 & 1	3/8 & 1/2	11 1/2	5/8	.75	1.13	1.50
868D	7/8 & 1 1/8	3/8 & 1/2	14 1/2	3/4	1.15	1.73	2.30
868E	7/8 & 1 1/4	3/8 & 1/2	14 1/2	3/4	1.15	1.73	2.30
868F	1 & 1 1/8	3/8 & 1/2	14 1/2	3/4	1.15	1.73	2.30
868G	1 & 1 1/4	3/8 & 1/2	14 1/2	3/4	1.15	1.73	2.30
868X	1 1/8 & 1 1/4	3/8 & 1/2	14 1/2	3/4	1.15	1.73	2.30

See page 194 for special conditions and styles of finish

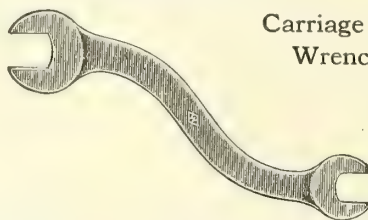
SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Drop-Forged Wrenches

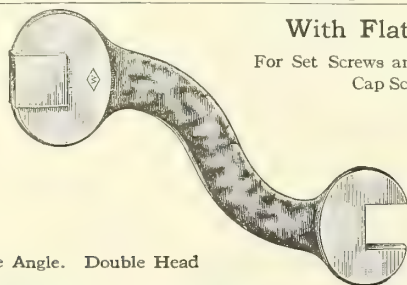
Williams "S"



Carriage Makers or Light Service
Wrenches for Manufacturers
Standard Nuts

22½-Degree Angle. Double Head. Long and Light

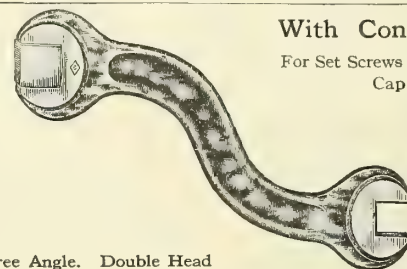
Number	Old Number	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each	Number
675B	475B	3/8 & 7/16	6 1/4	7/32	\$.13	\$.20	\$.26	675B
675A	475A	3/8 & 1/2	6 1/4	7/32	.13	.20	.26	675A
675	475	3/8 & 1/2	6 1/4	7/32	.13	.20	.26	675
677B	477B	1/2 & 9/16	7 1/8	1/4	.17	.25	.34	677B
677	477	1/2 & 5/8	7 1/8	1/4	.17	.25	.34	677
679A	479A	5/8 & 11/16	8 1/4	5/16	.22	.33	.44	679A
679	479	5/8 & 11/16	8 1/4	5/16	.22	.33	.44	679
681	481	11/16 & 3/4	9 1/4	3/8	.28	.42	.56	681
681B	481B	3/4 & 13/16	9 1/4	3/8	.28	.42	.56	681B
681A	481A	3/4 & 7/8	9 1/4	3/8	.28	.42	.56	681A
683	483	3/4 & 1 1/16	10 3/8	7/16	.34	.51	.68	683
683B	483B	7/8 & 1	10 3/8	7/16	.34	.51	.68	683B
683A	483A	7/8 & 1	10 3/8	7/16	.34	.51	.68	683A
685	485	1 & 1 1/8	12	1 1/2	.44	.66	.88	685
685A	485A	1 & 1 1/4	12	1 1/2	.44	.66	.88	685A
685C	485C	1 1/16 & 1 1/4	12	1 1/2	.44	.66	.88	685C
685B	485B	1 1/8 & 1 1/4	12	1 1/2	.44	.66	.88	685B



With Flat Handle

For Set Screws and Square Head
Cap Screws

22½-Degree Angle. Double Head



With Concave Handle

For Set Screws and Square Head
Cap Screws

22½-Degree Angle. Double Head

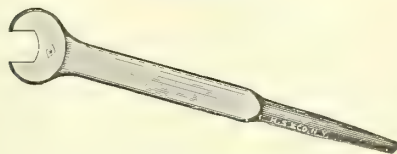
Number	For Set Screws Inches	For Square Head Cap Screws Diameter Screws Inches	Openings Milled Inches	Extreme Length Inches	Thick- ness Heads Inches	Unfin- ished Each	Semi- finished Each	Fin- ished Each	Number	For Set Screws Inches	For Square Head Cap Screws Diameter Screws Inches	Openings Milled Inches	Extreme Length Inches	Unfin- ished Each	Semi- finished Each	Fin- ished Each
661H	1/4 & 5/16	.....	1/4 & 5/16	4	9/32	\$.13	\$.20	\$.26	860H	1/4 & 5/16	.....	1/4 & 5/16	3 3/8	\$.13	\$.20	\$.26
661J	1/4 & 3/8	.....	1/4 & 3/8	4	9/32	.13	.20	.26	860J	1/4 & 3/8	.....	1/4 & 3/8	3 3/8	.13	.20	.26
661K	5/16 & 3/8	.....	5/16 & 3/8	4	9/32	.13	.20	.26	860K	5/16 & 3/8	.....	5/16 & 3/8	3 3/8	.13	.20	.26
661L	5/16 & 7/16	.....	5/16 & 7/16	4	9/32	.13	.20	.26	861H	5/16 & 7/16	.....	5/16 & 7/16	4 7/8	.18	.27	.36
662H	3/8 & 1/2	.....	3/8 & 1/2	5	5/16	.17	.26	.34	861J	3/8 & 1/2	1/4 & 5/16	5/16 & 7/16	4 7/8	.18	.27	.36
662J	3/8 & 1/2	.....	3/8 & 1/2	5	5/16	.17	.26	.34	862H	3/8 & 1/2	5/16 & 3/8	3/8 & 1/2	5 3/4	.21	.32	.42
662K	7/16 & 1/2	.....	7/16 & 1/2	5	5/16	.17	.26	.34	862J	7/16 & 1/2	5/16 & 3/8	7/16 & 1/2	5 3/4	.21	.32	.42
662L	7/16 & 9/16	.....	7/16 & 9/16	5	5/16	.17	.26	.34	862K	7/16 & 9/16	5/16 & 7/16	7/16 & 9/16	5 3/4	.21	.32	.42
663H	1/2 & 9/16	.....	1/2 & 9/16	6 1/4	3/8	.22	.33	.44	863H	1/2 & 9/16	3/8 & 7/16	1/2 & 9/16	6 1/2	.25	.38	.50
663J	1/2 & 5/8	.....	1/2 & 5/8	6 1/4	3/8	.22	.33	.44	863J	1/2 & 5/8	3/8 & 1/2	1/2 & 5/8	6 1/2	.25	.38	.50
663K	9/16 & 5/8	.....	9/16 & 5/8	6 1/4	3/8	.22	.33	.44	864H	9/16 & 5/8	7/16 & 1/2	9/16 & 5/8	7 1/4	.30	.45	.60
663M	.....	7/16 & 9/16	9/16 & 11/16	6 1/4	3/8	.22	.33	.44	864M	.....	7/16 & 9/16	9/16 & 11/16	7 1/4	.30	.45	.60
664H	9/16 & 3/4	.....	9/16 & 3/4	7 1/2	7/16	.28	.42	.56	864J	9/16 & 3/4	7/16 & 5/8	9/16 & 3/4	7 1/4	.30	.45	.60
664M	.....	1/2 & 9/16	5/8 & 11/16	7 1/2	7/16	.28	.42	.56	864R	.....	1/2 & 9/16	5/8 & 11/16	7 1/4	.30	.45	.60
664J	5/8 & 3/4	.....	5/8 & 3/4	7 1/2	7/16	.28	.42	.56	865H	5/8 & 3/4	.....	5/8 & 3/4	8	.38	.57	.76
664K	5/8 & 7/8	.....	5/8 & 7/8	7 1/2	7/16	.28	.42	.56	865J	5/8 & 7/8	.....	5/8 & 7/8	8	.38	.57	.76
664P	.....	9/16 & 5/8	11/16 & 3/4	7 1/2	7/16	.28	.42	.56	865M	.....	9/16 & 5/8	11/16 & 3/4	8	.38	.57	.76
664R	.....	9/16 & 3/4	11/16 & 7/8	7 1/2	7/16	.28	.42	.56	865R	.....	9/16 & 3/4	11/16 & 7/8	8	.38	.57	.76
665H	3/4 & 7/8	.....	3/4 & 7/8	9	1 1/2	.36	.54	.72	865K	3/4 & 7/8	.....	3/4 & 7/8	8	.38	.57	.76
665J	3/4 & 1	.....	3/4 & 1	9	1 1/2	.36	.54	.72	866H	3/4 & 1	.....	3/4 & 1	10	.50	.75	1.00
665K	7/8 & 1	.....	7/8 & 1	9	1 1/2	.36	.54	.72	866J	7/8 & 1	.....	7/8 & 1	10	.50	.75	1.00
666M	.....	5/8 & 7/8	3/4 & 1 1/8	10 1/2	9/16	.48	.72	.96	867H	7/8 & 1 1/8	3/4 & 7/8	7/8 & 1 1/8	11 1/2	.75	1.13	1.50
666H	7/8 & 1 1/8	.....	7/8 & 1 1/8	10 1/2	9/16	.48	.72	.96	867J	1 & 1 1/8	.....	1 & 1 1/8	11 1/2	.75	1.13	1.50
666R	.....	3/4 & 1	7/8 & 1 1/4	10 1/2	9/16	.48	.72	.96	867K	1 & 1 1/4	.....	1 & 1 1/4	11 1/2	.75	1.13	1.50
666J	1 & 1 1/8	.....	1 & 1 1/8	10 1/2	9/16	.48	.72	.96	867L	1 1/8 & 1 1/4	7/8 & 1	1 1/8 & 1 1/4	11 1/2	.75	1.13	1.50
666K	1 & 1 1/4	.....	1 & 1 1/4	10 1/2	9/16	.48	.72	.96	868M	.....	7/8 & 1 1/8	1 1/8 & 1 3/8	14 1/2	1.15	1.73	2.30
667H	1 1/8 & 1 1/4	.....	7/8 & 1 1/8	12	5/8	.72	1.08	1.44	868K	.....	7/8 & 1 1/4	1 1/8 & 1 1/2	14 1/2	1.15	1.73	2.30
667M	.....	7/8 & 1 1/8	1 1/8 & 1 3/8	12	5/8	.72	1.08	1.44	868R	.....	1 & 1 1/8	1 1/4 & 1 3/8	14 1/2	1.15	1.73	2.30
667R	.....	1 & 1 1/8	1 1/4 & 1 3/8	12	5/8	.72	1.08	1.44	868U	.....	1 & 1 1/4	1 1/4 & 1 1/2	14 1/2	1.15	1.73	2.30
668M	.....	1 & 1 1/4	1 1/4 & 1 1/2	14	3/4	1.10	1.65	2.20	868Y	.....	1 1/8 & 1 1/4	1 3/8 & 1 1/2	14 1/2	1.15	1.73	2.30
668R	.....	1 1/8 & 1 1/4	1 3/8 & 1 1/2	14	3/4	1.10	1.65	2.20								

See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

Williams

Construction



15-Degree Angle

The tang is for bringing bolt-holes into line and for insertion into convenient openings when wrench is not in use, preventing loss and keeping tool in sight.

Number	For U. S. Standard Nut Size Bolt Inches	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Un-finished Each	Semi-finished Each	Finished Each
221	1/4	1/2	8	3/8	\$.16	\$.24	\$.32
222	5/16	3/2	8	3/8	.16	.24	.32
223	3/8	1 1/2	9 1/2	7/16	.20	.30	.40
224	1/2	2 1/2	9 1/2	7/16	.20	.30	.40
225	1 1/2	7/8	11	1 1/2	.35	.53	.70
226	9/16	3 1/2	11	1 1/2	.35	.53	.70
227	5/8	1 1/2	13	9/16	.50	.75	1.00
228	3/4	1 1/4	15	5/8	.65	.97	1.30
229	7/8	1 1/2	17	1 1/8	.85	1.28	1.70
230	1	1 5/8	19	3/4	1.10	1.65	2.20

Structural



Straight Opening

The tang is for bringing bolt-holes into line and for insertion into convenient openings when wrench is not in use, preventing loss and keeping tool in sight.

Number	For U. S. Standard Nut Size Bolt Inches	Open-ing Inches	Extreme Length Inches	Thickness Heads Inch	Handle Offset Inches	Un-finished Each	Semi-Finished Each
901	1/4	1/2	8	3/8	1 1/2	\$.16	\$.24
902	5/16	3/2	8	3/8	1 1/2	.16	.24
903	3/8	2 1/2	9 1/2	7/16	7/8	.20	.30
904	1/2	3 1/2	9 1/2	7/16	7/8	.20	.30
905	1 1/2	2 1/2	11	1 1/2	1	.35	.53
906	9/16	1	11	1 1/2	1 1/2	.35	.53
907	5/8	1 1/4	13	5/8	1 1/2	.50	.75
908	3/4	1 1/2	15	1 1/8	1 1/4	.65	.97
909	7/8	1 1/2	17	3/4	1 5/8	.85	1.28
910	1	1 1/2	19	1 1/8	1 3/8	1.10	1.65

Track



Straight Opening

Unfinished are broached or milled.

Semi-finished are broached or milled and case-hardened all over; heads not ground. Length of handle can be varied, if desired.

Number	For U. S. Standard Nuts Size Bolt Inches	Openings Inches	Extreme Length Inches	Unfinished Each	Semi-finished Each
194	3/4	1 5/16	24	\$.60	\$.90
195	...	1 1/16	24	.60	.90
196A	7/8	1 1/2	27	.75	1.13
196	...	1 1/16	27	.75	1.13
197	1	1 1/8	27	.75	1.13
198	...	1 1/16	30	1.20	1.80
199A	1 1/8	1 7/8	30	1.20	1.80
199	...	1 1/16	30	1.20	1.80

Straight Flat Handle



Unfinished Only

Unfinished are broached only. Case-hardened Wrenches to order

Number	Kind	Outside Diameter of Nuts Inches	Openings Inches	Extreme Length Inches	Thickness Heads Inch	Un-finished Each
173	Single Head	1 3/16	1 1/4	23	3/4	\$.80
174	Single Head	1 1/4	1 5/16	23	3/4	.80
175	Single Head	1 3/8	1 7/16	23	3/4	.80
176	Single Head	1 1/2	1 9/16	23	3/4	1.00
177	Single Head	1 5/8	1 11/16	23	3/4	1.00
182	Double Head	1 3/16 & 1 1/4	1 1/4 & 1 5/16	24	3/4	1.35
184	Double Head	1 1/4 & 1 3/8	1 5/16 & 1 7/16	24	3/4	1.35
186	Double Head	1 1/4 & 1 1/2	1 5/16 & 1 9/16	24	3/4	1.35
188	Double Head	1 3/8 & 1 1/2	1 7/16 & 1 9/16	24	3/4	1.35

Telegraph Lineman

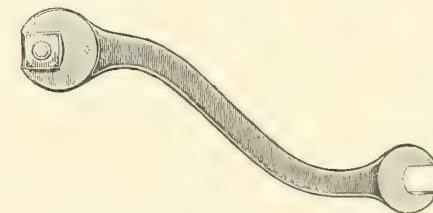


For Lag Screws, Rough Nuts, Etc.

Especially designed for dependable service in the erection of cross-arms on telegraph, etc., poles, but equally adaptable for use about agricultural and other machinery.

Number	Forged Openings for	Extreme Length Inches	Thickness Heads Inch	Un-finished Each
999	3/8, 7/16, 1/2, 9/16, 3/4 Lag Screws 5/16, 3/8, 1/2, 5/8 Square Nuts 7/16, 1/2, 5/8 Hexagon Nuts	13 3/4	1 1/2 & 5/8	\$2.00

Car



22 1/2-Degree Angle. Double Head

Long leverage. Unfinished are broached only

Semi-finished are broached, case-hardened all over; heads not ground

Number	For U. S. Standard Nuts Size Bolt Inches	Openings Inches	Extreme Length Inches	Thickness Heads Inch	Un-finished Each	Semi-finished Each
367	3/8 & 1/2	2 3/8 & 2 9/16	12	7/16 & 1/2	\$.50	\$.75
370	1/2 & 5/8	1 5/8 & 1 1/2	19	1 1/2 & 1 1/2	.85	1.28
371	1/2 & 3/4	1 5/8 & 1 1/2	19	1 1/2 & 1 1/2	.85	1.28
372	1/2 & 7/8	1 5/8 & 1 1/2	20	1 1/2 & 1 1/2	.92	1.38
373	5/8 & 3/4	1 5/8 & 1 1/2	20	1 1/2 & 1 1/2	.92	1.38
374	5/8 & 7/8	1 5/8 & 1 1/2	21	1 1/2 & 9/16	1.00	1.50
375	5/8 & 1	1 5/8 & 1 1/2	21	1 1/2 & 9/16	1.00	1.50
376	3/4 & 7/8	1 5/8 & 1 1/2	21	1 1/2 & 9/16	1.00	1.50
377	3/4 & 1	1 5/8 & 1 1/2	22	1 1/2 & 9/16	1.10	1.65
378	3/4 & 1 1/8	1 5/8 & 1 1/2	22	1 1/2 & 5/8	1.10	1.65
379	7/8 & 1	1 1/2 & 1 1/2	22	9/16 & 9/16	1.10	1.65
380	7/8 & 1 1/8	1 1/2 & 1 1/2	23	9/16 & 5/8	1.23	1.85
381	7/8 & 1 1/4	1 1/2 & 2 1/16	23	9/16 & 5/8	1.23	1.85
382	1 & 1 1/8	1 1/2 & 1 7/8	23	9/16 & 5/8	1.23	1.85
383	1 & 1 1/4	1 1/2 & 2 1/16	24	9/16 & 5/8	1.40	2.10
385	1 1/8 & 1 1/4	1 7/8 & 2 1/16	24	5/8 & 5/8	1.40	2.10
387	1 1/8 & 1 1/2	1 7/8 & 2 1/16	25	5/8 & 3/4	1.70	2.55
389	1 1/4 & 1 1/2	2 1/16 & 2 1/16	25	5/8 & 3/4	1.70	2.55

See page 194 for special conditions and styles of finish

SINCE
1848

HAMMACHER SCHLEMMER & CO.

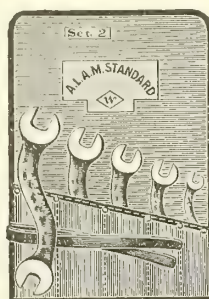
NEW
YORK

Drop-Forged Wrench Sets

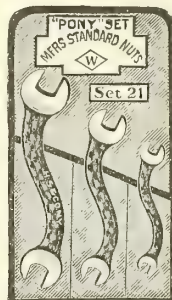
Williams



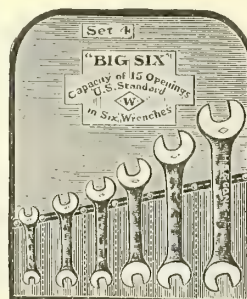
Carriage Makers



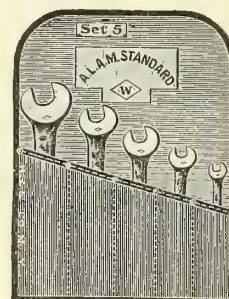
S.A.E. or A.L.A.M.
Light



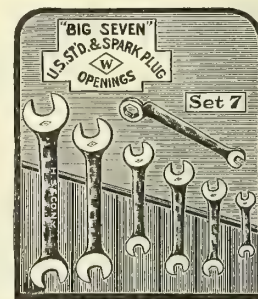
Pony Carriage Makers



Big Six



S.A.E. or A.L.A.M.



Big Seven

Unless otherwise specified Finished Wrenches will be supplied

Carriage Makers. Light

With openings for Manufacturers Standard Nuts

Number	For Manufacturers Standard Nuts Size Bolts Inch	Openings Milled Inch	Extreme Length Inches	Thick-ness Heads Inch	Un-finished Each	Semi-finished Each	Fin-ished Each
675	$\frac{3}{16}$ & $\frac{1}{4}$	$\frac{13}{32}$ & $\frac{1}{2}$	$6\frac{1}{4}$	$\frac{7}{32}$	.13	.20	.26
677	$\frac{1}{4}$ & $\frac{5}{16}$	$\frac{1}{2}$ & $\frac{5}{8}$	$7\frac{1}{8}$	$\frac{1}{4}$	.17	.25	.34
679	$\frac{5}{16}$ & $\frac{3}{8}$	$\frac{5}{8}$ & $\frac{11}{16}$	$8\frac{1}{4}$	$\frac{5}{16}$	.22	.33	.44
681	$\frac{3}{8}$ & $\frac{7}{16}$	$\frac{11}{16}$ & $\frac{27}{32}$	$9\frac{1}{4}$	$\frac{3}{8}$	.28	.42	.56
683	$\frac{7}{16}$ & $\frac{1}{2}$	$\frac{27}{32}$ & $\frac{15}{16}$	$10\frac{3}{8}$	$\frac{7}{16}$	.34	.51	.68
No. 1 Set					1.14	1.71	2.28

Duck Roll, 45 cents extra

Original. Extra Capacity. Big Six

With openings milled for most popular United States Standard Nuts and Cap Screws

Number	For Nuts Diameter Bolt Small Head	For Nuts Diameter Bolt Large Head	For Cap Screws Dia. Small Head	For Cap Screws Dia. Large Head	Openings Milled U. S. Standard Inches	Extreme Length Inches	Thick-ness Heads Inch	Un-finished Each	Semi-finished Each	Fin-ished Each
725	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{7}{16}$ & $\frac{1}{2}$	$4\frac{7}{8}$	$\frac{9}{32}$	.18	.27	.36
27C	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{9}{16}$	$\frac{11}{16}$	$\frac{9}{16}$ & $\frac{11}{16}$	$5\frac{7}{8}$	$\frac{5}{16}$	.22	.33	.44
28	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{7}{16}$ & $\frac{9}{16}$	$6\frac{7}{8}$	$\frac{11}{32}$	.24	.36	.48
729	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{11}{16}$	$\frac{9}{16}$ & $\frac{11}{16}$	$6\frac{7}{8}$	$\frac{11}{32}$	.26	.39	.52
34	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{5}{8}$ & $1\frac{1}{16}$	$7\frac{3}{4}$	$\frac{1}{2}$	.40	.60	.80
736	$\frac{3}{4}$	$\frac{3}{4}$	1	1	$\frac{3}{4}$ & $1\frac{1}{4}$	$11\frac{1}{2}$	$\frac{9}{16}$	.51	.77	1.02
No. 4 Set								1.81	2.72	3.62

Duck Roll, 45 cents extra

Automobile. Light

With openings for S. A. E. or A. L. A. M. Standard Nuts and Cap Screws

Number	For S. A. E. Standard Nuts and Cap Screws Size Bolt or Screw Inch	Openings Milled Inches	Extreme Length Inches	Thick-ness Heads Inch	Un-finished Each	Semi-finished Each	Fin-ished Each
675A	$\frac{1}{4}$ & $\frac{5}{16}$	$\frac{3}{8}$ & $\frac{1}{2}$	$6\frac{1}{4}$	$\frac{7}{32}$	.13	.20	.26
679A	$\frac{3}{8}$ & $\frac{7}{16}$	$\frac{9}{16}$ & $\frac{11}{16}$	$8\frac{1}{4}$	$\frac{5}{16}$	.22	.33	.44
681A	$\frac{1}{2}$ & $\frac{9}{16}$	$\frac{3}{4}$ & $\frac{7}{8}$	$9\frac{1}{4}$	$\frac{3}{8}$	.28	.42	.56
683A	$\frac{5}{8}$ & $\frac{11}{16}$	$\frac{15}{16}$ & 1	$10\frac{3}{8}$	$\frac{7}{16}$	.34	.51	.68
685B	$\frac{3}{4}$ & $\frac{7}{8}$	$1\frac{1}{8}$ & $1\frac{1}{4}$	12	$\frac{1}{2}$	.44	.66	.88
No. 2 Set					1.41	2.12	2.82

Duck Roll, 45 cents extra

Automobile. Extra Capacity. Big Seven

With openings for United States Standard Nuts, Cap Screws and Spark Plug, Etc.

Number	For Nuts Diameter Bolt Small Head	For Nuts Diameter Bolt Large Head	For Cap Screws Dia. Small Head	For Cap Screws Dia. Large Head	Openings Milled U. S. Standard Inches	Extreme Length Inches	Thick-ness Heads Inch	Un-finished Each	Semi-finished Each	Fin-ished Each
725	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{7}{16}$ & $\frac{1}{2}$	$4\frac{7}{8}$	$\frac{9}{32}$	.18	.27	.36
27C	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{9}{16}$	$\frac{11}{16}$	$\frac{9}{16}$ & $\frac{11}{16}$	$5\frac{7}{8}$	$\frac{5}{16}$	.22	.33	.44
28	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{7}{16}$ & $\frac{9}{16}$	$6\frac{7}{8}$	$\frac{11}{32}$	.24	.36	.48
729	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{11}{16}$	$\frac{9}{16}$ & $\frac{11}{16}$	$6\frac{7}{8}$	$\frac{11}{32}$	.26	.39	.52
34	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{5}{8}$ & $1\frac{1}{16}$	$7\frac{3}{4}$	$\frac{1}{2}$	.40	.60	.80
736	$\frac{3}{4}$	$\frac{3}{4}$	1	1	$\frac{3}{4}$ & $1\frac{1}{4}$	$11\frac{1}{2}$	$\frac{9}{16}$	.51	.77	1.02
S.P. }	S.A.E. }	U.S. }	S.P. }							
993 }	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{8}$ & $\frac{1}{2}$	8	$\frac{5}{16}$ & $\frac{1}{2}$	.40	.60	.80
No. 7 Set								2.21	3.32	4.42

Duck Roll, 45 cents extra

Automobile

With openings milled for S. A. E. or A. L. A. M. Standard Nuts and Cap Screws

Number	For Manufacturers Standard Nuts Size Bolts Inch	Openings Milled Inch	Extreme Length Inches	Thick-ness Heads Inch	Un-finished Each	Semi-finished Each	Fin-ished Each
675	$\frac{3}{16}$ & $\frac{1}{4}$	$\frac{13}{32}$ & $\frac{1}{2}$	$6\frac{1}{4}$	$\frac{7}{32}$	.13	.20	.26
679	$\frac{5}{16}$ & $\frac{3}{8}$	$\frac{5}{8}$ & $\frac{11}{16}$	$8\frac{1}{4}$	$\frac{5}{16}$	.22	.33	.44
683	$\frac{7}{16}$ & $\frac{1}{2}$	$\frac{27}{32}$ & $\frac{15}{16}$	$10\frac{3}{8}$	$\frac{7}{16}$	.34	.51	.68
No. 21 Set					.69	1.04	1.38

Duck Roll, 35 cents extra

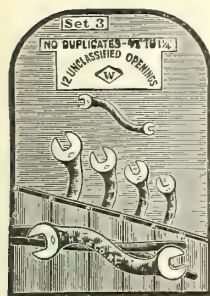
Number	For S. A. E. Standard Nuts and Cap Screws Diameter Bolts and Screws Inch	Openings Milled Inches	Extreme Length Inches	Thick-ness Heads Inch	Un-finished Each	Semi-finished Each	Fin-ished Each
723	$\frac{1}{4}$ & $\frac{5}{16}$	$\frac{3}{8}$ & $\frac{1}{2}$	4	$\frac{1}{4}$	.14	.21	.28
27C	$\frac{3}{8}$ & $\frac{7}{16}$	$\frac{9}{16}$ & $\frac{11}{16}$	$5\frac{7}{8}$	$\frac{5}{16}$	.22	.33	.44
731A	$\frac{1}{2}$ & $\frac{9}{16}$	$\frac{3}{4}$ & $\frac{7}{8}$	$7\frac{3}{4}$	$\frac{13}{32}$	.30	.45	.60
33C	$\frac{5}{8}$ & $\frac{11}{16}$	$\frac{15}{16}$ & 1	$8\frac{3}{4}$	$\frac{7}{16}$	.36	.54	.72
737	$\frac{3}{4}$ & $\frac{7}{8}$	$1\frac{1}{8}$ & $1\frac{1}{4}$	$11\frac{1}{2}$	$\frac{9}{16}$	.58	.87	1.16
No. 5 Set					1.60	2.40	3.20

Duck Roll, 45 cents extra

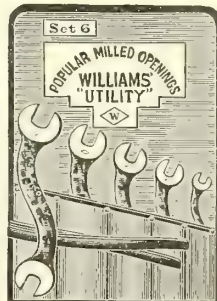
See page 194 for styles of finish

Drop-Forged Wrench Sets

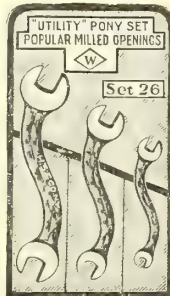
Williams



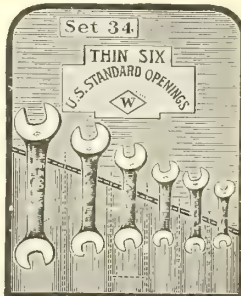
General Service



Utility Five



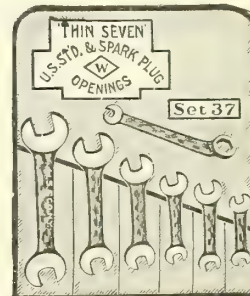
Pony Utility



Thin Six



Thin Five



Thin Seven

General Service. Light

With openings milled for twelve popular nut and screw sizes

Number	For Unclassified Nuts or Screws	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
675B	Twelve	3/8 & 7/16	6 1/4	7/32	\$.13	\$.20	\$.26
677B	Popular	1/2 & 9/16	7 1/8	1/4	.17	.25	.34
679B	Milled	5/8 & 1 1/16	8 1/4	5/16	.22	.33	.44
681B	Openings	3/4 & 1 1/16	9 1/4	3/8	.28	.42	.56
683B	No	7/8 & 1	10 3/8	7/16	.34	.51	.68
685B	Duplicates	1 1/8 & 1 1/4	12	1/2	.44	.66	.88
No. 3					1.58	2.37	3.16

Duck Roll, 45 cents extra

Utility. Light

With openings milled for nut measure instead of bolt size

Number	Openings Milled Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
675A	3/8 & 1/2	6 1/4	7/32	\$.13	\$.20	\$.26
677	1/2 & 5/8	7 1/8	1/4	.17	.25	.34
679C	5/8 & 3/4	8 1/4	5/16	.22	.33	.44
681A	3/4 & 7/8	9 1/4	3/8	.28	.42	.56
683B	7/8 & 1	10 3/8	7/16	.34	.51	.68
No. 6				1.14	1.71	2.28

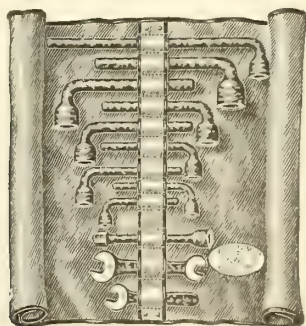
Duck Roll, 45 cents extra

Pony. Utility Light

With openings milled for popular sizes, without duplication

Number	Openings Milled Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
675A	3/8 & 1/2	6 1/4	7/32	\$.13	\$.20	\$.26
679C	5/8 & 3/4	8 1/4	5/16	.22	.33	.44
683B	7/8 & 1	10 3/8	7/16	.34	.51	.68
No. 26				.69	1.04	1.38

Duck Roll, 35 cents extra



Ford. Set A

Number	Class	Opening Size Inch	Extreme Length Inches	Unfinished Each	Semi-Finished Each	Finished Each
27	D. H. Engineers	1 1/2 & 1 1/4	5 7/8	\$.22	\$.33	\$.44
702	S. H. Cap Screw	1 1/2	4 3/4	.12	.18	.24
963D	Offset Socket	4	4 1/2	.24	.36	.48
964A	Offset Socket	4 1/2	5 1/4	.26	.39	.52
965D*	Straight Socket	5 1/4	6 1/2	.29	.44	.58
965D	Offset Socket	5 1/4	6 1/2	.29	.44	.58
965A	Offset Socket	5 1/4	6 1/2	.29	.44	.58
966DS	Offset Socket	11	11	.42	.63	.84
967A*	Offset Socket	6	6	.36	.54	.72
967D	Offset Socket	6	6	.36	.54	.72
968A	Offset Socket	6 7/8	6 7/8	.40	.60	.80
969A	Offset Socket	7 3/4	7 3/4	.46	.69	.92
Ford Set				3.71	5.58	7.42

List price of Roll, 60 cents extra

*Use Wrench No. 967A as lever for Wrench No. 965D. Designed for extreme and convenient service upon the bolts and screws common to the "Ford" construction.

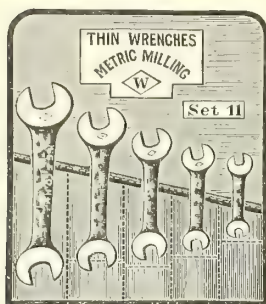
See page 194 for styles of finish

SINCE
1848

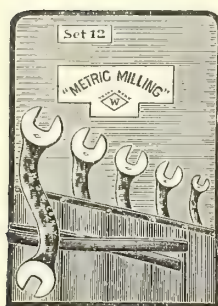
HAMMACHER SCHLEMMER & CO. NEW YORK

Metric

For Textile Machinery



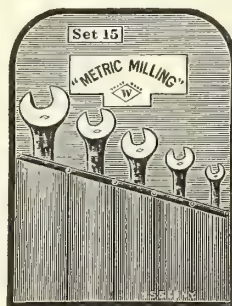
No. 11. Thin



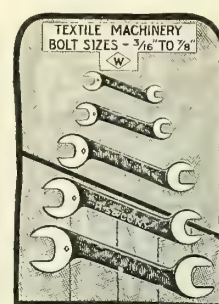
No. 12

Drop-Forged Wrench Sets

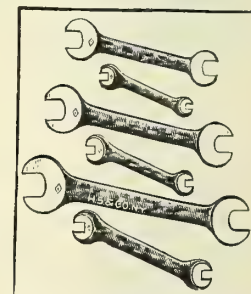
Williams



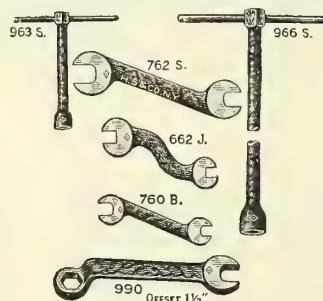
No. 15



Textile



Crompton & Knowles Loom



Draper Loom

Textile

With openings for every bolt size from $\frac{1}{16}$ inch to $\frac{3}{8}$ inch

Selected from standard line of Check Nut Wrenches for lighter service on thin or regular thicknesses of nuts, etc.

Number	Openings Milled mm.	Extreme Length mm.	Thickness Heads mm.	Unfinished Each	Semi-Finished Each	Finished Each
623M	10 & 12	111	3.5 & 3.9	.14	.21	.28
626M	14 & 16	140	3.9 & 4.7	.19	.29	.38
629M	18 & 20	174	4.7 & 5.5	.25	.38	.50
632M	22 & 25	216	5.5 & 7.1	.33	.50	.66
635M	28 & 30	264	7.1 & 7.9	.44	.66	.88
No. 11 Set				1.35	2.03	2.70

Duck Roll, 45 cents extra

No. 12

Selected from specially designed, lighter tools. Compact, convenient and serviceable.

Number	Openings Milled mm.	Extreme Length mm.	Thickness Heads mm.	Unfinished Each	Semi-Finished Each	Finished Each
675M	10 & 12	159	5.5	.13	.20	.26
679M	14 & 16	210	7.9	.22	.33	.44
681M	18 & 20	235	9.5	.28	.42	.56
683M	22 & 25	264	11.1	.34	.51	.68
685M	28 & 30	304	12.7	.44	.66	.88
No. 12 Set				1.41	2.12	2.82

Duck Roll, 45 cents extra

No. 15

Dependable tools selected from recognized standards of wrench-weights and design.

Number	Openings Milled mm.	Extreme Length mm.	Thickness Heads mm.	Unfinished Each	Semi-Finished Each	Finished Each
23M	10 & 12	102	6.3	.14	.21	.28
27M	14 & 16	149	7.9	.22	.33	.44
29M	18 & 20	175	8.7	.26	.39	.52
33M	22 & 25	222	11.1	.36	.54	.72
37M	28 & 30	292	14.2	.58	.87	1.16
No. 15 Set				1.56	2.34	3.12

Duck Roll, 45 cents extra

Junior "Ford." Set "B"

Drop-forged, accurately milled and case-hardened, the Wrenches in this selection—all tried out for service upon a Model "T" Ford Car—are of a class most commonly used for mechanical purposes and they will provide satisfactorily for the adjustment of about twenty prominent bolts and screws—Cylinder Head Bolts included—of that popular machine.

At moderate cost, owners are assured the maximum of first-class tool-service in their use.

Number	Class	Opening Size Inches	Extreme Length Inches	Unfinished Each	Semi-Finished Each	Finished Each
27C	D. H. Engineers	$\frac{9}{16}$ & $\frac{11}{16}$	5 $\frac{7}{8}$	.22	.33	.44
729	D. H. Cap Screw	$\frac{5}{8}$ & $\frac{3}{4}$	6 $\frac{7}{8}$	.26	.39	.52
33C	D. H. Engineers	$\frac{15}{16}$ & 1	8 $\frac{3}{4}$	.36	.54	.72
734	D. H. Cap Screw	$\frac{7}{8}$ & 1 $\frac{1}{8}$	9 $\frac{3}{4}$	.40	.60	.80
966DS	S. H. Socket	$\frac{11}{16}$	11	.42	.63	.84
Ford Set "B" List Price of Roll \$.45 extra				1.66	2.49	3.32

See page 194 for styles of finish

Number	For U. S. Standard Hexagon or Square Nuts, Size Bolt Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
760B	$\frac{3}{16}$ & $\frac{1}{4}$	$\frac{13}{32}$ & $\frac{1}{2}$	4 $\frac{3}{4}$	$\frac{1}{4}$	.15	.23	.30
761C	$\frac{5}{16}$ & $\frac{3}{8}$	$\frac{19}{32}$ & $\frac{11}{16}$	5 $\frac{3}{4}$	$\frac{5}{16}$	.20	.30	.40
763A	$\frac{7}{16}$ & $\frac{1}{2}$	$\frac{25}{32}$ & $\frac{7}{8}$	8 $\frac{1}{4}$	$\frac{1}{16}$	.30	.45	.60
764B	$\frac{9}{16}$ & $\frac{5}{8}$	$\frac{31}{32}$ & 1 $\frac{1}{16}$	9 $\frac{1}{2}$	$\frac{1}{2}$	.38	.57	.76
765C	$\frac{3}{4}$ & $\frac{7}{8}$	1 $\frac{1}{4}$ & 1 $\frac{1}{16}$	11	$\frac{9}{16}$	.50	.75	1.00
Per Set					1.53	2.30	3.06

Duck Roll, 45 cents extra

Draper Loom

With openings for U. S. Standard Nuts, Cap and Set Screws

Number	For	Size Openings Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
662J	$\frac{3}{8}$ & $\frac{1}{2}$ Set Screws	$\frac{3}{8}$ & $\frac{1}{2}$	5	$\frac{5}{16}$	.17	.26	.34
760B	$\frac{3}{16}$ & $\frac{1}{4}$ Nuts	$\frac{13}{32}$ & $\frac{1}{2}$	4 $\frac{3}{4}$	$\frac{1}{4}$	.15	.23	.30
762S	$\frac{1}{16}$ Nuts & S	$\frac{5}{8}$ & $\frac{3}{4}$	7	$\frac{3}{8}$	.25	.38	.50
963S	$\frac{3}{8}$ Set Screw	$\frac{25}{32}$	7 $\frac{3}{4}$	$\frac{11}{16}$	.44	.60	.75
966S	$\frac{1}{2}$ Set Screw	$\frac{33}{64}$	22 $\frac{1}{2}$	1*	.65	.90	1.15
990	$\frac{7}{16}$ & $\frac{1}{2}$ Bolt, $\frac{5}{8}$ C. S.	$\frac{7}{8}$ & $\frac{25}{32}$	7 $\frac{1}{4}$	$\frac{11}{32}$	.50	.75	1.00
Per Set					2.16	3.12	4.04

*Diameter.

Crompton & Knowles Loom

With openings for Special Nuts and Screws

Number	For	Size Openings Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
527S	Special Nuts	$\frac{11}{32}$ & $\frac{13}{32}$	5	$\frac{5}{16}$ & $\frac{11}{32}$	.18	.27	.36
530S	and Screws	$\frac{15}{32}$ & $\frac{17}{32}$	5 $\frac{7}{8}$	$\frac{11}{32}$ & $\frac{3}{8}$	.22	.33	.44
534S	on	$\frac{19}{32}$ & $\frac{21}{32}$	7 $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{1}{2}$	.33	.50	.66
30S	Crompton	$\frac{25}{32}$ & $\frac{27}{32}$	7 $\frac{3}{4}$	$\frac{5}{16}$ & $\frac{13}{32}$	.28	.42	.56
33S	& Knowles	$\frac{33}{32}$ & 1	8 $\frac{3}{4}$	$\frac{1}{16}$ & $\frac{13}{32}$	.36	.54	.72
37S	Loom	1 $\frac{1}{4}$ & 1 $\frac{13}{32}$	11 $\frac{1}{2}$	$\frac{1}{2}$ & $\frac{9}{16}$	.58	.87	1.16
Per Set					1.95	2.93	3.90



Drop-Forged Spanner Wrenches

Williams

Pin



Unfinished are plain forgings.
Semi-Finished have pins milled, edges ground, and are case-hardened all over.
Finished have pins milled and are polished and case-hardened all over and lacquered.

Number	For Circle Diameter Inches	Extreme Length Inches	Finished Diameter Pin Inch	Unfinished Each	Semi-finished Each	Finished Each
452	1	4	$\frac{3}{16}$	\$.18	\$.27	\$.36
453	$1\frac{1}{4}$	$4\frac{1}{2}$	$\frac{13}{64}$	.19	.29	.38
454	$1\frac{1}{2}$	5	$\frac{7}{32}$	.20	.30	.40
455	$1\frac{3}{4}$	$5\frac{1}{2}$	$\frac{15}{64}$	.21	.31	.42
456	2	6	$\frac{1}{4}$	.22	.33	.44
457	$2\frac{1}{4}$	$6\frac{1}{2}$	$\frac{17}{64}$	.23	.35	.46
458	$2\frac{1}{2}$	7	$\frac{9}{32}$	.24	.36	.48
459	$2\frac{3}{4}$	$7\frac{1}{2}$	$\frac{19}{64}$	.26	.39	.52
460	3	8	$\frac{5}{16}$	.28	.42	.56
461	$3\frac{1}{4}$	$8\frac{1}{2}$	$\frac{21}{64}$	.30	.45	.60
462	$3\frac{1}{2}$	9	$\frac{11}{32}$	.32	.48	.64
463	$3\frac{3}{4}$	$9\frac{1}{2}$	$\frac{23}{64}$	.34	.51	.68
464	4	10	$\frac{3}{8}$	.36	.54	.72
466	5	12	$\frac{7}{16}$	.48	.72	.96
468	6	14	$\frac{1}{2}$	.65	.98	1.30

Face



Unfinished are plain forgings but have pins milled.
Semi-Finished have pins milled, the edges ground and are case-hardened all over.
Finished have pins milled, and are polished, case-hardened and lacquered all over.
The pins are forged integral with the wrench.

Number	Pins Distance C to C Inches	Pins Diameter Milled Inch	Pins Length Inch	Span of Jaws in Clear Inches	Length from C of Pins Inches	Thickness Inch	Unfinished Each	Semi-finished Each	Finished Each
418	1	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{11}{16}$	$4\frac{1}{2}$	$\frac{3}{16}$	\$.15	\$.22	\$.30
420	$1\frac{1}{4}$	$\frac{7}{32}$	$\frac{7}{32}$	$\frac{29}{32}$	5	$\frac{3}{16}$	.17	.26	.34
422	$1\frac{1}{2}$	$\frac{7}{32}$	$\frac{7}{32}$	$1\frac{1}{8}$	$5\frac{1}{2}$	$\frac{3}{16}$	.19	.28	.38
424	$1\frac{3}{4}$	$\frac{7}{32}$	$\frac{7}{32}$	$1\frac{3}{8}$	6	$\frac{7}{32}$	.22	.33	.44
426	2	$\frac{1}{4}$	$\frac{1}{4}$	$1\frac{5}{8}$	$6\frac{1}{2}$	$\frac{7}{32}$	.25	.38	.50
428	$2\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$1\frac{7}{8}$	7	$\frac{7}{32}$	.29	.43	.58
430	$2\frac{1}{2}$	$\frac{9}{32}$	$\frac{9}{32}$	$2\frac{3}{32}$	$7\frac{1}{2}$	$\frac{1}{4}$	.33	.50	.66
432	$2\frac{3}{4}$	$\frac{9}{32}$	$\frac{9}{32}$	$2\frac{11}{32}$	8	$\frac{1}{4}$	.38	.57	.76
434	3	$\frac{5}{16}$	$\frac{5}{16}$	$2\frac{19}{32}$	$8\frac{1}{2}$	$\frac{1}{4}$	.43	.64	.86
436	$3\frac{1}{4}$	$\frac{5}{16}$	$\frac{5}{16}$	$2\frac{13}{16}$	$9\frac{1}{8}$	$\frac{1}{4}$	.49	.74	.98
438	$3\frac{1}{2}$	$\frac{5}{16}$	$\frac{5}{16}$	$3\frac{1}{32}$	$9\frac{3}{4}$	$\frac{1}{4}$	.55	.82	1.10
440	$3\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$3\frac{1}{4}$	$10\frac{3}{8}$	$\frac{1}{4}$	.62	.93	1.24
442	4	$\frac{3}{8}$	$\frac{3}{8}$	$3\frac{7}{16}$	11	$\frac{1}{4}$	.70	1.05	1.40

Hook



Unfinished Only

The diameter of circle which the unfinished forgings fit is given in second column of table, but wrenches will finish to sizes stated in third column.

Light Hook



Unfinished Only

Length of handle can be varied if desired

Number	Forgings For Circle Diameter Inches	Forgings will finish for Circles Diameter Inches	Extreme Length Inches	Thickness Inch	Each
403	$1\frac{1}{4}$	1 to $1\frac{1}{4}$	$4\frac{3}{4}$	$\frac{7}{32}$	\$.20
404	$1\frac{1}{2}$	$1\frac{3}{8}$ to $1\frac{5}{8}$	6	$\frac{1}{4}$	.23
405	2	$1\frac{3}{4}$ to 2	$7\frac{1}{8}$	$\frac{1}{4}$	.26
406	$2\frac{1}{4}$	$2\frac{1}{8}$ to $2\frac{3}{8}$	$8\frac{7}{16}$	$\frac{1}{4}$	.30
407	$2\frac{5}{8}$	$2\frac{1}{2}$ to $2\frac{3}{4}$	$9\frac{3}{4}$	$\frac{1}{4}$	.34
408	$3\frac{1}{8}$	$2\frac{7}{8}$ to $3\frac{1}{4}$	$10\frac{7}{8}$	$\frac{5}{16}$	.40
409	$3\frac{3}{4}$	$3\frac{3}{8}$ to $3\frac{7}{8}$	12	$\frac{5}{16}$	.48
410	$4\frac{3}{8}$	4 to $4\frac{1}{2}$	13	$\frac{5}{16}$	.58
412	$5\frac{3}{4}$	$5\frac{1}{4}$ to $5\frac{3}{4}$	15	$\frac{7}{16}$	.85

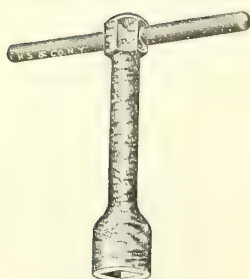
Number	Old Number	For Circle Diameter Inches	Extreme Length Inches	Hook Length Inch	Hook Width Inch	Hook Thickness Inch	Diameter Handle Inch	Each
491	308	$1\frac{3}{16}$	$6\frac{1}{2}$	$\frac{1}{16}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	\$.12
493	310	$1\frac{3}{4}$	$7\frac{1}{2}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	.14
494	311	$2\frac{1}{8}$	8	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	.15
495	312	$2\frac{1}{2}$	$8\frac{1}{4}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	.16
496	313	$2\frac{3}{4}$	$8\frac{1}{2}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	.18
497	314	3	$8\frac{3}{4}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	.20
498	315	$3\frac{1}{2}$	9	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	.22

See page 194 for styles of finish

Drop-Forged Wrenches

Williams

Single Head Socket, with or without Handle. For Square Nuts, Cap Screws and Set Screws



Square Opening

Unfinished are broached only.
Semi-Finished are broached,
edges ground and case-hardened
all over.

Finished are broached, polished
all over, case-hardened and lac-
quered.

Number	Square Openings					Hex. End same size as U. S. Nut for Bolt	Pin-Handle Diam. Length Inch	Pin-Handle Diam. Length Inches	Unfinished		Semi-finished		Finished			
	For Set Screw Size Inches	For Cap Screw Diam- eter Screw Inches	For U. S. Stand- ard Nut Size Inches	Short Diam- eter Broach- ed Open- ing Inches	Ex- treme Length Inches				Diam- eter Head Inches	Diam- eter Shank Inches	With- out Pin- Han- dle or Hole for same Each	With Pin- Han- dle and Hole for same Each	With- out Pin- Han- dle or Hole for same Each	With Pin- Han- dle and Hole for same Each	With- out Pin- Han- dle or Hole for same Each	With Pin- Han- dle and Hole for same Each
960H	1/8	...	...	1/8	3 5/8	11/32	7/32	1/8	1/8	3	\$.18	\$.26	\$.27	\$.35	\$.36	\$.44
961H	3/16	...	...	3/16	4	1/2	1/4	3/16	3/16	4	.20	.30	.30	.40	.40	.50
961J	1/4	...	...	1/4	4	1/2	1/4	3/16	3/16	4	.20	.30	.30	.40	.40	.50
962H	5/16	...	...	5/16	4 1/2	5/8	3/8	1/4	5/32	4 1/2	.22	.33	.33	.44	.44	.55
963H	3/8	1/4	...	3/8	4 7/8	11/16	3/8	5/16	5/8	5 1/8	.24	.37	.36	.49	.48	.61
965H	7/16	5/16	...	7/16	5 3/4	7/8	7/16	3/8	5/16	5 3/4	.29	.43	.44	.58	.58	.72
966H	1/2	3/8	1/4	1/2	6 1/8	1	1/2	7/16	11/32	6 1/8	.32	.47	.48	.63	.64	.79
967H	5/8	7/16	...	5/8	6 1/2	1 1/8	9/16	1/2	13/32	6 3/4	.36	.53	.54	.71	.72	.89
967X	...	...	...	...	6 1/2	1 1/8	9/16	1/2	13/32	6 3/4	.36	.53	.54	.71	.72	.89
968H	5/8	1/2	...	5/8	7	1 1/4	5/8	1/2	13/32	6 3/4	.40	.57	.60	.77	.80	.97
968M	...	...	...	...	7	1 1/4	5/8	1/2	13/32	6 3/4	.40	.57	.60	.77	.80	.97
969H	3/4	5/8	...	3/4	7 3/8	1 3/8	5/8	7/16	13/32	7 3/8	.46	.64	.69	.87	.92	1.10
970X	...	...	...	...	7 7/8	1 1/2	11/16	5/8	1/2	8 1/8	.52	.72	.78	.98	1.04	1.24
971H	7/8	3/4	1/2	7/8	8 1/4	1 5/8	3/4	5/8	1/2	8 1/8	.60	.80	.90	1.10	1.20	1.40
971X	...	...	...	...	8 1/4	1 5/8	3/4	5/8	1/2	8 1/8	.60	.80	.90	1.10	1.20	1.40
973H	1	...	...	1	9 1/8	1 7/8	7/8	3/4	5/8	9 1/8	.80	1.10	1.20	1.50	1.60	1.90
974X	...	...	...	...	9 1/2	2	15/16	7/8	11/16	9 1/2	.90	1.25	1.35	1.70	1.80	2.15
974H	1 1/8	7/8	...	...	9 1/2	2	15/16	7/8	11/16	9 1/2	.90	1.25	1.35	1.70	1.80	2.15
976H	1 1/4	1	3/4	1 1/4	10 3/8	2 1/4	1 1/16	1	3/4	10 3/8	1.15	1.55	1.72	2.12	2.30	2.70
977M	...	1 1/8	...	...	10 7/8	2 1/2	1 1/8	1 1/8	13/16	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
977X	...	...	...	...	10 7/8	2 1/2	1 1/8	1 1/8	13/16	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
977O	...	1 1/4	...	...	10 7/8	2 1/2	1 1/8	1 1/8	13/16	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
978M	...	1 3/8	1	...	11 3/8	2 3/4	1 3/16	1 1/8	13/16	10 7/8	1.60	2.05	2.40	2.85	3.20	3.65
979X	...	...	...	...	11 7/8	3	1 1/4	1 1/4	11/8	11 7/8	2.10	2.60	3.15	3.65	4.20	4.70
980X	...	...	...	...	12 1/2	3 5/16	1 3/8	1 3/8	1	12 1/2	2.80	3.45	4.20	4.85	5.60	6.25

Hexagon Opening



Offset form may be had of any
wrench listed on this page, if so
ordered, at prices same as for
straight wrenches without pin,
handle or hole.

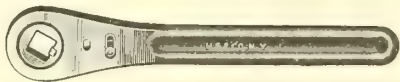
Number	Hexagon Openings					Hex. End same size as U. S. Nut; for Bolt	Pin-Handle Diam. Length	Pin-Handle Diam. Length	Unfinished		Semi-Finished		Finished	
	For U. S. Stand- ard Nut Size Inches	For Cap Screw Diam- eter Screw Inches	Short Diam- eter Broach- ed Open- ing Inches	Ex- treme Length Inches	Diam- eter Head Inches				With- out Pin- Han- dle or Hole for same Each	With Pin- Han- dle and Hole for same Each	With- out Pin- Han- dle or Hole for same Each	With Pin- Han- dle and Hole for same Each	With- out Pin- Han- dle or Hole for same Each	With Pin- Han- dle and Hole for same Each
961A	1/8	...	21/64	4	1/2	1/4	3/16	4	\$.20	\$.30	\$.30	\$.40	\$.40	\$.50
962D	...	...	25/64	4 1/2	5/8	3/8	1/4	4 1/2	.22	.33	.33	.44	.44	.55
963A	3/16	...	27/64	4 7/8	11/16	3/8	5/16	5 1/8	.24	.37	.36	.49	.48	.61
963D	...	1/4	29/64	4 7/8	11/16	3/8	9/32	5 1/8	.24	.37	.36	.49	.48	.61
964A	1/4	...	31/64	5 1/4	3/4	3/8	5/16	5 1/8	.26	.39	.39	.52	.52	.65
965D	...	3/8	33/64	5 3/4	7/8	7/16	3/8	5 3/4	.29	.43	.44	.58	.58	.72
965A	5/16	...	35/64	5 3/4	7/8	7/16	3/8	5 3/4	.29	.43	.44	.58	.58	.72
966D	...	1/2	37/64	6 1/8	1	1/2	1/2	6 1/8	.32	.47	.48	.63	.64	.79
967A	3/8	...	39/64	6 1/2	1 1/8	9/16	1/2	6 3/4	.36	.53	.54	.71	.72	.89
967D	...	1/2	41/64	6 1/2	1 1/8	9/16	1/2	6 3/4	.36	.53	.54	.71	.72	.89
968A	1/2	...	43/64	7	1 1/4	5/8	1/2	6 3/4	.40	.57	.60	.77	.80	.97
968D	...	...	45/64	7	1 1/4	5/8	1/2	6 3/4	.40	.57	.60	.77	.80	.97
969A	1/2	5/8	47/64	7 3/8	1 3/8	5/8	7/16	7 3/8	.46	.64	.69	.87	.92	1.10
970A	...	...	49/64	7 7/8	1 1/2	11/16	5/8	8 1/8	.52	.72	.78	.98	1.04	1.24
970D	...	3/4	51/64	7 7/8	1 1/2	11/16	5/8	8 1/8	.52	.72	.78	.98	1.04	1.24
971A	5/8	...	53/64	8 1/4	1 5/8	3/4	5/8	8 1/8	.60	.80	.90	1.10	1.20	1.40
971D	...	7/8	55/64	8 1/4	1 5/8	3/4	5/8	8 1/8	.60	.80	.90	1.10	1.20	1.40
973A	3/4	1	57/64	9 1/8	1 7/8	7/8	3/4	9 1/8	.80	1.10	1.20	1.50	1.60	1.90
974D	...	1 1/8	59/64	9 1/2	2	15/16	7/8	9 1/2	.90	1.25	1.35	1.70	1.80	2.15
975A	7/8	...	61/64	10	2 1/8	1	7/8	10	1.00	1.35	1.50	1.85	2.00	2.35
975D	...	1 1/4	63/64	10	2 1/8	1	7/8	10	1.00	1.35	1.50	1.85	2.00	2.35
976A	1	...	65/64	10 3/8	2 1/4	1 1/16	1	10 3/8	1.15	1.55	1.72	2.12	2.30	2.70
977A	1 1/8	...	67/64	10 7/8	2 1/2	1 1/8	1 1/8	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
978A	1 1/4	...	69/64	11 3/8	2 3/4	1 3/16	1 1/8	10 7/8	1.60	2.05	2.40	2.85	3.20	3.65
979A	1 3/8	...	71/64	11 7/8	3	1 1/4	1 1/4	11 7/8	2.10	2.60	3.15	3.65	4.20	4.70
980A	1 1/2	...	73/64	12 1/2	3 5/16	1 3/8	1 3/8	12 1/2	2.80	3.45	4.20	4.85	5.60	6.25

Unless otherwise specified, wrenches with pin-handles will be sent

See page 194 for styles of finish

Wrenches

Socket Ratchet



No. 350

This Wrench is intended for use in conjunction with steel sockets listed below. It is 10 inches long, with adjustable ratchet arrangement and finished in full nickel-plate.

Without socket, each..... \$2.00

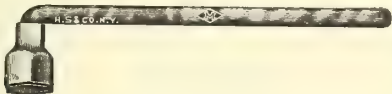
Allen-Friction



Made of drop-forged high carbon steel, carefully finished and pack-hardened. It has instant grip and no lost motion. It does the work of a ratchet wrench, without teeth, springs, pawls, etc. Simple, durable and fast. Works in less space than a ratchet wrench. Uses sockets listed below.

No. 10. 8½ inches over all, without sockets, each..... \$3.00

Offset

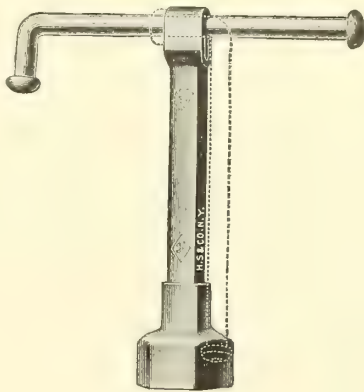


No. 320

Uses sockets listed below. Sockets are held on handle by ball friction. Furnished regularly 10 inches long, but can be supplied any length.

Without sockets, each..... \$.25

Folding



No. 310

This Wrench uses sockets listed below. Sockets are held on handle by ball friction.

When Wrench is not in use handle can be folded down so as to lie flat along the body, requiring little room in kit or tool box.

Without sockets, each..... \$.50

Pressed Steel Sockets for Wrenches

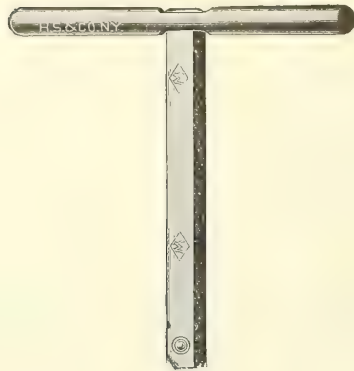
Fitting hexagon or square nuts, cap screws, set screws, etc. They are hardened, with mottled finish. They are used with all Wrenches shown on this page and first two on next page.

Hexagon

Sizes of Sockets Hexagon Inches	Fitting U. S. Standard Hexagon Nuts and Bolts Bolt Size Inch	Fitting S. A. E. Standard Nuts and Screws Screw Size Inch	Fitting Manufacturers Standard Head Bolts Bolt Size Inch	Fitting Hexagon Head Cap Screws Screw Size Inch	Fitting Hexagon Head Coach Screws Screw Size Inch
$\frac{5}{16}$					
$\frac{11}{32}$					
$\frac{3}{8}$					
$\frac{13}{32}$		$\frac{1}{4}$	$\frac{1}{4}$		$\frac{1}{4}$
$\frac{7}{16}$					
$\frac{15}{32}$				$\frac{1}{4}$	
$\frac{1}{2}$			$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$
$\frac{17}{32}$	$\frac{1}{4}$	$\frac{5}{16}$			
$\frac{9}{16}$					
$\frac{19}{32}$		$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
$\frac{5}{8}$	$\frac{5}{16}$				
$\frac{21}{32}$				$\frac{7}{16}$	
$\frac{11}{16}$			$\frac{7}{16}$		$\frac{7}{16}$
$\frac{23}{32}$	$\frac{3}{8}$	$\frac{7}{16}$			
$\frac{3}{4}$					
$\frac{25}{32}$		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
$\frac{13}{16}$	$\frac{7}{16}$				
$\frac{27}{32}$				$\frac{9}{16}$	
$\frac{7}{8}$			$\frac{9}{16}$	$\frac{5}{8}$	$\frac{9}{16}$
$\frac{29}{32}$	$\frac{1}{2}$	$\frac{9}{16}$			
$\frac{15}{16}$		$\frac{5}{8}$	$\frac{5}{8}$		$\frac{5}{8}$
$\frac{31}{32}$					
1	$\frac{9}{16}$				
$1\frac{1}{32}$		$\frac{11}{16}$		$\frac{3}{4}$	
$1\frac{3}{32}$	$\frac{5}{8}$				
$1\frac{5}{32}$		$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{3}{4}$
$1\frac{7}{32}$	$\frac{3}{4}$	$\frac{7}{8}$		1	

Wrenches

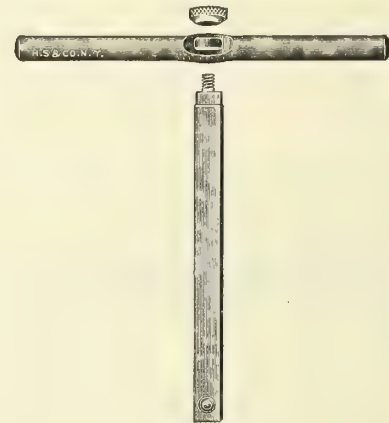
Socket



No. 330

Uses sockets listed on preceding page. Sockets are held on handle by ball friction. This Wrench is intended for use on machinery on which the bolts, nuts or screws are placed in otherwise inaccessible positions. Wrench is regularly furnished 10 inches long, but can be furnished to order in any length. Crossbar is securely riveted on.
Without sockets, each \$.30

Detachable Handle



No. 340

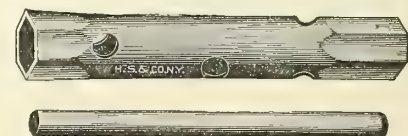
This Wrench is similar to the No. 330 except that the handle is detachable. Regular length of Wrench is 10½ inches.
Without sockets, each \$.35

Bent



Size	Fits United States Standard Hexagon Nuts, Inch	Fits United States Standard Cap Screws, Inch	Number 20 Dozen
6	..	¼	\$4.30
7	¼	⅝	5.30
8	..	¾	6.50
9	⅝	⅞	7.70
10	¾	..	8.15
11	..	1½	8.40
12	⅞	1⅞	8.90
13	1½	2⅞	9.60

Straight



No. 10

Size	Fits United States Standard Hexagon Nuts, Inch	Fits United States Standard Hexagon Cap Screws, Inch	Dozen
1	¼	¼	\$3.10
2	⅝	⅝-⅞	4.30
3	¾	1½	5.50
4	⅞-1½	1⅞-⅝	7.70
5	1⅞-⅝	3¼	10.80

Socket Brace

Steel Tube

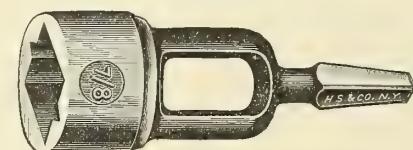


Blued. Cut Shows Hexagon

In ordering, state whether wanted for Square or Hexagon Nuts

Size of Nut for Bolt, inch.	¼	⅝	¾	1	1½	2	2½	3
Square opening, inches...	⅞	1⅞	2⅞	3⅞	4⅞	5⅞	6⅞	7⅞
Hexagon opening, inches.	1½	2⅞	3⅞	4⅞	5⅞	6⅞	7⅞	8⅞
Dozen	\$3.00	3.50	4.00	5.00	6.00	6.50	7.00	8.40

Cast Steel



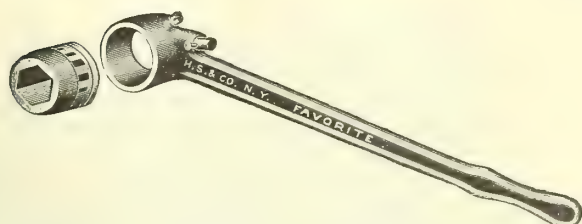
Japanned. For Square and Hexagon Nuts

Size opening Inches	¾	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10
Size of Nut for Bolt, inch....	¾	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10
Dozen	\$1.75	2.00	2.00	2.50	2.50	3.00	3.00	3.50	4.00	5.00	5.00	6.00	6.00	7.00	7.00	8.00	8.00	9.00	9.00	10.00

Wrenches

Ratchet Socket

Favorite



Nut encompassed on all sides by head, cannot slip and become injured
Reverse motion instantaneous by turning pawl from right to left or vice versa.
Its motion is continuous until nut is seated or removed.
Opening through head allows bolt to pass clear through.
Can be used in narrower places than an ordinary wrench.

Wrench	Length of Handle Inches	Take Heads	Head Sent Unless Otherwise Specified	Handle and One Head
No. 1	15	A B C	A	\$4.50
No. 2	28	D E F G M	E	5 50
No. 2 1/2	28	Z	Z	6.50
No. 3	28	H K L	H	7.50

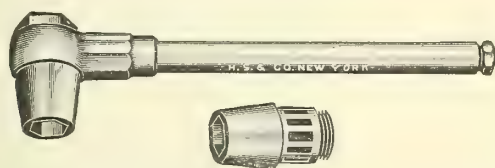
Heads Only

Showing Heads that have square and hexagon openings, and those having hexagon openings only.

Head	Openings for U. S. S. Nuts		Exact Size of Openings		Each	Fit Handles Number
	Square Inches	Hexagon Inches	Square Inches	Hexagon Inches		
A	1 1/2	1 1/2	1 5/16	1 5/16	\$2.50	1
B	5/8	5/8	1 1/8	1 1/8	2.50	1
C	...	5/8x3/4	...	1 1/8x1 5/16	2.50	1
D	...	3/4x7/8	...	1 5/16x1 1/2	3.00	2
E	3/4	3/4	1 5/16	1 5/16	3.00	2
F	7/8	7/8	1 1/2	1 1/2	3.00	2
G	...	7/8x1	...	1 1/2x1 11/16	3.00	2
M	...	1x1 1/8	...	1 11/16x1 7/8	3.00	2
Z	...	1 1/8x1 1/4	...	1 7/8x2 1/16	3.00	2 1/2
H	1	1	1 11/16	1 11/16	4.00	3
K	1 1/8	1 1/8	1 7/8	1 7/8	4.00	3
L	1 1/4	1 1/4	2 1/16	2 1/16	4.00	3

Keystone

(Reversible)



The body of this Wrench is made of drop-forged steel, the socket of forged steel; the handle is made of cold-drawn tubing, thereby insuring the greatest possible strength. These Wrenches are made with handles from 10 inches long and upwards as ordered, other parts being in proportion, and for use on either square or hexagon nuts.

In making sockets we work according to U. S. standard size nuts. Special sockets made to order. In ordering sockets other than U. S. standard size, it is advisable to have sample of nuts to insure accuracy.

Number	Length of Handle, Inches	For Nuts, Bolt Size, Inches	Wrench with One Socket	Extra Sockets Each
171	10	1/4 to 5/8	\$4.75	\$1.75
172	14	3/8 to 7/8	5.50	2.00
173	16	1/2 to 1 1/8	6.50	2.50
174	18	3/4 to 1 1/2	7.50	3.00
175	22	3/4 to 1 1/2	7.75	3.00
176	24	3/4 to 1 1/2	8.00	3.00
177	28	3/4 to 1 1/2	8.50	3.00

Order Sockets by bolt sizes, and state whether square or hexagon

Ronson Combination



Made of carbon plate steel, carefully tempered. Wing nut and bolt are drop-forged. Can be taken apart by loosening thumb-screw. The range is sufficient for most of the work around automobiles and small machines generally. An additional feature is the Prest-O-Lite key embodied in one of these wrenches.

Four Wrenches with nine openings sizes, as follows: 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 11/16 and 3/4 inch. Nickel-plated.

Each \$1.50

A Handbook for Mechanics

By Franklin E. Smith, M. E.

324 Pages. 127 Illustrations. 12 Mo. Cloth Bound. Each, \$1.50

Contents

Part. I. Arithmetic

Numeration. Notation. Addition. Subtraction. Multiplication. Division. Tables of Weights and Measures used by Mechanics. Reduction. Fractions. Addition of Fractions. Arithmetical Signs. Subtraction. Multiplication and Division of Vulgar Fractions. Decimal Fractions. Reduction of Decimal Fractions. Addition, Subtraction, Multiplication and Division of Decimals. Proportion. Compound Proportion. Interest. Involution. Evolution. Cube Root.

Part II. Arithmetical Signs and Characters and Explanation of Solving Formulæ

Arithmetical Signs. Examples on the use of Addition, Minus, Multiplication and Division signs. Examples showing how Brackets are used. Examples on signs representing the Power of numbers and the Roots of numbers. Law of signs in Multiplication and Division. Formulæ.

Part III. Mensuration

Table of Decimal Equivalents. Explanation of Terms. The Circle. Ellipse. Triangle. Rhomboid. Trapezium. Sphere. Volume Measure and contents of Solids. Rectangular Solids. The Cylinder. Pyramid. Cone. Frustum.

Part IV. Weight. Specific Gravity

How the Dimensions, Measurements and Weight of different shaped vessels and the Weight of different parts are found. Specific Gravity. Table of Specific Gravities of Liquids and Solids. Circular Measure. Square Measurements. Circular Areas. Measurements and Weights of Tanks. Measurements of Circular Tanks. How to calculate the Weight of Different Materials and the Weight of the Different Parts of a machine or structure of any kind. Tables of Weights of various Metals.

Part V. The Primary or Simple Machines

The Lever. Compound Lever. Pulley. Strength of a Rope. Wheel and Axle. Inclined Plane. Wedge. Screw.

Part VI. Strength of Materials and Questions Relating to Stress

Table showing Ultimate and Elastic Strength, Safe Working Stress and Factors of Safety of Materials. Tensile Stress. Compressive Stress. Shearing Stress.

Ratchet Socket Wrench Sets, for Automobiles, Etc.

B. M. Co.

Contains

One Improved Ratchet Wrench
Ten Hexagon Steel Tube Socket Wrenches
One Wrench Extension
One Steel Screwdriver Bit

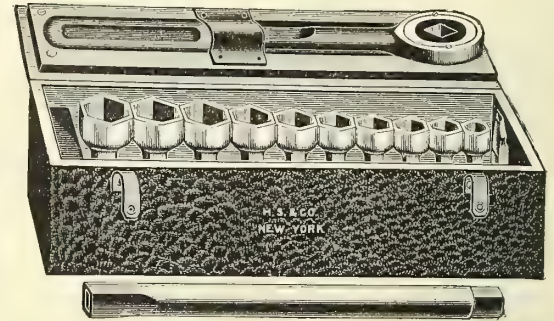
Capacity

U. S. Standard Hexagon Nuts, $\frac{1}{4}$ to $\frac{5}{8}$ inclusive
U. S. Standard Hexagon Cap Screws, $\frac{1}{4}$ to $\frac{3}{4}$ inclusive
S. A. E. or A. L. A. M. Hexagon Nuts and Cap Screws, $\frac{5}{16}$ to $\frac{9}{16}$ inclusive

Handsome and attractive wood case, covered with imitation leather, 11 inches long by $2\frac{3}{4}$ inches deep by $2\frac{1}{2}$ inches wide.

The simplicity of this ratchet makes it the best and most popular on the market. There are no screws to adjust to change the action—no intricate mechanism to get out of order. The action of the ratchet is reversed by simply placing the socket in the reverse side of the handle. Sockets are made of the highest grade of tubing procurable.

No. 3 Per Set \$5.50



Mossberg

This is an exceptionally complete set. The tools are all of very fine quality in wooden case, as follows:

Ratchet Wrench Handle No. 350
Take Down Handle No. 340, and Extension Bar
Offset Socket Handle No. 320.
One Pipe Grip
No. 1 General Service Set of Double End Wrenches, Extra Finish, End Openings $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{16}$, $1\frac{1}{8}$, $1\frac{1}{4}$ inches
Universal Joint
Three Special Spark Plug Sockets, Hexagon opening $\frac{29}{32}$, $1\frac{1}{32}$, $1\frac{1}{8}$ inches—all 4 inches long
Three Sizes Screwdriver Bits
One Cotter Pin Extractor
Mottled, thoroughly hardened, sockets

Twenty-three Hexagon openings

$\frac{5}{16}$, $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{15}{32}$, $\frac{1}{2}$, $\frac{17}{32}$, $\frac{19}{32}$, $\frac{5}{8}$, $\frac{21}{32}$, $\frac{11}{16}$, $\frac{23}{32}$, $\frac{25}{32}$, $\frac{13}{16}$, $\frac{27}{32}$, $\frac{7}{8}$, $\frac{29}{32}$, $\frac{31}{32}$, 1, $1\frac{1}{32}$, $1\frac{1}{32}$, $1\frac{5}{32}$, $1\frac{9}{32}$ inches

Eleven Square openings

$\frac{13}{32}$, $\frac{15}{32}$, $\frac{17}{32}$, $\frac{19}{32}$, $\frac{21}{32}$, $\frac{23}{32}$, $\frac{25}{32}$, $\frac{27}{32}$, $\frac{29}{32}$, $1\frac{1}{32}$, $1\frac{5}{32}$, $1\frac{9}{32}$ inches

No. 14 Per Set..... \$12.00



Allen

This Set is furnished with the Allen-Friction Socket Wrench, made from the best drop-forged high carbon steel, carefully machined, pack-hardened and finished.

The Set, in wooden case, comprises:

One Allen-Friction Wrench No. 10
Twenty-seven Hexagon Hardened Steel Sockets Openings, $\frac{5}{16}$ to $1\frac{1}{32}$ x32nds; also $1\frac{3}{32}$ - $1\frac{5}{32}$ - $1\frac{9}{32}$
Three Square Hardened Steel Sockets Openings, $\frac{13}{32}$ - $\frac{17}{32}$ - $\frac{21}{32}$
One Spark Plug Socket
One Short Extension
One Long Extension
One Screwdriver
One Universal Joint

No. 31 Per Set..... \$10.00



Spark Plug Wrench

Williams No. 993

Drop-forged from steel and designed for convenient service about automobiles, motor boats, gas engines, etc.

Open End

For Tire Lug
 $\frac{3}{8}$ -inch U. S. Standard Cap Screw
 $\frac{3}{8}$ -inch S. A. E. or A. L. A. M. Standard Nut
 $\frac{3}{8}$ -inch S. A. E. or A. L. A. M. Stand. Cap Screw
 $\frac{9}{16}$ -inch Set Screw

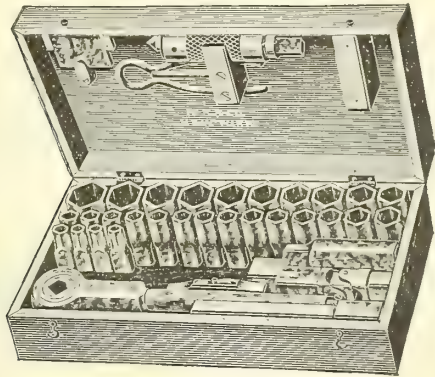
Box End

$\frac{7}{8}$ -inch opening, for $\frac{1}{2}$ -inch Spark Plug
 $\frac{1}{2}$ -inch U. S. Standard Nut
Unfinished, each..... \$.40
Semi-Finished, each..... .60
Finished, each..... .80



Socket Wrench Sets for Automobiles, Etc.

Starrett



This Wrench is made from drop-forged and other steel—all finished in a workmanlike manner, case-hardened and strong where strength is needed, yet light and convenient to handle. The ratchet can be instantly reversed by simply rotating between thumb and finger the stem end of the dog in the end of the handle half a turn. Hexagon drawn steel sockets varying by 32ds from $\frac{5}{16}$ to $1\frac{1}{4}$ inches, have duplicate shanks to fit the square opening through the ratchet head, also the end of a square extension piece which fits the ratchet where they are frictionally held, and will reach otherwise inaccessible places. A universal joint is also made to fit this extension piece to turn a nut otherwise difficult to get at. A screw-driver with reversible blades of two sizes also fits the extension and may be used with or without the wrench.

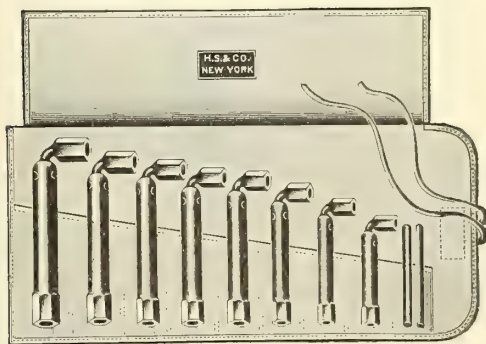
A first-class drilling fixture is made to fit the ratchet head, which will hold any size of twist drill from $\frac{1}{8}$ inch to $\frac{1}{2}$ inch, with which drilling can be done in difficult places to best advantage, the feed being done with our special friction wrench sent with each.

This Wrench, with a full set of sockets and other accessories, will be found of inestimable value to engineers and machinists in every plant where nuts and bolts are used, as well as to the automobilist.

No. 443A, complete. Each \$15.00
No. 443B, without Drill Fixture. Each 12.00

Sent complete unless otherwise ordered

B. M. Co. Bent



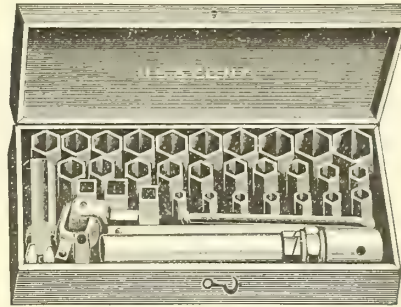
No. 2. Eight Pieces

Made of seamless steel tubing. One solid piece. Strong, light and handy; especially for close offset and deep work. No adjusting. Very popular with automobilists.

Kit when closed is 9 inches long by 4 inches wide and weighs 4 pounds. Capacity U. S. S. Hexagon Nuts— $\frac{1}{4}$ to $\frac{1}{2}$ inclusive. U. S. S. Hexagon Cap Screws $\frac{1}{4}$ to $\frac{5}{8}$ inclusive. S. A. E. or A. L. A. M. Hexagon Nuts and Cap Screws $\frac{5}{16}$, $\frac{9}{16}$ inclusive.

In Imitation Leather Roll, per set. \$6.00

Large Auto Cle



The Large Auto Cle Set consists of the following:
One take-down reversible ratchet handle, nickel-plated
One swivel or Universal joint, which permits using the wrench at any angle
One $9\frac{1}{2}$ -inch extension bar
One $1\frac{3}{4}$ -inch extension bar
Two sizes of screwdriver bits
Thirty-one sizes of Mottled Case-hardened Pressed Steel sockets
Sizes of sockets furnished:

Hexagon

$\frac{5}{16}$, $\frac{11}{32}$, $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{15}{32}$, $\frac{1}{2}$, $\frac{17}{32}$, $\frac{9}{16}$, $\frac{19}{32}$, $\frac{5}{8}$, $\frac{21}{32}$, $\frac{11}{16}$, $\frac{23}{32}$, $\frac{3}{4}$, $\frac{25}{32}$, $\frac{13}{16}$, $\frac{27}{32}$, $\frac{7}{8}$, $\frac{29}{32}$, $\frac{15}{16}$, $\frac{31}{32}$, 1, $1\frac{1}{32}$, $1\frac{3}{32}$, $1\frac{5}{32}$, $1\frac{7}{32}$ inches.
Special Spark Plug Socket $\frac{23}{32}$ inch hexagon, 4 inches long

Square

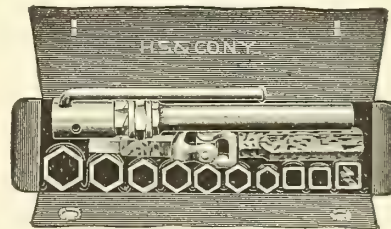
$\frac{13}{32}$, $\frac{17}{32}$, $\frac{21}{32}$ inch

These sockets will fit all set screws, bolts and nuts in general use on automobiles whether of American or foreign manufacture.

The above parts and sockets are contained in a compact hardwood case fitted with pegs on which to place the sockets, thus making loss of parts unlikely and preventing rattle or noise.

In Wooden Case, per set. \$10.00

Small Auto Cle



The Small Auto Cle Set is the same as the Large Auto Cle Set, with the exception that twelve sizes of Mottled Case-hardened Pressed Steel sockets are furnished instead of thirty-one. Sizes of sockets furnished:

Hexagon

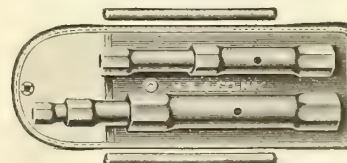
$\frac{13}{32}$, $\frac{17}{32}$, $\frac{19}{32}$, $\frac{21}{32}$, $\frac{23}{32}$, $\frac{11}{16}$, $\frac{25}{32}$, $1\frac{1}{32}$ inches
Special Spark Plug Socket $\frac{23}{32}$ inch hexagon, 4 inches long

Square

$\frac{13}{32}$, $\frac{17}{32}$, $\frac{21}{32}$ inch

In Leather Case, per set. \$7.50

B. M. Co. Straight

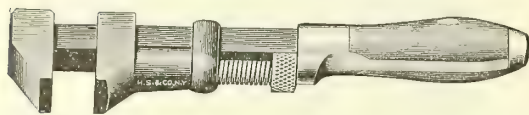


No. 1

Five Pieces. 10 openings. Capacity:
All Spark Plugs, U. S. S. Hexagon Nuts $\frac{1}{4}$ to $\frac{5}{8}$ inch inclusive.
U. S. S. Hexagon Cap Screws $\frac{1}{4}$ to $\frac{3}{4}$ inch inclusive. S. A. E. or A. L. A. M. Hexagon Nuts and Cap Screws $\frac{5}{16}$ to $\frac{3}{16}$ inclusive.
Per set. \$3.10

Screw or Monkey Wrenches

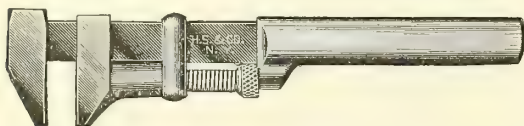
Genuine Coes Knife Handle



Cast semi-steel frame handle, hardwood sides secured at both ends by insertion under metal and riveted up under pressure. The screw is of hardened steel and in one piece.

Length, inches.	6	8	10	12	15	18	21
Opens, inches.	1	1¼	1¾	2¼	2⅝	3	4
Black, dozen.	\$9.00	10.00	12.00	14.00	24.00	30.00	36.00

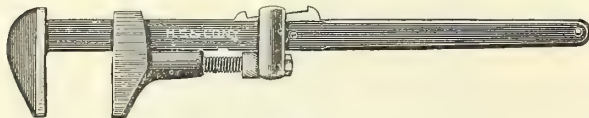
Genuine Coes Steel Handle



Made for heavy work, and especially adapted to railroad work. Made of steel with all working parts hardened. The handle is internally supported and retained by cross riveting and by extension of bar through handle. The 12 to 21 inches have ball bearing screws and extended screw support.

Length, inches.	4	6	8	10	12	15	18	21
Opens, inches.	⅞	1	1¼	1¾	2¼	2⅝	3	4
Black, dozen.	\$8.00	9.00	10.00	12.00	14.00	24.00	30.00	36.00

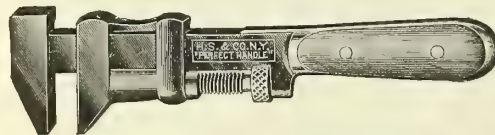
Genuine Coes Key Model



This Wrench is designed especially for large nuts, and finished work where the regular wrench is too small or not suited on account of short leverage. The strap has two positions for large and small work.

28-inch weighs about 19 pounds, opens 5½ inches. Each, \$9.75
36-inch weighs about 27 pounds, opens 6¼ inches. Each, 19.00
48-inch weighs about 62 pounds, opens 9½ inches. Each, 47.00

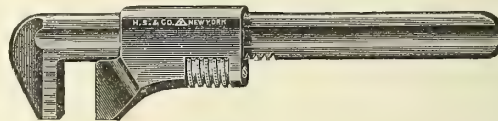
Perfect Handle



This Wrench is made from a drop forging which includes handle, bar and head in one piece. Top and bottom straps of sliding jaw are rigidly yoked together. Back of bar is reinforced to compensate for screw head cut-out on front of bar. The wooden handle pieces are waterproofed, locked in and riveted under pressure. Cut shows the drop-forged "one piece" bar.

Length, inches.	6	8	10	12	15	18	21
Opens, inches.	1⅞	1¼	1⅞	2⅞	2¾	3⅞	4
Dozen.	\$9.00	10.00	12.00	14.00	24.00	30.00	36.00

Billings and Spencer Automobile

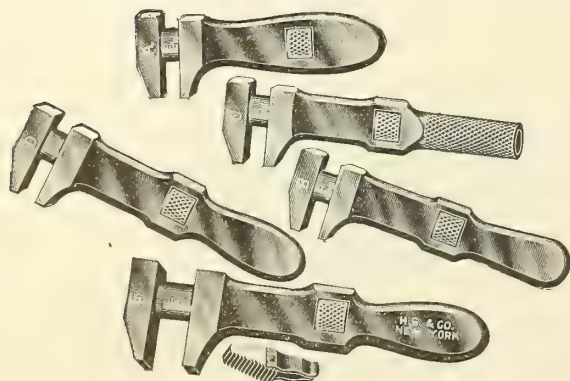


Drop-forged from bar steel and case hardened

Length, inches.	6	8	10	12	14	18
Opens, inches.	1⅞	1½	2⅞	2¾	2⅞	3⅞
Thickness of Jaw, inches	⅞	⅞	⅞	⅞	⅞	¾
Depth of Jaw, inches.	1	1¼	1½	1½	1¾	2⅞
Weight, pounds.	⅝	1	1¾	2	4	7
Rustless Blue, dozen.	\$7.00	9.00	10.00	15.00	20.00	28.00
Nickel-plated, dozen.	10.00	12.00	16.00	24.00	34.00	42.00

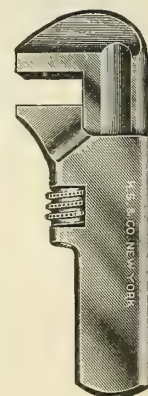
Billings and Spencer Pocket

Drop-Forged. Finely Finished



	Length Closed Inches	Opens Inches	Weight Ounces	Black Dozen	Nickel Dozen
Model A.	4¼	1	7¼	\$9.00	\$10.00
Model B.	5	1	7½	9.00	10.00
Model C.	5	1	7	10.00	11.00
Model D.	6	1¼	11¼	10.00	12.00
Model E, without pipe attachment.	7	1¾	19	12.00	15.00
Model E, with pipe attachment.	7	1¾	19¼	16.20	19.20
Model 97.	4¼	1⅞	5½	6.50	8.00

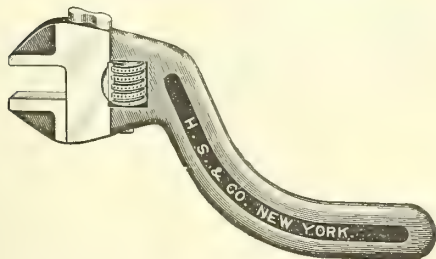
By the use of the Attachment shown in the illustration, the Model E Wrench can be instantly converted into a Pipe Wrench.
The Attachment consists of a serrated tool-steel jaw with a tempered steel spring, which serves to hold the jaw in place on the wrench. Can be used on pipe up to and including ¾-inch in diameter.



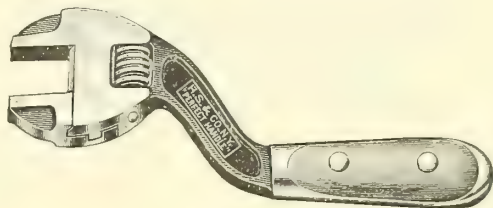
Sliding Bar Graduated to 32nds of an Inch

Adjustable "S" Wrenches

Billings & Spencer



Perfect Handle



No. 641

This Wrench combines the advantages of a solid machine wrench with the convenience of an adjustable wrench. Every part is a drop-forging, and the sliding jaw is fitted in a double groove, which greatly adds to the strength of the tool. By tightening the thumb screw on the adjusting knurl, the Wrench may be securely locked to the desired opening.

Drop-forged steel, with the Perfect Handle, is scientifically constructed and has great leverage.

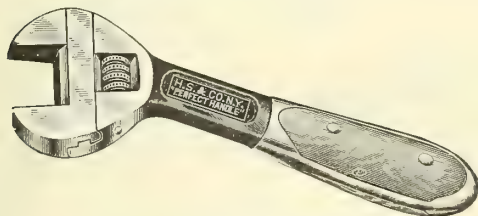
Number	Size Inches	Opens Inches	Thickness of Jaw Inch	Depth of Jaw Inches	Weight	Dozen
5	6	1	13/32	7/8	8 oz.	\$8.00
6	8	1 1/4	17/32	1 1/8	1 lb. 1 oz.	9.00
7	10	1 1/2	5/8	1 1/4	1 lb. 11 oz.	10.00
8	12	1 3/4	13/16	1 7/16	2 lb. 5 oz.	11.00

Absolutely Guaranteed

Length, inches	6	8	10
Opening, inches	7/8	1 1/8	1 3/8
Dozen	\$10.00	12.50	15.00

Adjustable 15-Degree Angle Wrenches

Perfect Handle



No. 642 Drop-Forged, Light and Strong

B. M. Co.



Drop-forged of a high grade tool steel, especially adaptable for wrenches and pliers. The jaws are carefully and accurately milled to fit and are properly hardened.

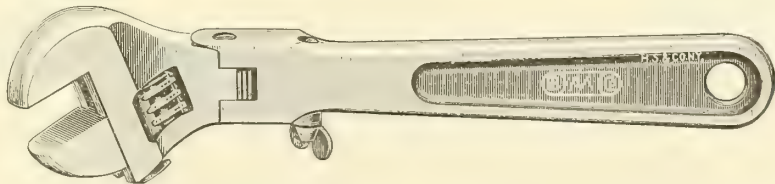
The popularity and merit of the Angle Wrench is so well established that nothing need be said on that point. Finished in Full Natural Polish and Polished Nickel.

Unqualifiedly Guaranteed

Length, inches	6	8	10
Opening, inches	7/8	1 1/8	1 3/8
Dozen	\$10.00	12.50	15.00

Length, inches	6	8	10
Opening of Jaw, inches	3/4	1 1/8	1 3/8
Natural Polish	\$7.80	9.60	12.00
Polished Nickel	9.60	11.60	14.00

B. M. Co. Duplex



The "Duplex" represents the latest and most practical adjustable wrench yet devised.

Embodying all of the advantageous features of the open-end adjustable angle wrench, the "Duplex" has, directly back of the jaws, an adjustable break in the handle which permits the head to be adjusted and set at nine different angles, right or left from the handle.

The advantages of this improved feature are obvious and require no detailed explanation.

Work which is inaccessible with any other type of wrench can be conveniently done with the "Duplex."

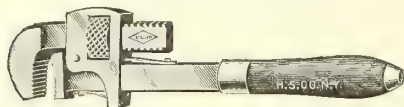
All parts are drop-forged of good tough steel, accurately and carefully machined and are fully guaranteed against any defects in either workmanship or material.

A distinctively handsome high grade tool.

Length 6 inches, opening of jaw 3/4 inch, per dozen	\$16.80
Length 8 inches, opening of jaw 1 1/8 inch, per dozen	22.80
Length 10 inches, opening of jaw, 1 3/8 inches, per dozen	26.40

Pipe Wrenches

Genuine Stillson



Wood Handle, 6 to 14 Inches



Steel Handle, 8 to 48 Inches

Length Open Inches	Takes Pipe Inches	Each	Extra Jaws Each	Extra Nuts Each	Extra Frames Each	Extra Wood Handles Each	Extra Steel Handles Each	Extra Springs Each
6	$\frac{1}{8}$ to $\frac{1}{2}$	\$2.00	\$.75	\$.11	\$.35	\$.16	.....	\$ .10
8	$\frac{1}{8}$ to $\frac{3}{4}$	2.00	.75	.11	.35	.16	.....	.10
10	$\frac{1}{8}$ to 1	2.25	.80	.14	.40	.18	.....	.10
14	$\frac{1}{4}$ to $1\frac{1}{2}$	3.00	1.00	.17	.50	.25	.....	.10
18	$\frac{1}{4}$ to 2	4.00	1.33	.22	.55	.28	\$2.10	.10
24	$\frac{1}{4}$ to $2\frac{1}{2}$	6.00	2.10	.35	.80	.....	3.20	.11
36	$\frac{1}{4}$ to $3\frac{1}{2}$	12.00	4.75	.55	1.30	.....	6.40	.13
48	1 to 5	18.00	7.25	.95	1.50	.....	9.25	.13

Genuine Stillson Automobile Polished



8 Inches, holds pipe $\frac{1}{8}$ to $\frac{3}{4}$ -inch Each, \$2.00
10 Inches holds pipe $\frac{1}{8}$ to 1-inch Each, 2.25

Perfect Handle



No. 643. Drop-Forged

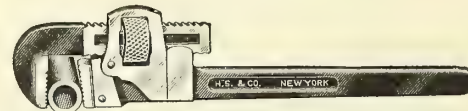
A handsome and strong tool, with Perfect Handle; comfortable in all weather and conditions. The spring is protected and the movable jaw and bar are drop-forgings.

Length when open, inches...	8	10	14	18
Grips Rounds, inches.....	$\frac{1}{8}$ to $\frac{3}{4}$	$\frac{1}{8}$ to 1	$\frac{1}{4}$ to $1\frac{1}{2}$	$\frac{1}{4}$ to 2
Each.....	\$2.00	\$2.25	\$3.00	\$4.00

Parts

Inches.....	8	10	14	18
Movable Jaw.....	\$.75	\$.80	\$1.00	\$1.33
Nut.....	.11	.14	.17	.22
Frame.....	.35	.40	.50	.55
Spring.....	.03	.03	.03	.04
Frame Pin.....	.03	.04	.04	.04
Spring Pin.....	.03	.04	.04	.04

Trimo



Length Open Inches	Capacity Inches	Movable Jaw Each	Nut Each	Insert Jaw Each	Frame Each	Springs Each	Frame Pins Each	Jaw Pins Each
6	$\frac{1}{8}$ to $\frac{1}{2}$	\$2.00	\$.75	\$.11	\$.35	\$.35	\$.03	\$.03
8	$\frac{1}{8}$ to $\frac{3}{4}$	2.00	.75	.11	.35	.35	.03	.03
10	$\frac{1}{8}$ to 1	2.25	.80	.14	.45	.40	.03	.04
14	$\frac{1}{4}$ to $1\frac{1}{2}$	3.00	1.00	.17	.55	.50	.03	.04
18	$\frac{1}{4}$ to 2	4.00	1.33	.22	.65	.55	.04	.04
24	$\frac{1}{4}$ to $2\frac{1}{2}$	6.00	2.10	.35	.75	.80	.04	.04
36	$\frac{1}{2}$ to $3\frac{1}{2}$	12.00	4.75	.55	1.05	1.30	.04	.05
48	1 to 5	18.00	7.25	.95	1.35	1.50	.04	.05

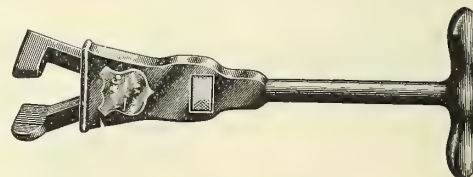
Trimo, Narrow Jaw



This Wrench is designed for "close-quarter" work. The jaws are narrower than on the regular wrenches; particularly desirable for automobile use.

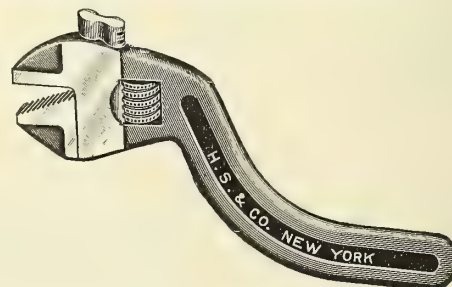
Length, inches.....	6	8	10
Holds pipe up to, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1
Each.....	\$2.00	2.00	2.25

Trimo, Basin



Length 10 inches. All parts interchangeable.....	Each	\$1.25
Extra Jaws.....	Each	.50
Extra Screws.....	Each	.20
Extra Nuts.....	Each	.20
Extra Springs.....	Each	.10

Billings & Spencer Adjustable "S"



In general design this Wrench follows the lines of the regular Adjustable "S," but has a serrated jaw for use on pipe. The Wrench is of drop-forged steel throughout, and the parts are carefully hardened and are interchangeable. The thumb screw at side securely locks the nut at any desired opening.

Number	Size Inches	For Pipe Inches	Thickness of Jaw Inch	Depth of Jaw Inches	Weight	Dozen
10	6	$\frac{1}{8}$ to $\frac{1}{2}$	$\frac{13}{32}$	$\frac{7}{8}$	8 oz.	\$10.00
11	8	$\frac{1}{8}$ to $\frac{3}{4}$	$\frac{17}{32}$	$1\frac{1}{8}$	1 lb. 1 oz.	12.00
12	10	$\frac{1}{8}$ to 1	$\frac{5}{8}$	$1\frac{1}{4}$	1 lb. 11 oz.	14.00
13	12	$\frac{1}{8}$ to $1\frac{1}{4}$	$\frac{13}{16}$	$1\frac{7}{8}$	2 lb. 5 oz.	16.00

Alligator Wrenches

Triplet



Adjustable

Victor



Combines three Wrenches as follows:

Plain Wrench 0 to 7⁄8 inch

Alligator Wrench 0 to 5⁄8 inch

Tap Wrench 1⁄8 to 1⁄2 inch

Tool is 5½ inches long. Drop-forged, with hardened jaws, and has improved screw adjustment.

Each..... \$1.00

Drop-forged from best tool steel, 7 inches long; holds pipe up to ¾ inch and rods and nuts up to 1 inch.

Full Nickel-plated.....Each \$1.20

Black, polished jaws.....Each 1.00

Solid

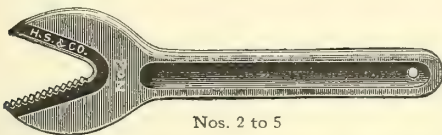
Wrenches Nos. 2 to 5, 10 to 20 and Twin are forged solid in one piece, from best refined iron, with tempered steel jaws. No. 1 Pocket and Pony are plate steel. They all have ratchet teeth cut diagonally across one jaw, thus enabling them to bite with three teeth at once. A single wrench will hold many sizes of nuts or bolts without the necessity for adjustment.



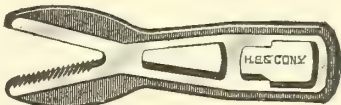
No. 1



Pocket



Nos. 2 to 5



Nos. 10 and 20



Twin



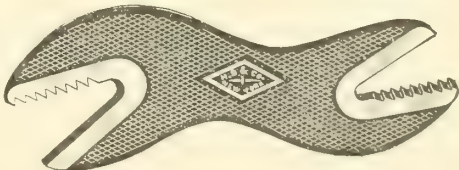
Pony

Number	1	2	3	4	4½	5	Twin	Pocket	10	20	Pony
Holds Pipe, inches	1⁄8 to 3⁄8	3⁄8 to 3⁄4	1⁄2 to 1 1⁄4	1 1⁄4 to 2	1 1⁄2 to 2 1⁄2	2 to 3	1⁄8 to 3⁄4	1⁄8 to 1⁄4	1⁄8 to 3⁄8	1⁄4 to 1	1⁄4 to 9⁄16
Holds Round Iron, inches	1⁄4 to 3⁄4	1⁄2 to 1	3⁄4 to 1 3⁄8	1 1⁄2 to 2 1⁄2	1 7⁄8 to 3 1⁄4	2 1⁄4 to 3 1⁄2	1⁄4 to 1	1⁄4 to 9⁄16	1⁄4 to 3⁄4	1⁄2 to 1 1⁄4	1⁄4 to 3⁄4
Length, inches	5 5⁄8	8 7⁄8	15 3⁄4	21 1⁄2	24 3⁄4	27 1⁄2	10	4	5 5⁄8	7	5 5⁄8
Dozen	\$4.00	\$12.00	\$24.00	\$36.00	\$50.00	\$60.00	\$18.00	\$4.00	\$4.50	\$8.00	\$6.50

Always Ready

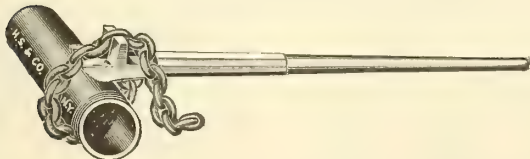
Forged from high carbon steel, oil tempered. Black finish. Polished jaws

Number	Length Over all Inches	Holds Square or Round Iron Diameter Inches	Weight Per Dozen	Per Dozen
1	5	1⁄4 to 3⁄4	5 pounds 8 ounces	\$4.60
2	7	1⁄4 to 1 1⁄4	9 pounds 11 ounces	6.30
2½	9 1⁄2	1⁄4 to 1 3⁄4	20 pounds 5 ounces	10.00
3	11 1⁄2	3⁄4 to 2	28 pounds 2 ounces	15.25



Chain Tongs

Robbins



Number	2	3	4	5	6	7
Length of Lever, inches . .	27	36	48	60	72	84
Size of Chain, inches	5⁄16	5⁄16	3⁄8	1⁄2	5⁄8	3⁄4
For pipe, inches	1 to 2	1 1⁄4 to 4	2 to 6	2 1⁄8 to 8	4 to 10	4 to 16
Weight, pounds	7	12	24	33	50	100
Each	\$5.50	\$6.25	\$9.00	\$12.50	\$16.00	\$30.00

Drop-Forged Chain Pipe Wrenches

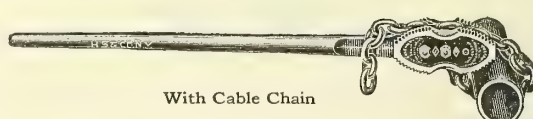
Vulcan Improved

With Double-Ended Reversible Jaws for Turning or Holding Pipe, Pipe Fittings, Etc.

From 1/8 to 12 Inches Diameter



With Flat Link Chain



With Cable Chain

Wholly made from drop-forged and otherwise wrought steel. These tools are fully guaranteed and recommended as the most efficient and serviceable chain pipe wrenches made.

The Double-ended Reversible Jaws, which may be quickly changed end for end as teeth first in use wear, greatly extend the life of the wrench and assure the service of "two tools at the price of one."

The fastening of jaws to handle with two unusually tough steel studs makes repairs possible in emergencies, insures uninterrupted service of tool and prevents the jaws from spreading. One stud will withstand full working strength of tool, when necessary.

In the "straight-cut" teeth there is thorough distribution of gripping pressure; the tearing of pipe and one-spot wear of teeth will therefore be wholly prevented.

The chains, actually proof-tested to two-thirds of their breaking strain, are hand-made from steel manufactured expressly for them; they swing from the center and can be used on either side of the jaws, thus reducing to the minimum the wear upon specific teeth.

The handle design provides for the maximum of strength in the minimum of weight.

Number.....	30	31	32	33	33½	34	35
Capacity							
Size pipe....	1/8 to 3/4	1/8 to 1½	1/4 to 2½	3/4 to 4	1 to 6	1½ to 8	2 to 12
Ex. Length, inches.....	13¾	20	27	37	44½	50½	64½
Weight, lbs....	1¾	5¾	10	16	24	31	50
Flat Link Chain							
Length.....	9½	13½	17½	22½	31	39	54½
Breaking strain, lbs....	3,600	6,700	9,800	12,500	14,300	15,700	21,600
Cable Chain							
Length.....	9¾	14½	18	27	33½	42	57
Size iron....	1/8	3/8	1/2	3/4	1	1½	2
Breaking strain, lbs....	1,200	4,000	6,000	10,500	12,500	15,000	19,000
Complete							
Wrench.....	\$2.50	\$3.50	\$5.00	\$7.00	\$9.00	\$11.00	\$18.00
Ex. Chain....	.75	1.00	1.50	2.50	3.25	4.00	6.00
Ex. Jaws pair	1.00	1.75	2.75	4.00	4.75	5.50	7.50
Extra Nuts and Studs for Jaws, per set.....	.20	.25	.35	.45	.55	.70	.90

Wrenches for pipe sizes larger than 12 inches are only supplied in the non-reversible jaw form—see No. 16 below.

Drop-Forged Chain Pipe Wrenches

Vulcan Old Style

For Turning or Holding Pipe, Pipe Fittings, Etc.

From 1/8 to 18 Inches Diameter



With Flat Link Chain

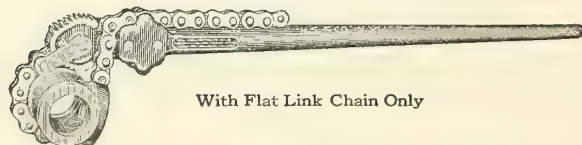


With Cable Chain

The design and manufacture of this tool are identical in every respect with Bijaw Tools listed above, except that jaws are not reversible.

Agrippa

For Pipe and Fittings



With Flat Link Chain Only

Number.....	10	11	12	13	13½	14	15	16
Capacity								
Size pipe....	1/8 to 3/4	1/8 to 1½	1/4 to 2½	3/4 to 4	1 to 6	1½ to 8	2 to 12	4 to 18
Ex. Length, inches.....	13¾	20	27	37	44½	50½	64½	87
Weight, lbs....	1¾	5¾	10	16	24	31	50	137
Flat Link Chain								
Length.....	9½	13½	17½	22½	31	39	54½	74½
Breaking strain, lbs....	3,600	6,700	9,800	12,500	14,300	15,700	21,800	40,000
Cable Chain								
Length.....	9¾	14½	18	27	33½	42	57	76
Size iron....	1/8	3/8	1/2	3/4	1	1½	2	2½
Breaking strain, lbs....	1,200	4,000	6,000	10,500	12,500	15,000	19,000	40,000
Complete								
Wrench....	\$2.50	\$3.50	\$5.00	\$7.00	\$9.00	\$11.00	\$18.00	\$40.00
Ex. Chain....	.75	1.00	1.50	2.50	3.25	4.00	6.00	13.00
Ex. Jaws pair	1.00	1.75	2.75	4.00	4.75	5.50	7.50	16.00
Ex. Screws and Pins, per set....	.20	.22	.25	.30	.35	.40	.50	1.30

Drop-Forged Strap Pipe Wrenches

Warnock



For Brass or Nickel-plated Pipe. Will not mar the pipe

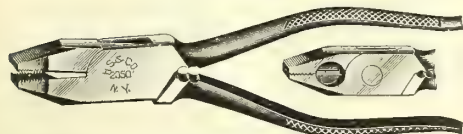
Size, inches.....	12	18
Takes Pipe, inches.....	1/4 to 2	1 to 5
Each.....	\$1.50	\$2.50
Extra Straps.....	.25	.50

An unsurpassed tool for cramped and irregular fittings or pipe that cannot be effectively reached with broader wrenches. It is particularly serviceable on flanges, short nipples and R. & L. hand fittings. The Wrench is made entirely from wrought steel; the single jaw is tempered for file sharpening; all parts are interchangeable.

Number.....	20	21	22	23	23½	24	25
Capacity							
Fittings....	1/8 to 3/4	1/8 to 1½	1/4 to 2½	3/4 to 4	1 to 6	1½ to 8	2 to 12
Ex. Length, inches.....	13¾	20	27	37	44½	50½	64½
Weight, lbs....	2½	5¾	9¾	17	24	32	56
Chain							
Length, ins..	10	15	19½	26	34	45	61
Breaking strain, lbs....	3,600	6,700	9,800	12,500	14,300	15,700	21,800
Complete							
Wrench....	\$2.50	\$3.50	\$5.00	\$7.00	\$9.00	\$11.00	\$18.00
Extra Chain....	1.00	1.25	1.75	2.75	3.75	4.50	6.75
Extra Jaws, each	1.00	1.75	2.75	4.00	4.75	5.50	7.50

Side Cutting Pliers

Box Joint

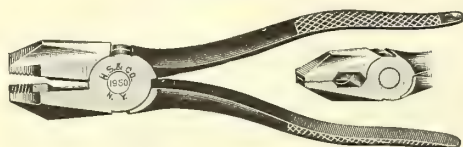


Utica, Nos. 2050 and 2250

Drop-forged steel, with checkered handles
Splicing Clamp or Sleeve Twister between the handles

Inches.....	5	6	7	8
No. 2050, Blue,				
dozen.....	\$19.20	21.60	26.40	30.00
No. 2250, Nickel,				
dozen.....	22.80	25.20	30.00	33.60

Linemen's

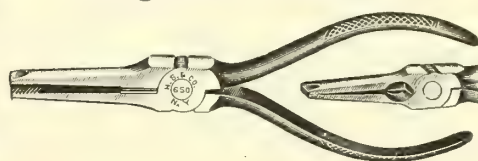


Utica, No. 1950

Heavy drop-forged steel, with checkered handles. Blue finish.

Inches.....	6	7	8	9
Dozen.....	\$20.40	24.00	30.00	42.00

Long Reach Flat Nose



Utica, No. 650

Used by telephone and switchboard builders and electrical workers. Indispensable for working in deep and narrow places. Drop-forged steel.

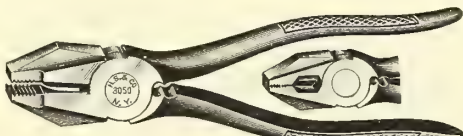
Inches.....	5 1/2	6 1/2
Blue, dozen.....	\$18.00	24.00
Nickel, dozen.....	21.60	27.60



P. S. & W., No. 300
Insulated

Handles are covered with a patent insulation which is not brittle and will not flake off. Tested to insulate against 2,500 volts.

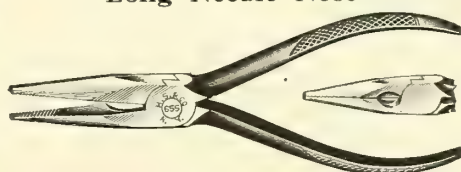
Inches.....	6	7	8
Dozen.....	\$24.50	29.25	34.00



Utica, No. 3050

Heavy drop-forged steel, with checkered handles, blue finish, with splicing clamp or sleeve twister between the handles, that will take the regular or combination sleeve without bruising or crushing wire or sleeve. This feature does away with the necessity of carrying an extra tool.

Inches.....	6	7	8	9
Dozen.....	\$21.60	27.60	32.40	48.00



Utica, No. 655

Drop-forged steel, with checkered handles, spring tempered nose, and strong cutting edges.

Inches.....	5 1/2	6 1/2
Blue, dozen.....	\$20.40	24.00
Nickel, dozen.....	24.00	27.60

Lap Joint



Utica, No. 50

Drop-forged steel, with checkered handles

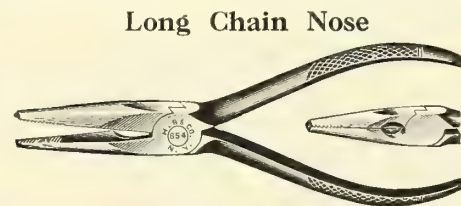
Inches.....	4	5	6	7	8
Blue, dozen	\$13.20	14.40	15.60	19.20	21.60
Nickel dozen	16.80	18.00	19.20	22.80	25.20



Utica, No. 350

Same as No. 3050, except lighter construction

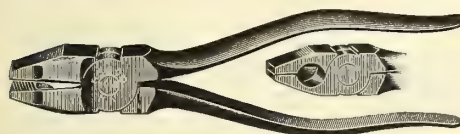
Inches.....	6	7	8
Dozen.....	\$16.80	21.60	24.00



Utica, No. 654

Drop-forged steel, with spring tempered nose.

Inches.....	5 1/2	6 1/2
Blue, dozen.....	\$19.20	24.00
Nickel, dozen.....	22.80	27.60



H. S. & Co., Nos. 1050 and 1250

Same as No. 50, except smooth handles

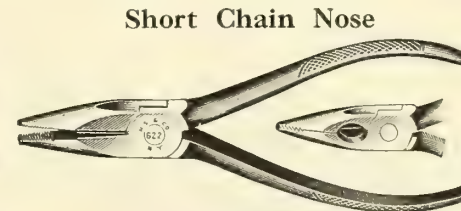
Inches.....	4	5	6	7	8
No. 1050, Black					
Dozen.....	\$9.60	10.80	13.20	15.60	19.20
No. 1250, Nickel					
Dozen.....	\$13.20	14.40	16.80	19.20	22.80



Vulcan, No. 502

Drop-forged steel, with compound lever, making it possible to cut heavy wire with slight pressure. Black handles, polished jaws.

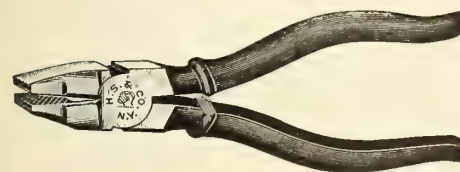
Inches.....	4	5	6	7	8
Dozen.....	\$12.00	15.00	19.00	22.00	26.00



Utica, No. 622

Same as No. 654, except shorter nose

5 inches Blue, dozen.....	\$15.60
5 inches Nickel, dozen.....	19.20

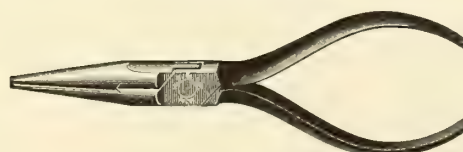


P. S. & W., No. 400
Insulated

Handles are covered with a patent insulation, which is not brittle and will not flake off. Tested to insulate against 2,500 volts.

Inches.....	6	7	8
Dozen.....	\$15.25	17.00	19.75

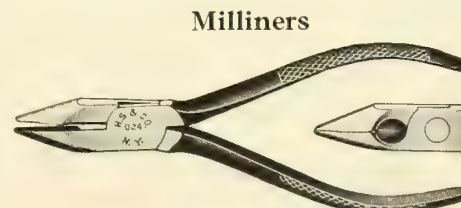
Electricians



H. S. & Co., No. 1215

Black. A handy tool for light work only

Inches.....	5	5 1/2	6
Dozen.....	\$10.50	11.20	12.60



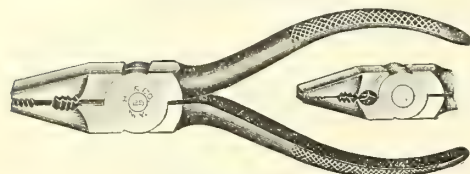
H. S. & Co., Nos. 024 and 0224

This Plier has a special cutting edge which will cut silk-covered wire without drawing the silk or bruising the wire. Hole in handle for hanging from the waist.

Inches.....	4	5
No. 024, Blue, dozen.....	\$9.00	9.25
No. 0224, Nickel, dozen.....	12.00	13.00

Pliers

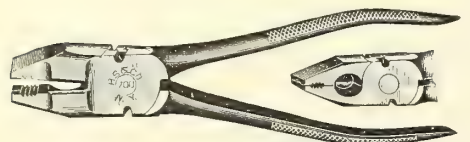
Combination



Utica No. 25

Drop-forged steel, blue handles. Combines a burner, flat nose and side-cutting pliers.

5½-inch, dozen \$14.40



Utica No. 700

Drop-forged steel, with blue checkered handles. Burner teeth are milled. Combines a wire cutter, side cutter, flat nose and gas pliers, and screwdriver.

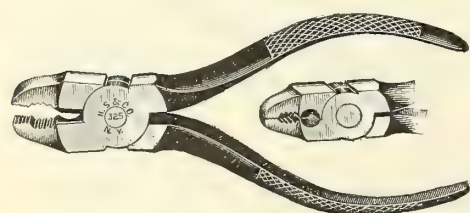
7-inch, dozen \$20.40

H. S. & Co. No. 1880

Polished steel, same general design as No. 700, without checkered handles.

7-inch, dozen \$15.00

Round End

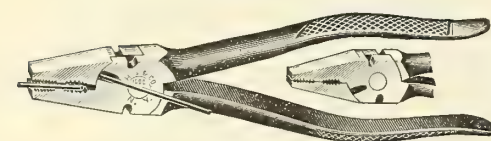


Utica No. 325

Drop-forged steel. Milled teeth. Blue handles

Inches 5 5½
Dozen \$13.20 14.40

Button



Utica No. 1000

Drop-forged steel, with four wire cutters. The two cutters between the jaws are so designed that the wire is held after it is cut. Blue checkered double roll handles.

Inches... 4½ 6 8 10
Dozen... \$8.40 9.60 12.00 18.00

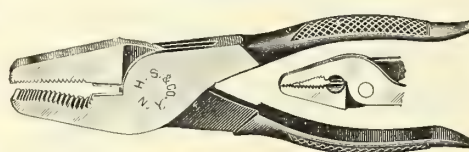


H. S. & Co. No. 3000

Drop-forged, black smooth handles

Inches 4½ 6 8 10
Dozen \$5.70 7.65 9.60 11.70

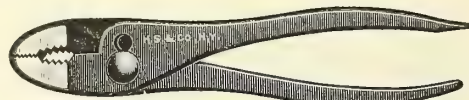
Combination



Utica No. 6006 Line

Drop-forged steel with blue checkered handles. The slip joint is of the box type, distributing the strain to both sides, avoiding side and twisting strains. It also does away with the large headed bolt and nut, and the annoyance that goes with them.

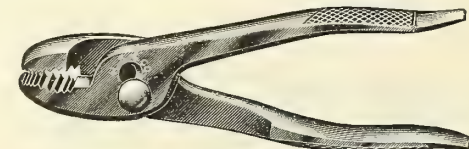
No. 6006 6½-inch, dozen \$12.00
No. 6008 8-inch, dozen 16.00
No. 6010 10-inch, dozen 21.35



Billings & Spencer

Drop-forged from tool steel. Finely finished. A powerful wire cutter is located near the bolt. An ⅛-inch wire may be cut with ease.

Inches.....	6	8	10	14
Black, No.	1	2	3	4
Black, per dozen.....	\$13.50	16.00	18.00	24.00
Nickel, No.	1 N	2 N	3 N	4 N
Nickel, per dozen.....	\$15.00	18.00	21.00	30.00



Utica No. 4000

Heavy drop-forged. Blue double roll checkered handles, extra strong. Milled teeth.

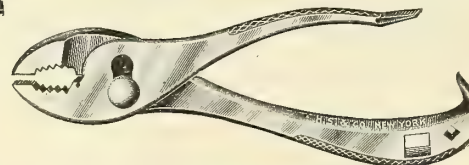
Inches 6 8
Dozen \$8.40 12.00



H. S. & Co. No. 305

A high grade tool in quality and finish. Forged from fine steel. Knurled handles.

7-inch Black, dozen \$13.50
7-inch Nickel, dozen 15.00



Knight Patent Auto

Combines the following tools most used on automobiles, motor boats and cycles into one good pair of pliers:
Screwdriver
Wire Cutters
Pipe Wrench
Gas and Air Tank Keys
Cotter Pin Puller
Two Tap Wrenches

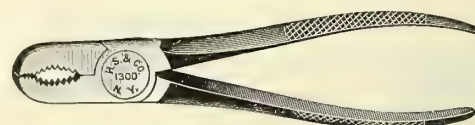
Made of the best grade of tool steel, properly tempered and fitted, heavily nickel-plated and shaped to fit the hand.

The Cotter Pin Extractor will pull large or small cotter pins easily and quickly, and is a great labor saver in taking off and on anti-skid chains.

The two tap wrenches form gas and air tank keys, and are handy for tightening up loose auto lamps and for removing and replacing them.

No. 50 7-inch, dozen \$10.00

Gas and Burner



Utica No. 1300

5 and 6-inch burner

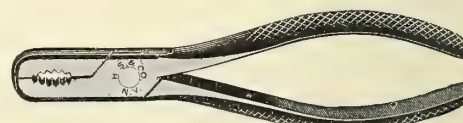


Utica No. 1300

7, 8 and 10-inch gas

Drop-forged steel, with checkered handles. Milled teeth, giving a firm grip with little pressure. Blued.

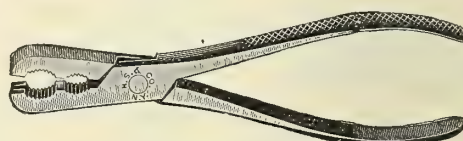
Inches.....	5	6	7	8	10
Dozen.....	\$8.40	9.60	10.80	12.00	18.00



H. S. & Co. Nos. 118 and 326 Burner

Cast steel, polished. No. 326 has knurled handle, extra fine quality.

Inches.....	5	6
No. 118, dozen.....	\$6.70	7.00
No. 326, dozen.....	8.00	9.00



H. S. & Co. No. 327 Burner

Cast steel, polished, knurled handle, extra fine quality.

7-inch, dozen \$10.00



H. S. & Co. Nos. 119 and 325 Gas

No. 119. Cast steel, polished.

No. 325. Cast steel, japanned handle, polished jaw, extra fine quality.

Inches...	7	8	9	10	12	14
No. 119						
Dozen.	\$8.00	9.70	10.50	13.00	15.00	

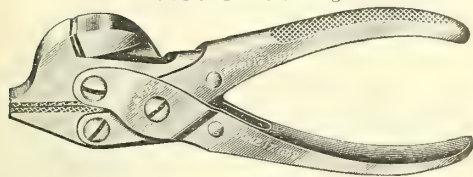
No. 325

Dozen. \$12.00 14.00 15.00 18.00 24.00

Pliers

Combination

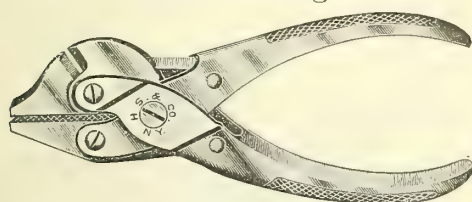
Side and end cutting



Bernard No. 122

Inches.....	5	6
Dozen.....	\$21.00	\$26.00

Side Cutting



Bernard No. 102

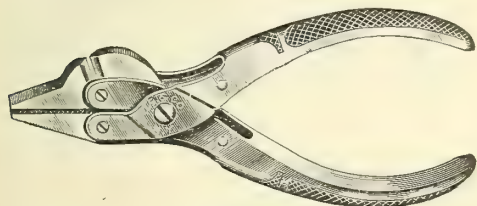
Warranted crucible steel, open throat, parallel jaws, full nickel-plated.

Inches	Dozen	Inches	Dozen
4½	\$11.50	6½	\$17.50
5	13.00	7	19.00
5½	14.50	8	23.50
6	16.00		

Bernard No. 102½

Same design as No. 102, but will cut tempered steel wire.

5½-inch, dozen..... \$14.50

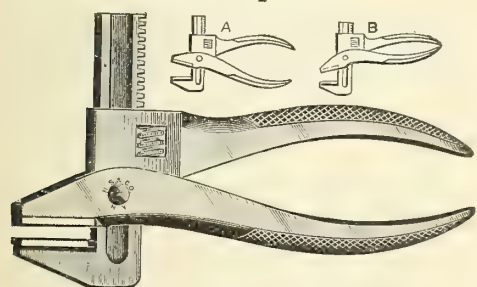


Bernard No. 105

Same as No. 102, except lighter construction

Inches.....	5	6
Dozen.....	\$12.00	15.00

Patent Expansion

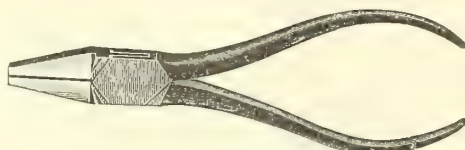


Starrett No. 240

A most useful Plier. It is made from drop-forged steel with handles struck up from heavy stock to give ample strength for all requirements. The handles move together and are always the right distance apart to grip with the hand, while the jaws adjust themselves to fit the work between them, whatever its shape may be, and will hold it firmly. The jaws will take anything between them and fit any straight or taper piece from 0 to 1¼ inches. The hinged jaw having a short fulcrum will hold with a tremendous grip, making it a very effective pipe wrench. It will hold to turn any nut or bolt within its limit; will grip and hold to pull a headless nail that nothing else will hang to, making altogether one of the most efficient tools in its line ever produced.

Plain, each	\$2.00
Nickel, each	2.25

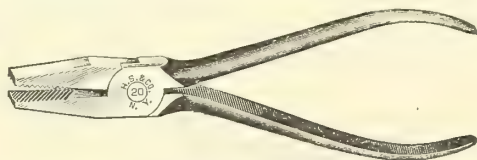
Flat Nose



H. S. & Co. Nos. 1806½ and 1906½

Hand-forged steel; best quality box joint. No. 1806½, black; No. 1906½, polished.

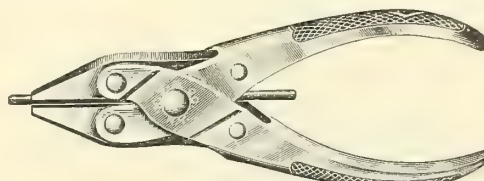
Inches.....	3½	4	4½	5	5½
No. 1806½,					
dozen.....	\$5.20	5.20	5.70	6.30	7.40
No. 1906½,					
dozen.....	5.80	5.80	6.50	7.10	8.00
Inches.....	6	6½	7	8	
No. 1806½					
dozen.....	\$8.60	10.10	12.10	15.00	
No. 1906½					
dozen.....	9.20	10.90	12.90	15.60	



H. S. & Co. No. 20

Drop-forged steel

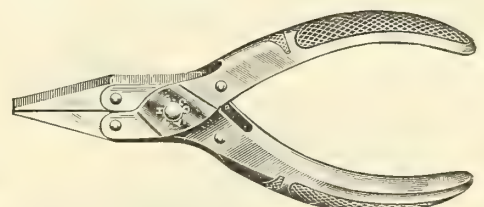
Inches.....	3½	4	4½	5	5½
Blue, dozen...	\$7.20	8.20	9.60	9.60	10.80
Nickel, dozen...	10.80	12.00	13.20	13.20	14.40
Inches.....	6	7	8		
Blue, dozen.....	\$10.80	\$12.00	\$13.20		
Nickel.....	14.40	15.60	16.80		



Bernard No. 100

Warranted crucible steel. Open throat, parallel jaws. Full nickel-plated.

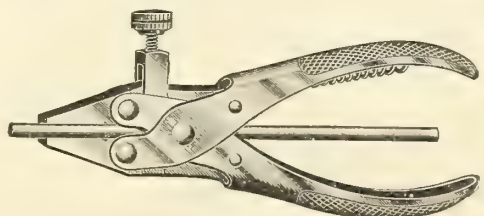
Inches.....	4½	5	5½	
Dozen.....	\$6.00	7.00	8.00	
Inches.....	6	6½	7	8
Dozen.....	\$9.00	10.00	11.00	14.00



Bernard No. 103

Same as No. 100, but lighter construction

Inches.....	3½	4	4½	5	6
Dozen.....	\$5.00	5.50	6.00	7.00	8.00

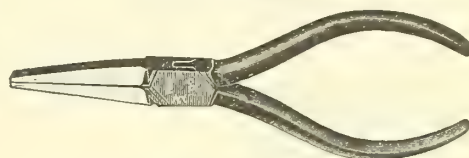


Bernard No. 113

Open throat, parallel jaws. Full Nickel-plated. Warranted crucible steel. Can be used as a Plier Wrench and Hand Vise. Provided with a spring in the handle, which will throw and maintain them open.

Inches.....	5	6½
Dozen.....	\$10.00	13.00

Flat Nose

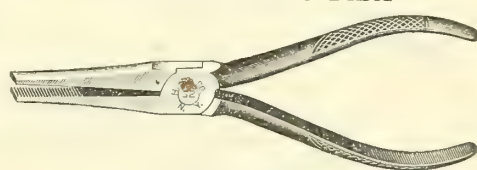


H. S. & Co. No. 810

Cast steel, black, long nose

Inches.....	3½	4½	5½
Dozen.....	\$5.20	5.60	7.20

Flat Jaw Loom Fixer

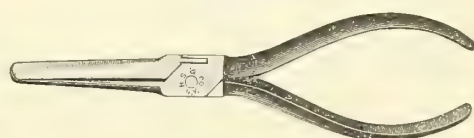


Utica No. 32

Drop-forged steel, with spring tempered nose

Inches.....	5½	6½
Blue, dozen.....	\$18.00	24.00
Nickel, dozen.....	21.60	27.60

Swan Bill

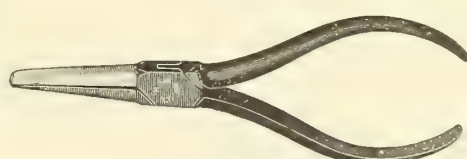


H. S. & Co. No. 4110

Box joint, polished

Length						
Inches..	5	6	6	8	8	9
Nose						
Inches..	¼	¼	¾	¾	1½	1½
Dozen...	\$7.20	9.25	9.25	15.50	15.50	19.20

Weavers

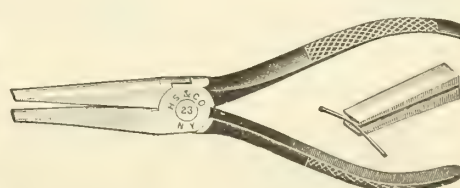


H. S. & Co. No. 822

Cast steel, black, box joint

Inches.....	5	6
Dozen.....	\$6.30	8.20

Concave and Convex Nose



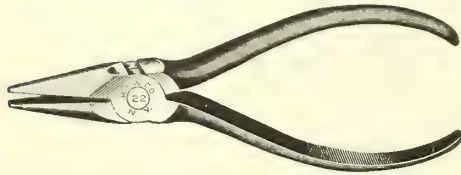
Utica No. 23

Drop-forged steel. Will straighten reed without twisting the hand.

Inches.....	5½	6½
Blue, dozen.....	\$18.00	24.00
Nickel, dozen.....	21.60	27.60

Pliers and Nippers

Short Nose Chain Pliers



H. S. & Co. No. 22

Drop-forged Steel

Inches	3 1/2	4	4 1/2	5	5 1/2	6
Blue						
Dozen	\$7.20	8.40	9.60	9.60	10.80	10.80
Nickel						
Dozen	10.80	12.00	13.20	13.20	14.40	14.40

Long Nose Chain Pliers

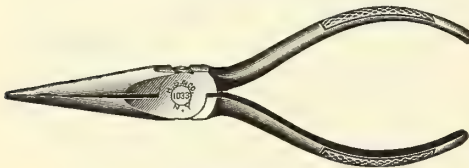


H. S. & Co. No. 912

Cast steel. Black. Box joint

Inches	4 1/2	5	5 1/2	6
Dozen	\$5.70	6.40	7.00	8.20

Long Needle Nose Chain Pliers

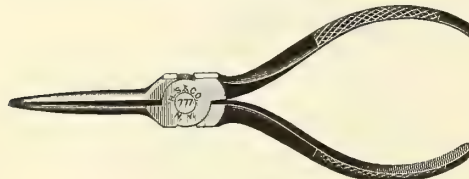


Utica No. 1033

Drop-forged steel, with spring tempered nose

Inches	5 1/2	6 1/2
Blue, dozen	\$18.00	24.00
Nickel, dozen	21.60	27.60

Long Needle Nose Pliers

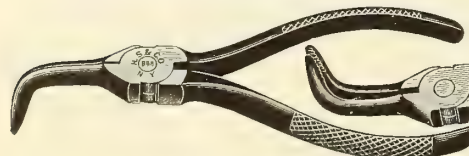


Utica No. 777

Drop-forged steel, with long thin spring tempered nose.

Inches	5 1/2	6 1/2
Blue, dozen	\$19.20	24.00
Nickel, dozen	22.80	27.60

Curved Needle Nose Pliers

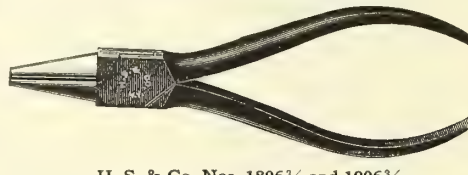


Utica No. 888

Drop-forged steel. The curved spring tempered nose makes it easy to reach deep, narrow places.

5 1/2-inch, Blue, dozen	\$21.60
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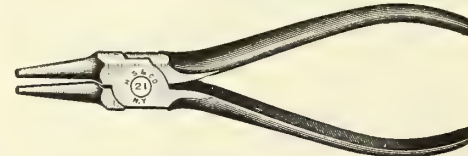
Round Nose Pliers



H. S. & Co. Nos. 1806 3/4 and 1906 3/4

Hand-forged steel; best quality. Box joint.

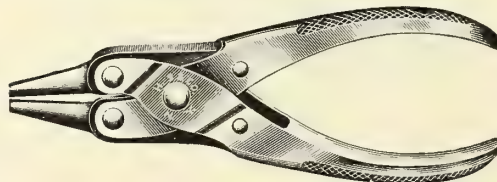
Inches	3 1/2	4	4 1/2	5	5 1/2
No. 1806 3/4					
Black	\$5.20	5.20	5.70	6.30	7.40
No. 1906 3/4					
Polished	5.80	5.80	6.50	7.10	8.00
Inches	6	6 1/2	7	8	
No. 1806 3/4					
Black	8.60	10.10	12.10	15.00	
No. 1906 3/4					
Polished	9.20	10.90	12.90	15.60	



H. S. & Co. No. 21

Drop-forged steel. Lap joint. Blue

Inches	3 1/2	4	4 1/2	5	6	7	8
Dozen	\$7.20	8.40	9.60	9.60	10.80	12.00	13.20



Bernard No. 101

Warranted crucible steel. Open throat, parallel jaws. Full nickel-plated.

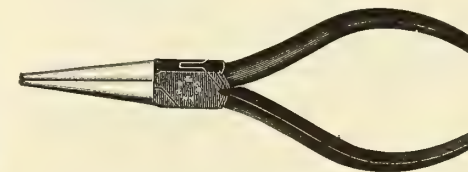
Inches	4 1/2	5	5 1/2	6	6 1/2	7	8
Dozen	\$6.00	7.00	8.00	9.00	10.00	11.00	14.00



Bernard No. 104

Same as No. 101, except lighter in construction

Inches	4	4 1/2	5
Dozen	\$5.50	6.00	7.00

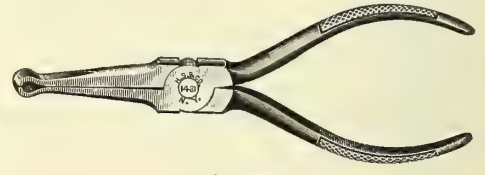


H. S. & Co. No. 810 1/4

Cast steel. Black, with long nose

Inches	3 1/2	4 1/2	5 1/2
Dozen	\$5.20	5.60	7.20

Heat Coil Pliers

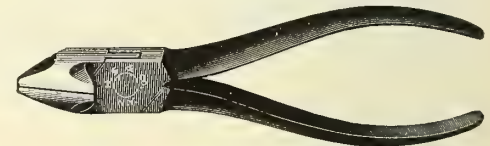


Utica No. 1431

Drop-forged steel, with special shaped spring tempered jaws. Blue

Inches	5 1/2	6 1/2
Dozen	\$21.60	24.00

Side-Cutting or Diagonal Nippers



No. 149. Genuine Stubs. Best English steel, box joint. Black.

No. 5639. Swiss. Polished for light work.

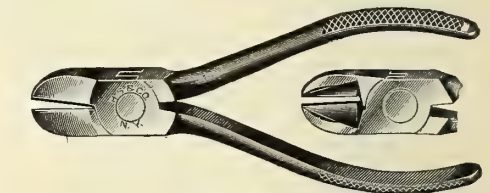
Inches	4 1/2	5	5 1/2	6
No. 149 Dozen	\$10.50	11.50	14.00	
No. 5639 Dozen	\$10.90	12.00		



H. S. & Co. No. 242

Polished lap joint

Inches	4 1/2	5
Dozen	\$11.20	11.20



Utica No. 42

Drop-forged steel. Box joint. Checkered handles

Inches	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2
Blue							
Doz.	\$16.80	18.00	19.20	21.60	24.00	27.60	30.00

Straight Cutting Nippers



Swedish No. 518

Heavy, with detachable cutters, made of finest Swedish steel. Will cut regular or tempered steel wire to 1/8 inch with equal facility.

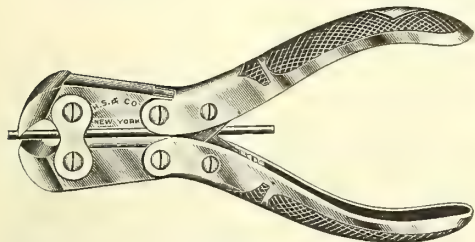
9-Inch, dozen	\$21.60
Extra cutters, dozen pairs	3.00

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

Nippers, Pliers and Pincers

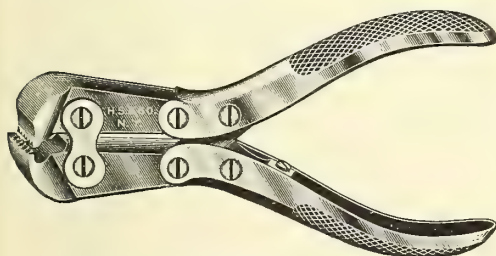
Compound End Cutting Nippers



Bernard No. 125

Open throat. Full nickel-plated. Spring in handle. Not for music wire.

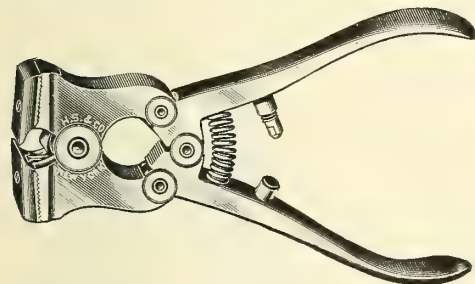
Inches.....	4	5	6	7	8
Cuts wire, inch.	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$
Dozen.....	\$11.00	14.00	17.00	20.00	25.00



Bernard No. 135

Will cut music wire up to No. 32. Open throat. Full nickel-plated, spring in handle.

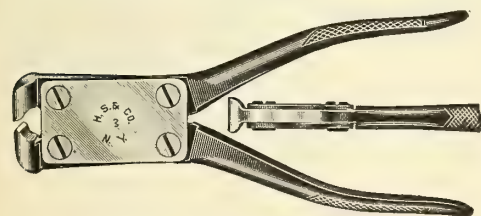
5-Inch, dozen..... \$17.00



Starrett

Head and handles drop-forged steel, finely finished. All parts case-hardened, except the jaws, which are properly tempered for their work. Jaws are detachable and can be ground and replaced. No. 1M will cut music wire up to No. 25.

Inches.....	5 $\frac{1}{2}$	7
No. 1 Regular, each.....	\$2.00	\$2.50
No. 1M For music wire, each.....	2.00	2.50
Extra jaws, pair.....	.50	.50
Extra screws, dozen.....	.25	.25
Extra splines, dozen.....	.25	.25
Extra springs, dozen.....	.25	.25

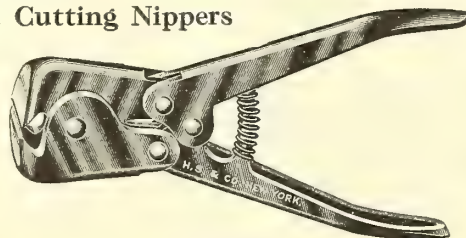


Utica No. 3

Blue checkered handle

Inches.....	4 $\frac{1}{2}$	5 $\frac{1}{2}$	7 $\frac{1}{2}$	9
Each.....	\$2.00	2.30	2.90	3.50
Extra jaws, each.....	.60	.70	.80	.90
Extra plates, each.....	.40	.50	.60	.70
Extra springs, each.....	.20	.20	.20	.20

No. 3M for music wire will be furnished if desired, at regular prices.



Monarch

5 $\frac{1}{2}$ -inch will cut music wire up to No. 25; 6 $\frac{1}{2}$ -inch up to No. 32.

5 $\frac{1}{2}$ -inch, Black, dozen.....	\$15.00
6 $\frac{1}{2}$ -inch, Black, dozen.....	20.00

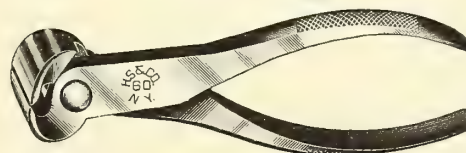
End Cutting Nippers



H. S. & Co.

No. 1306A. German, Black.
No. 1306AY Best German, highly tempered. Black.
No. 5533 Swiss, polished, for light work.

Inches	No. 1306 A Dozen	No. 1306 AY Dozen	No. 5533 Dozen
3 $\frac{1}{2}$	....	\$20.00	
4	\$8.30	20.00	
4 $\frac{1}{2}$	9.00	20.00	\$10.90
5	9.70	20.00	12.00
5 $\frac{1}{2}$	10.40	22.00	
6	11.70	24.00	
6 $\frac{1}{2}$	....	27.00	
7	....	30.00	
8	....	39.00	



Utica No. 60

Forged steel, carefully tempered

Inches.....	5	6	7	8
Dozen.....	\$16.80	19.20	21.60	25.20

No. 60M, for music wire, will be furnished at regular prices.



Carew

Forged steel. Interchangeable jaws

Inches.....	8	10	12	14
Each.....	\$2.00	2.25	2.60	3.00
Jaws, pair.....	.55	.60	.65	.70

Todd Improved

(Similar to Carew)

The Cutters are forged from the best steel and tempered in the most approved manner.

They can be taken off to be ground and when worn out can be replaced at a slight expense, making the tool as good as new.

Number.....	0	1	2	3	4
Inches.....	15	12	11	10	8
Each.....	\$3.00	2.25	2.00	1.75	1.50
Cutters, pair.....	.70	.65	.60	.60	.50

Swedish No. 519

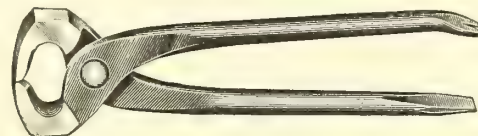
(Similar to Carew)

Extra strong. Detachable Cutters, made of finest Swedish steel. The 7-inch size will cut regular or tempered steel wire to $\frac{1}{4}$ -inch; the 9-inch to $\frac{3}{8}$ -inch.

Inches.....	7	9
Dozen.....	\$24.00	30.00

Extra Cutters, dozen pairs. \$5.00

Carpenters Pincers



Swedish No. 1601

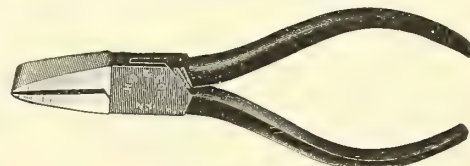
Genuine Swedish steel of finest quality. Drop-forged. Polished jaws. Hammer head.

Inches.....	6	7	8	10
Dozen.....	\$9.00	10.50	12.00	18.00

German No 475. Cast steel. Polished jaws

Inches.....	6	7	8	10
Dozen.....	\$3.25	3.85	4.60	7.60

Umbrella Pliers

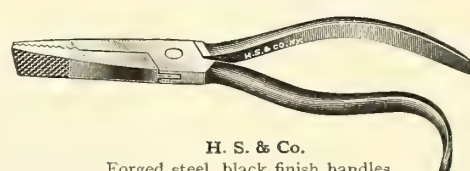


H. S. & Co. No. 830

Cast steel, black

5 $\frac{1}{2}$ -inch, dozen.....	\$9.60
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Furriers Pliers



H. S. & Co.

Forged steel, black finish handles

Inches.....	7	10
Dozen.....	\$16.00	\$18.00

Glass Pliers



H. S. & Co. No. 450. Regular, Flat Jaw

Forged steel. Black finish handles. Polished flats and jaws.

Inches.....	8	10
Dozen.....	\$10.00	12.00



H. S. & Co. No. 455. Roller, Round Jaw

Forged steel. Black finish handles. Polished flats and jaws

11-Inch, dozen.....	\$20.00
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Basket Pliers



H. S. & Co. Nos. 1 and 2

Forged steel, nail driver

No. 1, 9 $\frac{1}{2}$ inches long, 1 $\frac{3}{4}$ -inch jaw, dozen.....	\$22.00
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No. 2, 10 inches long, 2-inch jaw, dozen.....	22.00
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H. S. & Co. No. 3

Forged-steel, flat

10 inches long, 2 $\frac{1}{2}$ -inch jaw, dozen..	\$18.00
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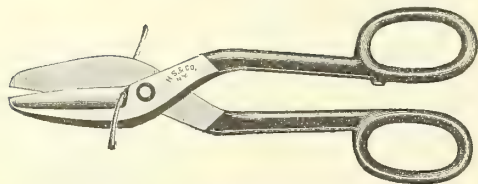
Metal or Tinner Snips

Reliance Brand

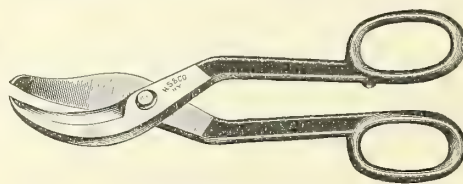
Every Reliance Snip is Guaranteed to be Satisfactory in Every Particular

The Length of Cut is the Standard Cutting Edge of Blade

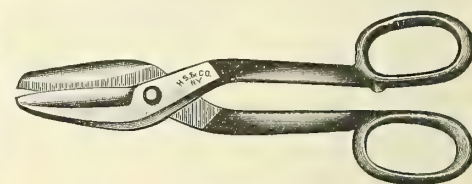
Drop-forged steel, with bar tool steel laid polished blades. Blued handles. For use by right-handed mechanics



Regular



Circular Blade



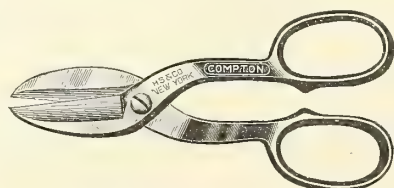
Handy

A convenient, all-around tool, cutting straight, curved and irregular shapes.

Number	Full Length Inches	Length of Cut Inches	Pair
6 1/2	15 1/2	4 1/2	\$3.00
7	14	4	2.50
8	13	3 1/2	2.00
9	12	3	1.50
10	11	2 1/2	1.40
11	9	2 1/4	1.20
12	8	2	1.05

Number	Full Length Inches	Length of Cut Inches	Pair
6 1/2 CB	15 1/2	4 1/2	\$4.25
7 CB	14	4	3.50
8 CB	13	3 1/2	3.00
9 CB	12	3	2.50
10 CB	11	2 1/2	2.25
11 CB	9	2 1/4	1.95
12 CB	8	2	1.80

Number	Full Length Inches	Length of Cut Inches	Pair
17	14	4	\$3.00
18	13	3 1/2	2.50
19	12	3	2.00
110	11	2 1/2	1.90



Left-Handed, with Reversed Bows

Number	8 L. H.	9 L. H.
Full length, inches	13	12
Length of cut, inches	3 1/2	3
Regular Blades, per pair	\$3.00	\$2.50
Circular Blades, per pair	4.00	3.50

No. 111 Same quality as regular Reliance (line shown above), but made shorter and very powerful, small in size, but unusually large in range of work. Length over all, 7 inches.

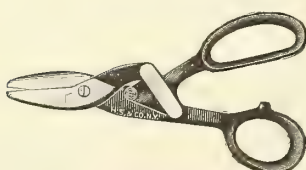
Length of cut, 2 inches, pair. \$1.05

For use by left-handed mechanics. Bows shaped to be used with the left hand.

Searight Compound Lever

These Snips are forged from a solid bar of high grade crucible tool steel. They are carefully made, tempered and ground, are scientifically designed and correctly built to withstand the strain of heavy work without injury. The compound leverage is so arranged as to distribute the cutting power equally the full length of the blades.

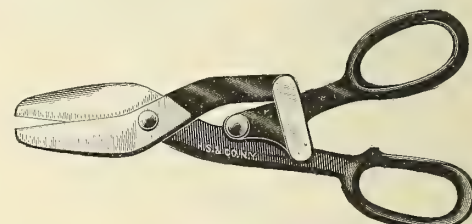
Temper Finished Blades. Japanned Handles



No. 8

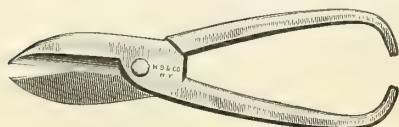
Number	Full Length Inches	Length of Cut Inches	Pair
*7	7	1 1/2	\$1.00
8	8	1 3/4	1.50
10	10 1/2	2 1/2	2.25
12	12	3	3.00
14	14	3 3/4	3.50

*No. 7 is pocket size, similar to No. 8 Except pressed from crucible sheet steel



Nos. 10, 12 and 14

Reliance Jewelers



No. 29. Polished
For all light metal work

Full length, inches.	5	5 1/2	6	6 1/2	7	7 1/2	8
Dozen	\$11.00	11.00	11.00	11.80	12.80	13.80	15.00

Reliance Dental




No. 832

For cutting very light metal. Japanned handles, 8 inches long, polished blades, cut 2 1/2 inches. With screw and nut.


Dozen \$22.00

Tweezers




Piano

		Dozen
No. 56	6 inches.....	\$ 7.20
No. 57	7 inches.....	8.40
No. 57A	8 inches.....	9.60




Imported

		Dozen
No. 57B	5 inches.....	\$1.50
No. 57D	5½ inches.....	2.25
No. 57C	6 inches.....	3.60




Printers, with Coarse Serrated Flat Points

No. 291	3½ inches, Nickel, dozen..	\$4.50
Same with Shim and Back Pin Length, 4 inches		
No. 340	Nickel, dozen.....	11.30




Over all including Bodkin 6¼ inches

No. 350	4 inches, Nickel-plated, with movable bodkin, extra quality, dozen.....	\$18.00
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Jewelers No. 240

4¾ inches, Nickel-plated, with bent points, dozen.....	\$9.00
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Jewelers

No. 15	4¼ inches, Nickel-plated, dozen.....	\$3.00
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Jewelers

No. 18	4½ inches, Nickel-plated, dozen.....	\$3.00
No. 40	4½ inches, Polished, dozen.....	2.40

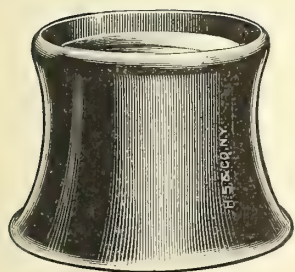


Flower Makers No. 180

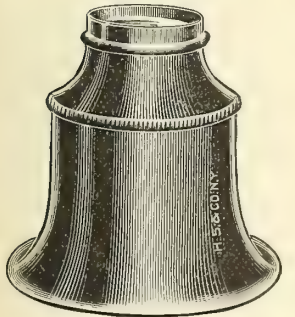
4¼ inches long, 5½ inches over all Nickel-plated, dozen.....	\$2.00
Plain, dozen.....	2.40

Eyeglasses

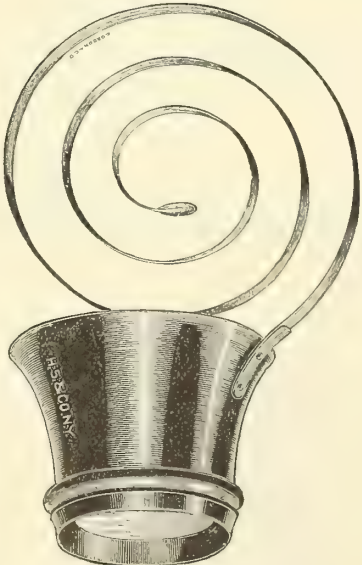
Watchmakers Loupes



No. 144-2

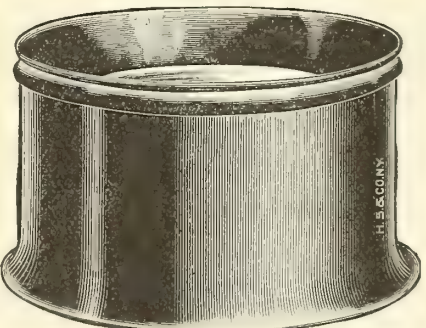


No. 144A



No. 144-2 LP

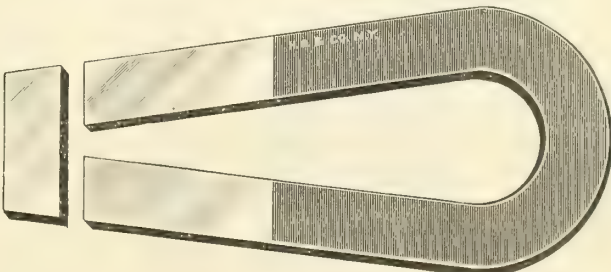
Engravers



No. 146A. 1⅝ inches diameter lens. Magnification 3.5x
Each \$.75

No. 148A. 2⅜ inches diameter lens. Magnification 2.5x
Each \$1.25

Horseshoe Magnets

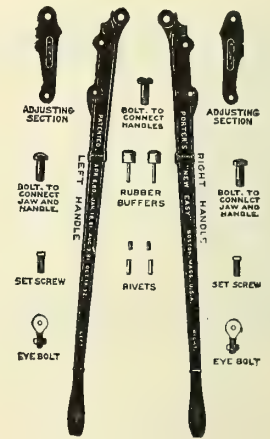
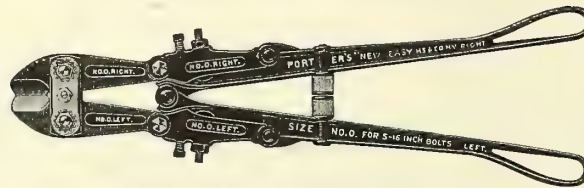
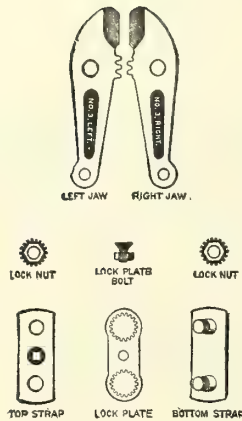


Number	Diameter of Lens Inch	Range of Magnifications	Each
144-2	1	2 to 10X	\$.40
144-A	½ and 1	4 to 10X	.60
144-2 LP	1	2 to 5X	.55

Inches.....	3	4	5	6
Each.....	\$.10	.20	.30	.60

Bolt or Rivet Clippers

New Easy



Number	0	1	2	3
Length, inches	18	24 $\frac{1}{2}$	30	36
Cuts up to, inch	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$
Weight, pounds	3	5 $\frac{3}{4}$	9	13
Porter's "New Easy," each	\$3.75	5.00	7.00	9.00

Cutter Heads and Parts

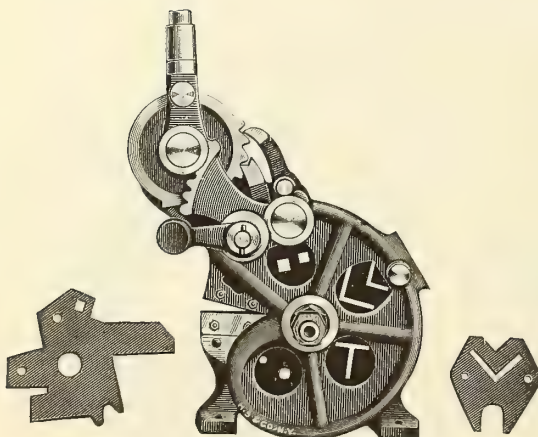
Number	0	1	2	3
Cutter Head, complete	\$2.10	\$2.70	\$3.70	\$4.65
Pair Cutting Jaws, ready for use	1.35	1.65	2.35	3.00
One Cutting Jaw, ready for use	.68	.83	1.18	1.50
Bottom Strap, with two steel bolts	.40	.50	.60	.70
Top Strap	.10	.20	.30	.40
Lock Nuts, pair	.10	.15	.20	.25
Lock Plate	.10	.15	.20	.25
Lock Plate Bolt	.05	.05	.05	.05

Handles and Parts

Number	0	1	2	3
Pair of Handles, complete	\$1.90	\$2.30	\$3.30	\$4.35
One Handle, complete	.95	1.15	1.65	2.20
One Handle, without parts, long piece only	.40	.50	.90	1.35
Adjusting Sections, with one rivet, each	.25	.30	.35	.40
Steel Adjusting Screws, pair	.10	.10	.10	.10
Steel Bolts, to connect jaws and handles, pair	.10	.10	.10	.10
Eye Bolts, with nuts and rivets, pair	.20	.25	.30	.35
Rubber Buffers, with rivets and washers, pair	.20	.25	.30	.35

Universal Shears for Profiles and Bars

Niagara



For cutting angle and T-iron, round, square and flat bars.

The frame is made of two steel castings, with inserted tool steel dies. One part is stationary, the other can be given a limited rotary motion around the center pivot.

The angle iron cutters are removable; the cutters for T-iron, also for round and square bars, are fixed.

Has a compound mechanism for heavier work, or can be operated direct, with greater speed, in cutting lighter stock.

Hold-down plates on the side of the machine hold and guide the stock while being cut off.

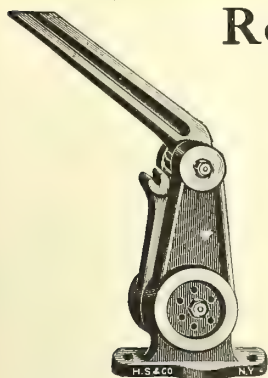
Dies are furnished for:

Angle iron—2 $\frac{1}{2}$ x $\frac{3}{8}$ inches
Angle iron—2 x $\frac{1}{4}$ inches
T-iron—2 $\frac{1}{2}$ x $\frac{3}{8}$ inches

Round Bars— $\frac{3}{4}$ and 1 inch
Square Bars— $\frac{3}{4}$ and 1 inch
Straight Knives—4 $\frac{1}{2}$ x $\frac{5}{8}$ inch flat

Universal Shears for Profiles and Bars. 360 pounds, each \$125.00

Rod Cutters



Nos. 1 and 2

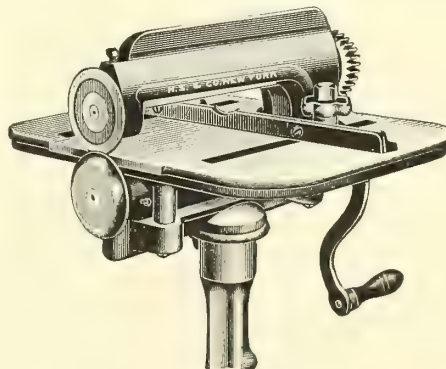
No. 1 will cut rods $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$ and $\frac{3}{8}$ inch diameter.

Each..... \$5.00

No. 2 will cut rods $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$ and $\frac{5}{8}$ inch diameter.

Each..... 16.00

Rotary Slitting Shears



No. 121

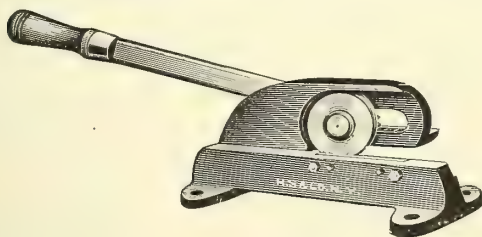
These Shears are constructed with gauge table and will cut strips up to 9 inches in width.

For No. 20 Iron and lighter. Weight 100 pounds.

With Stand... \$27.00

Extra Cutters, pair..... 6.00

Rolling Cutter Shears

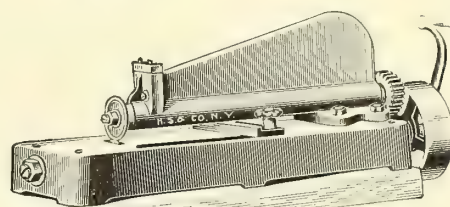


Nos. 11 and 12

These Shears are operated by a pinion lever engaging in a rack and cutting with the forward roll of the cutting disc. The advantage of this construction is that the power travels with the cutter, the resistance and power being the same all along the cut.

No. 11 Will cut No. 20 Iron..... \$5.00

No. 12 Will cut No. 16 Iron..... 7.50



No. 251

These Shears will cut No. 20 Iron up to 15½ inches in width with gauge, or 16¾ inches with the gauge taken out. Bed plate 9 x 22 inches. Lower cutter is inserted in bed plate. Hand or power drive. Weight, 150 pounds.

Complete as shown..... \$60.00

Extra Cutters..... 6.00

Combined Punch, Shear and Rod Cutting Machine Union

Is the only machine which combines all three operations.

Parts are made of the best quality of material, and the machine work is of the best. The Rotary Punch is easy of adjustment and when in position for the Rotary Die is locked firmly in place by means of a strong nut and screw.

The machine is always set up and ready for use, and has many handy features which will appeal to all workers in metal.

Operation

The tension latch should always be locked in position unless it is desired to cut strips from a sheet, in which case it may be disengaged and will drop down out of the way.

To use the wire gauge, remove the graduated punch gauge entirely, and feed the wire from the right-hand side when facing the shear. This allows the piece cut off to disengage itself from the gauge.

Size No. 1

For Bench or Vise Use

Capacity

Cuts wire or rods $\frac{1}{4}$, $\frac{3}{16}$, $\frac{5}{32}$, $\frac{1}{8}$ and $\frac{3}{32}$ inch round.

Shears $\frac{1}{8}$ x 1 inch flat bar or No. 14 gauge plate.

Punches $\frac{1}{4}$ inch hole in stock $\frac{3}{32}$ inch thick.

Equipment

Combination wire and punch gauge, four regular punches and dies, $\frac{1}{4}$, $\frac{3}{16}$, $\frac{5}{32}$ and $\frac{1}{8}$ inch.

Also operating lever.

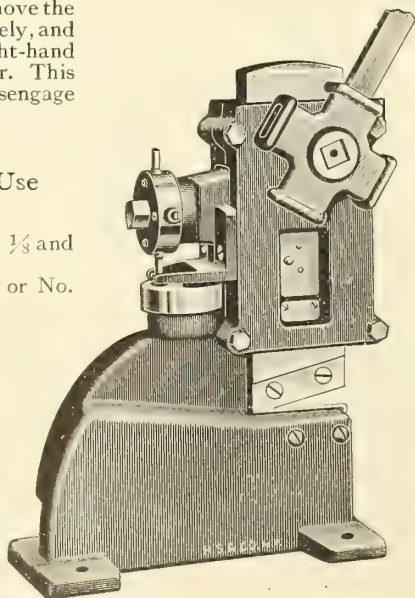
Weight, pounds.... 22

Price..... \$30.00

Extra Punches, each... .50

Extra Dies, each.... .50

Extra Blades, each... .65



Size No. 2

Larger than No. 1 and mounted on floor stand.

This is the size most used for general work, and will be found to be the most useful size for the general manufacturer and tool maker.

Capacity

Cuts wire or rods $\frac{7}{16}$ inch square and $\frac{1}{2}$ or $\frac{3}{8}$ inch round.

Shears $\frac{1}{8}$ x 2 inches flat bar or No. 8 gauge plate.

Punches $\frac{3}{8}$ inch hole in $\frac{1}{4}$ inch thick plate.

Equipment

Combination wire and punch gauge, four regular punches and dies, $\frac{3}{8}$, $\frac{5}{16}$, $\frac{1}{4}$ and $\frac{3}{16}$ inch, also operating lever and spider.

Weight, pounds..... 190

Price..... \$66.00

Extra Punches, each..... .50

Extra Dies, each..... .50

Extra Blades, each..... .65

Size No. 3

This is the largest size made, and will be found useful in the blacksmith or machine shop. Note the capacity of this machine as outlined below.

Capacity

Cuts wire or rods $\frac{5}{8}$ inch square and $\frac{5}{8}$, $\frac{1}{2}$, $\frac{3}{8}$ inch round.

Shears $\frac{1}{2}$ x 3 inch flat bar or $\frac{1}{4}$ inch plate.

Punches $\frac{1}{2}$ inch hole in $\frac{1}{2}$ inch thick plate.

Equipment

Combination wire and punch gauge, four regular punches and dies, $\frac{1}{2}$, $\frac{3}{8}$, $\frac{5}{16}$ and $\frac{1}{4}$ inch, one 48-inch forged steel operating lever with reversible ratchet, and quick return lever.

The quick return lever may be used when cutting or punching thin stock, and for feeding the punch down to the work before applying the full power.

It also facilitates the quick return of the plunger.

Complete, with 4 to 1 power reduction and mounted on floor stand.

Weight complete with lever and attachments, 750 pounds.

Price..... \$160.00

Extra Punches, each..... .85

Extra Dies, each..... .85

Extra Blades, each..... 1.00

Files and Rasps

Nicholson Increment Cut Files

THESE Files are made in the regular grades of cut, viz.: Rough, Coarse, Bastard, Second Cut, Smooth and Dead Smooth, but because of the peculiar arrangement of the teeth are universally known as the Increment Cut Files.

The arrangement of the teeth of the Increment Cut may be described as follows:

1st. The rows of teeth are spaced progressively wider from the point toward the middle of the File, by regular increments of spacing, and progressively narrower from the middle toward the heel, by regular decrements of spacing.

2nd. This general law of the spacing of the teeth is modified by introducing, as they are cut, an element of controllable irregularity as to their spacing, which irregularity is confined within maximum and minimum limits, but is not a regular progressive increment or decrement.

3rd. In arranging the teeth of files so that the successive rows shall not be exactly parallel, but cut slightly angular with respect to each other, the angle or inclination is reversed (during the operation of cutting) as necessity requires.

In addition to the above the tooth is so formed as to have a keen edge and special shape, designed to withstand pressure and to free itself from chips.

Files possessing these characteristics do not produce channels or furrows in the work, but effect a shearing cut, for the reason that no two successive teeth in any longitudinal row of a cross-cut file are in alignment; the file is thereby able to cut more smoothly and more rapidly and possesses greater endurance than any file whose teeth are not disposed upon the same principle.

Kearney & Foot Files and Rasps

The Kearney & Foot Files and Rasps are recommended for general shop use. They are a little cheaper in price than the Nicholson Files, but will stand tests as to quality, durability, etc.

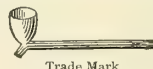
We have been handling and selling Files since 1848, and during that time we have had an exceptional chance to study the characteristic points of many makes, and we know from experience that the K. & F. brand can be absolutely depended upon for quality, cutting speed and general satisfaction.

We urge a trial, guaranteeing satisfaction.

Nicholson "XF" Swiss Pattern Files

"XF" is a term given to a brand of Nicholson Files, and signifies *extra fine*. In general it applies to that class of files used by jewelers, watch and tool makers, and for similar fine work, in which the best material and superior workmanship are required. The cut is designated by numbers ranging from No. 00, the coarsest, to No. 8, the finest. On pages 233 to 236 we illustrate and list this line.

Vautier Genuine Imported Swiss Files

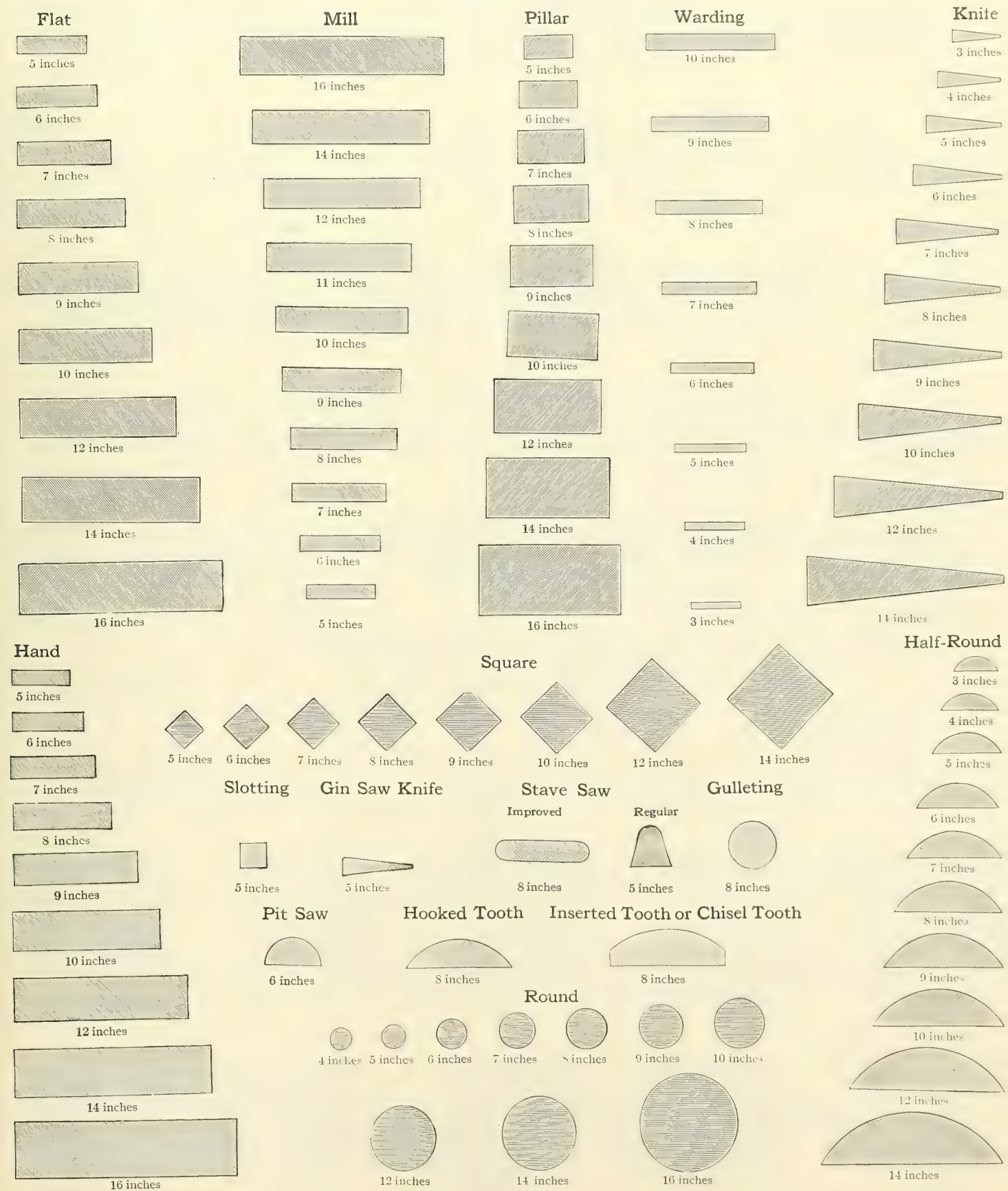


Trade Mark

The celebrated Vautier "Pipe" (trade-mark) Files are unsurpassed and are equal in quality and evenness of cut to any genuine Swiss Files on the market.

These Files are graded the same as the Nicholson "XF" Swiss pattern—No. 00 being the coarsest, a little coarser than the ordinary bastard cut, and No. 6 the finest, equal to super or dead smooth. They are made in the same styles as shown on pages, 233, 234 and 235 and prices will be quoted on application.

Sectional View of Files
Actual Sizes

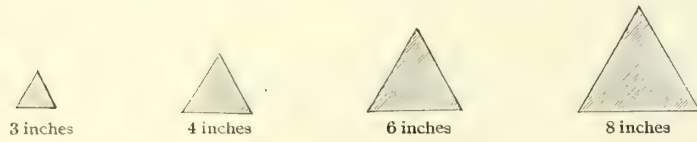


See page 232 for listing

Sectional Views of Files

Actual Sizes

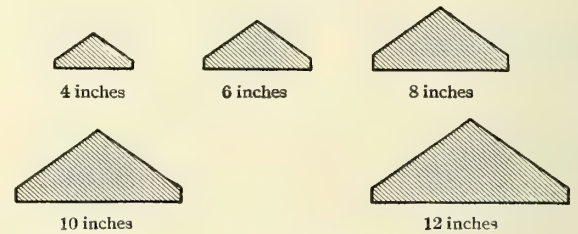
Three Square and Regular Taper Saw



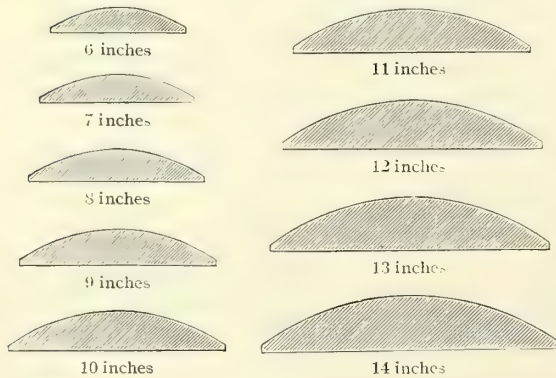
Slim Taper Saw



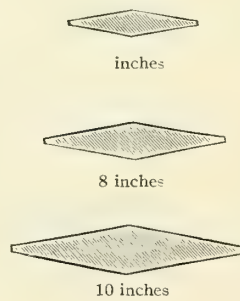
Cant Saw



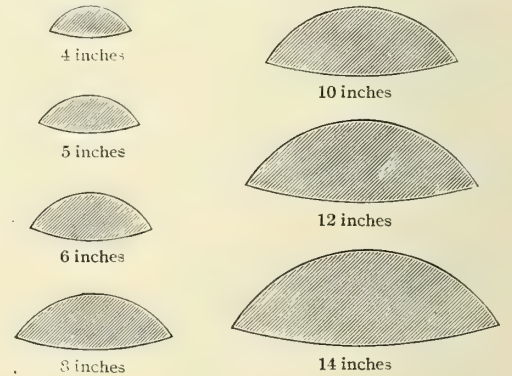
Cabinet



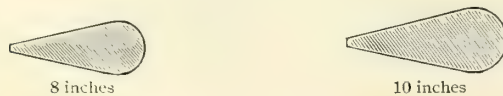
Feather Edge



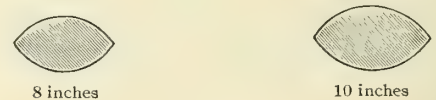
Crossing



Cross-Cut



Tumbler

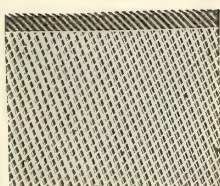


See page 232 for listing

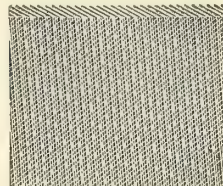
Cutting Surfaces of Files

These illustrations indicate the cutting surfaces of 8-inch Coarse, Open Cut, Bastard, Second Cut and Smooth Hand Files

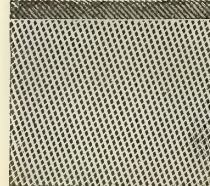
See page 232 for listing



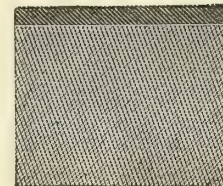
Coarse



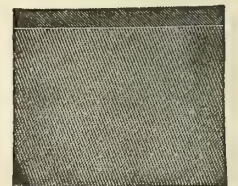
Open Cut (for Lead, Babbitt and other soft metals)



Bastard



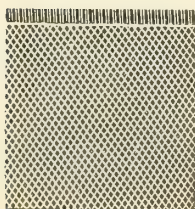
Second Cut



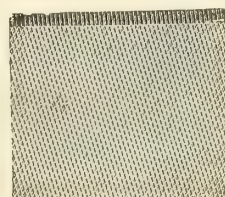
Smooth

These illustrations indicate the cutting surfaces of 8-inch Nos. 00, 0, 2, 4 and 6 XF Swiss Pattern Hand Files

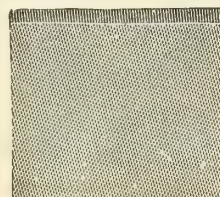
See page 236 for listing



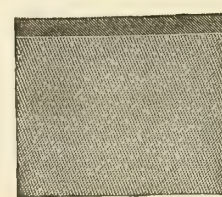
No. 00 Cut



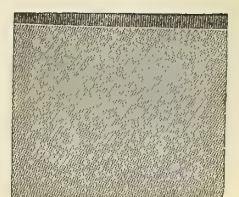
No. 0 Cut



No. 2 Cut



No. 4 Cut



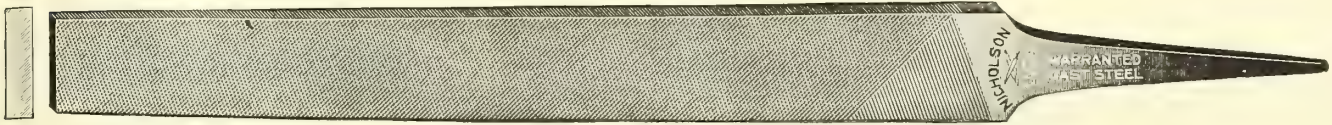
No. 6 Cut

SINCE
1848

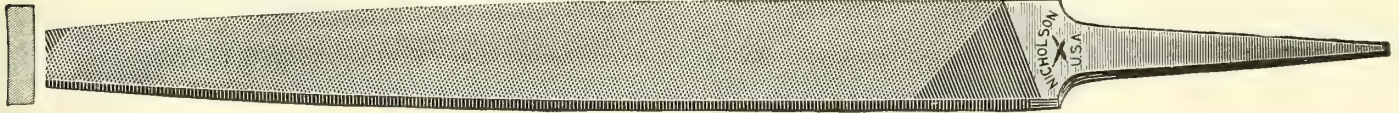
HAMMACHER SCHLEMMER & Co.

NEW
YORK

Files



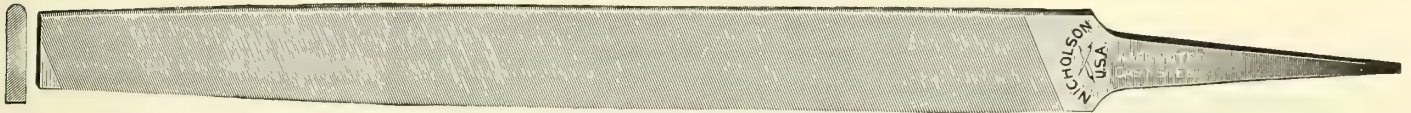
Hand—One Safe Edge



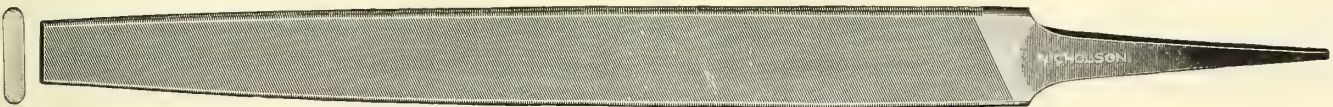
Flat



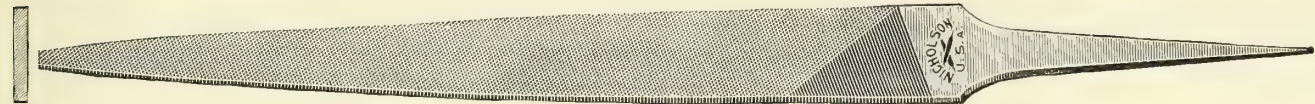
Mill—Two Square Edges



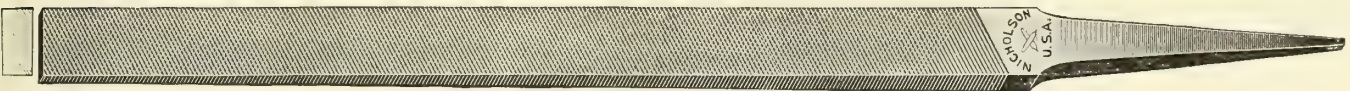
Mill—One Round Edge



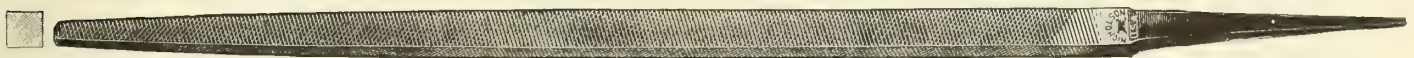
Mill—Two Round Edges



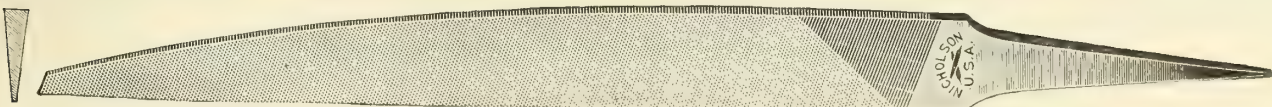
Warding



Fillar—One Safe Edge



Square



Knife



Feather Edge—Blunt

See page 232 for listing

Files



Three Square



Taper Saw—Regular



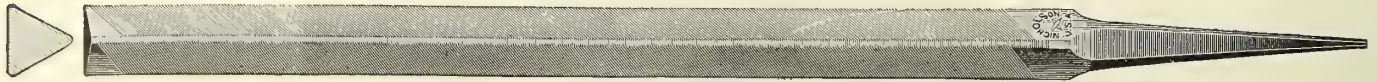
Taper Saw—Slim



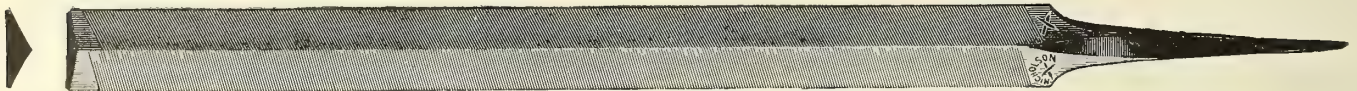
Taper Saw—Extra Slim



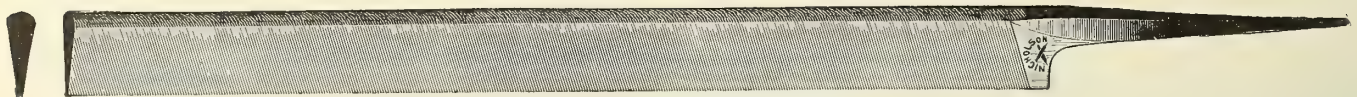
Double Ender Saw



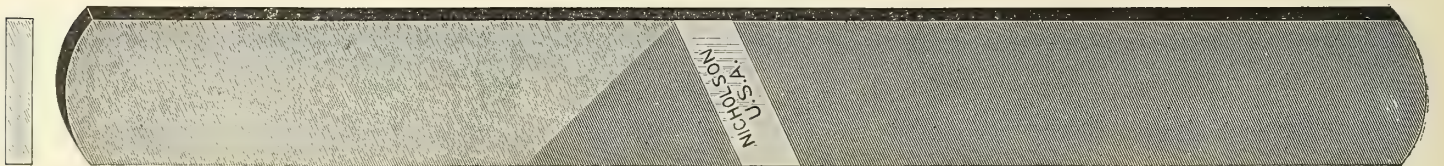
Band Saw—Blunt



Cant Saw—Blunt



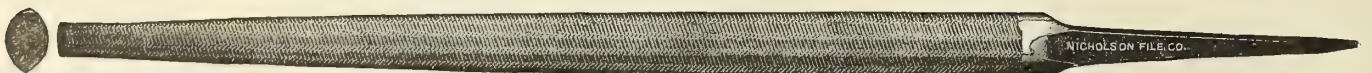
Cross-Cut—Blunt



Planer Knife



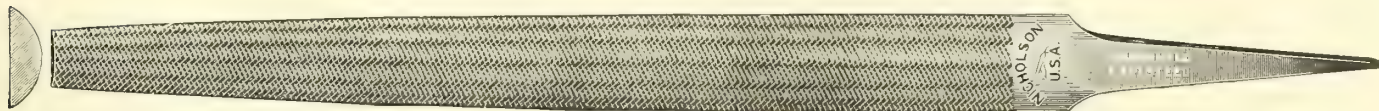
Round



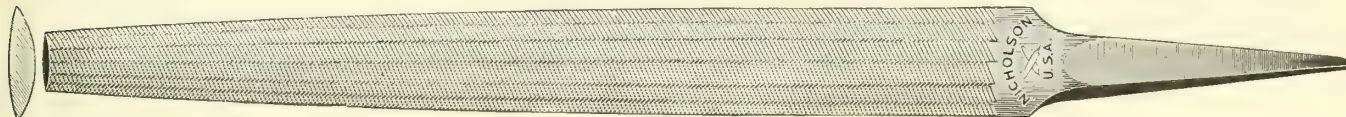
Tumbler

See page 232 for listing

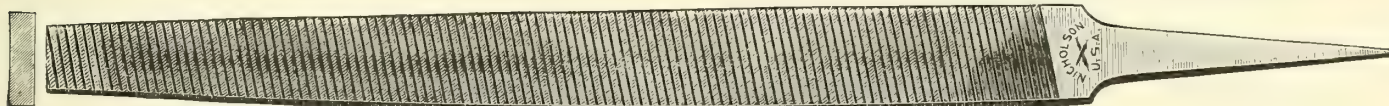
Files and Rasps



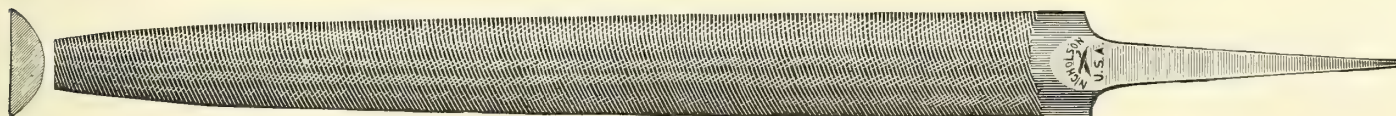
Half-Round File



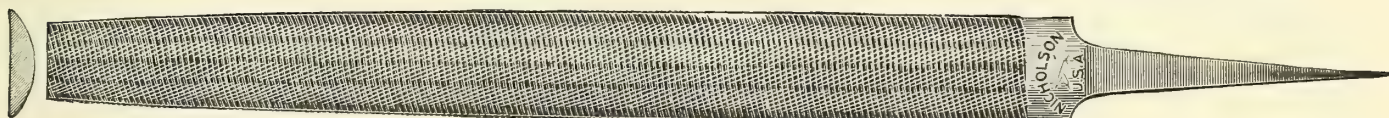
Crossing File



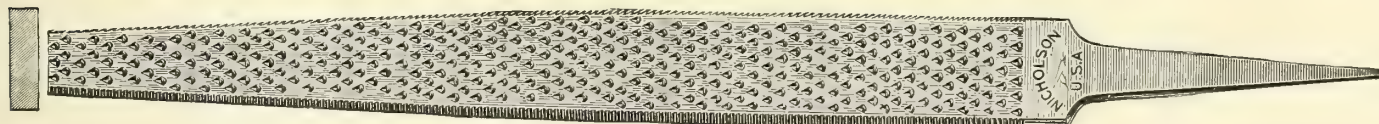
Flat Wood File—Open Cut



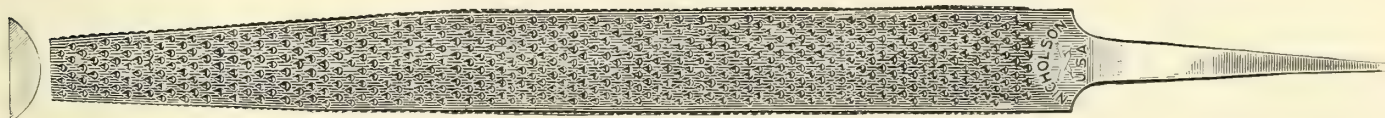
Half-Round Wood File—Open Cut



Cabinet File—Open Cut



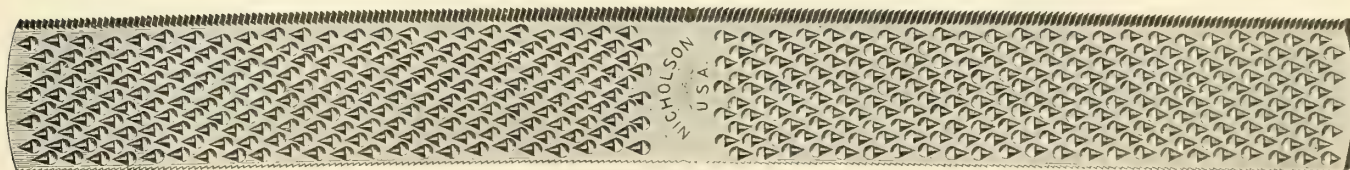
Flat Wood Rasp



Half-Round Wood Rasp



Cabinet Rasp



Plain Horse Rasp

See page 232 for listing

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Price List of Files and Rasps

Nicholson Increment Cut and Kearney and Foot Brands

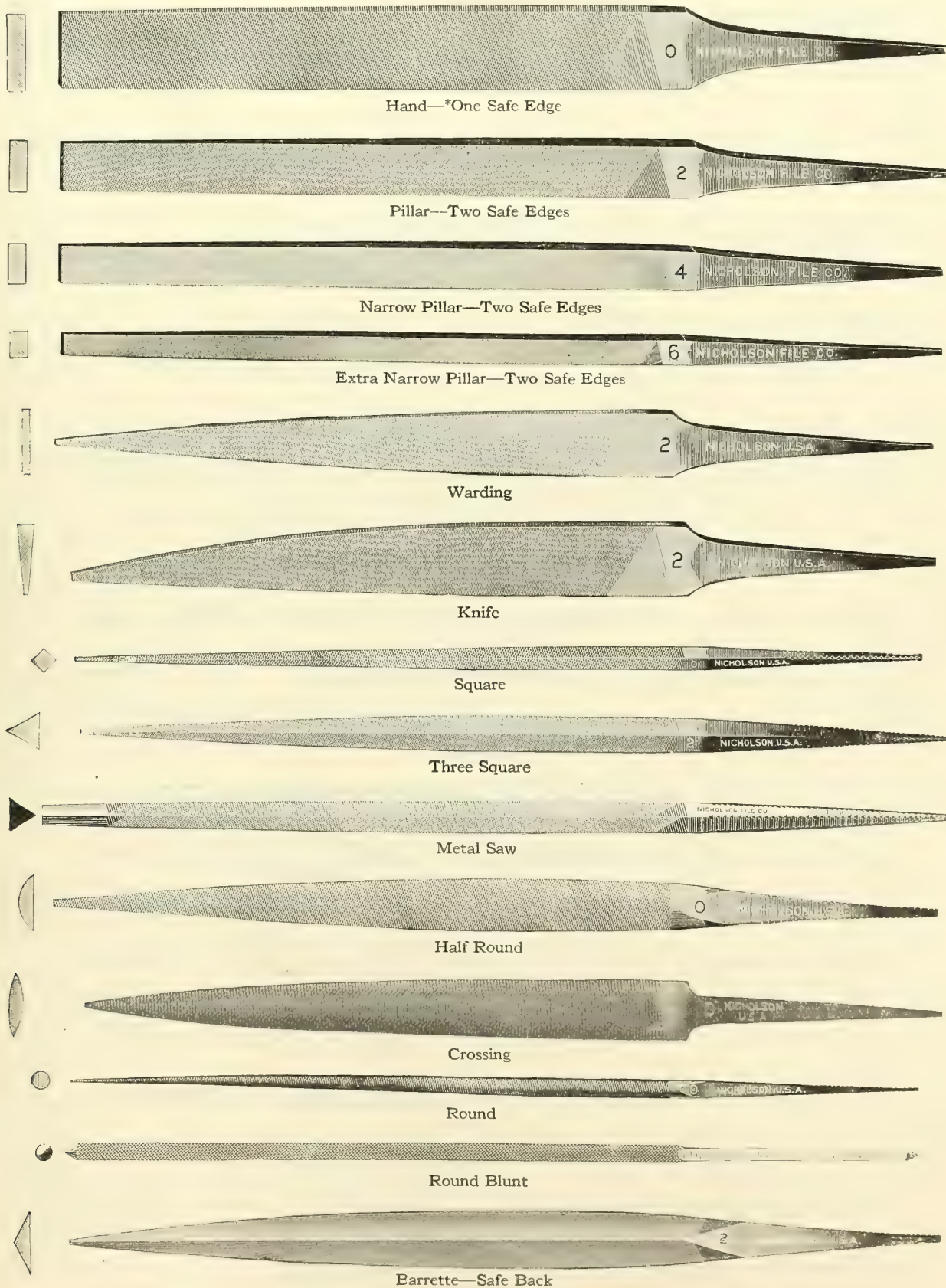
As Adopted by the File Manufacturers' Association of the United States, November 1, 1899

Mill (single cut, two square edges) and Round				Flat			Square				Hand and Pillar One safe edge			Half-Round and 3 Sq.				Warding		
Inches	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth	Inches	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth	Inches	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	\$3.00	\$3.50	\$3.90	\$3.70	\$4.30	\$4.70	4	\$3.80	\$4.60	\$4.90	\$3.70	\$4.30	\$4.80	4	\$4.80	\$5.60	\$6.10	\$4.00	\$4.80	\$5.40
5	3.20	3.80	4.10	3.90	4.60	4.90	5	4.10	4.80	5.30	3.90	4.70	5.30	5	5.40	6.10	6.40	4.50	5.30	5.80
6	3.50	4.00	4.50	4.30	4.80	5.30	6	4.60	5.10	5.50	4.30	5.10	5.60	6	6.10	6.70	7.10	4.90	5.90	6.40
7	3.90	4.60	4.90	4.80	5.50	6.10	7	5.10	5.80	6.30	4.90	5.80	6.30	7	7.00	7.70	8.20	5.90	6.90	7.50
8	4.30	4.90	5.40	5.30	6.10	6.60	8	5.50	6.30	7.00	5.40	6.30	6.70	8	7.50	8.30	8.90	6.40	7.50	18.20
9	4.90	5.80	6.30	6.30	7.20	7.90	9	6.60	7.70	8.30	6.70	7.80	8.30	9	8.50	9.40	9.90	7.80	9.00	9.90
10	5.60	6.40	7.00	7.00	8.10	8.70	10	7.40	8.50	9.10	7.50	8.70	9.40	10	9.10	10.10	10.70	8.70	10.10	1.00
11	6.70	7.80	8.50	8.60	9.80	10.70	11	9.10	10.40	11.30	9.40	10.90	11.80	11	10.70	11.80	12.70	10.90	12.70	13.70
12	7.50	8.60	9.40	9.70	11.00	12.10	12	10.20	11.50	12.80	10.70	12.30	13.50	12	11.80	13.00	13.90	12.30	14.30	15.40
13	9.40	10.70	11.70	11.80	13.60	14.70	13	12.50	14.30	15.40	13.30	15.20	16.20	13	14.10	15.40	16.60	15.20	17.40	18.70
14	10.70	12.20	13.10	13.30	15.30	16.70	14	13.90	16.10	17.50	15.00	17.00	18.20	14	15.50	17.00	18.30	17.00	19.40	21.00
15	13.10	15.00	16.10	16.00	18.30	20.00	15	16.90	19.20	20.90	17.90	20.60	21.70	15	18.50	20.40	21.70	Stavesaw (Blunt) Regular.		
16	14.70	16.80	17.90	17.80	20.10	22.30	16	18.70	21.20	23.30	20.10	22.80	24.20	16	20.60	22.50	24.20	8 inches \$9.40		
17	18.20	20.20	21.70	21.50	24.20	26.50	17	22.50	25.40	27.50	24.20	27.10	28.60	17	24.70	27.00	28.90	Stavesaw. Improved		
18	20.20	22.70	24.30	23.90	26.80	29.20	18	25.10	28.20	30.40	26.80	29.90	31.50	18	27.50	29.90	32.00	6 inches \$6.40		
19	24.60	27.50	29.40	28.40	31.60	34.60	19	29.70	33.20	35.70	31.90	35.40	37.60	19	32.80	35.70	38.10	7 inches 7.40		
20	27.40	30.70	32.90	31.50	35.30	38.30	20	32.80	36.70	39.30	35.10	39.20	41.60	20	36.20	39.40	42.30	8 inches 8.10		
Mill Blunt, Dbl. Cut, adv. 2 in.				Cant (Blunt) Double Cut, advance 2 inches.			Square Blunt, advance 1 inch.				Slotting (Blunt) one safe edge, advance 2 inches.			Ginsaw Knife, take Bastard price.				7 inches 7.40		
Mill Double Cut, adv. 1 in.														Crossing, advance 2 inches.				8 inches 8.10		
Mill Narrow Point, adv. 1 in.														Tumbler, advance 2 inches.				9 inches 9.70		
Mill Machine, adv. 1 in.														Feather Edge (Blunt) advance 2 inches.				10 inches 10.70		
Mill Triangular & Sq. adv. 1 in.														High Back } advance 2 inches				12 inches 15.40		
Half-Round }																				

Inches	Mill Single Cut One Round Edge				Mill Single Cut Two Round Edges				Inches	Tapers				Slim and Extra Slim Tapers				Bandsaw Blunt and Taper		Inches	Pit Saw Blunt	Cant Saw Blunt	Cross Cut Blunt	Hook Tooth Blunt *	Planer Knife	Insert'd Tooth or Chisel Tooth Blunt		
	Bastard	2d Cut	Smooth		Bastard	2d Cut	Smooth			Single Cut	Double Cut		Single Cut	Double Cut		Single Cut	Double Cut	Regul'r	Slim									
4	\$3.40	\$3.90	\$4.40		\$3.80	\$4.40	\$4.90		3	\$2.10	\$2.50		\$2.10	\$2.50		\$2.50	\$2.50	4	\$4.80	\$4.30	\$4.80							Two Safe Edges
5	3.60	4.30	4.60		4.00	4.80	5.10		3½	2.10	2.50		2.10	2.50		2.50	2.50	5	5.40	4.70	5.40							
6	3.90	4.50	5.10		4.40	5.00	5.60		4	2.20	2.90		2.20	2.60		2.90	2.60	6	6.10	5.40	6.10		\$6.70					
7	4.40	5.20	5.50		4.90	5.80	6.10		4½	2.40	3.10		2.30	3.00		3.10	3.00	7	7.00	6.10	7.00		7.70					
8	4.80	5.50	6.10		5.40	6.10	6.80		5	2.60	3.50		2.50	3.20		3.50	3.20	8	7.50	6.40	7.50		8.30	\$6.40				\$8.30
9	5.50	6.50	7.10		6.10	7.30	7.90		5½	3.00	4.00		2.90	3.50		4.00	3.50	9	8.50	7.80	8.50		9.40					9.40
10	6.30	7.20	7.90		7.00	8.00	8.80		6	3.40	4.70		3.10	3.90		4.70	3.90	10	9.10	8.70	9.10		10.10	8.60				10.10
11	7.50	8.80	9.60		8.40	9.80	10.60		7	4.30	5.60		3.80	4.50		5.60	4.50	11	10.70	10.40	10.70		11.80					
12	8.40	9.70	10.60		9.40	10.80	11.80		8	5.40	6.70		4.50	5.30		6.70	5.30	12	11.80	11.40	11.80		13.00	12.10				
13	10.60	12.00	13.20		11.80	13.40	14.60		9	6.60	8.10		5.40	6.30		8.10	6.30	Climax, Blunt, Single Cut, advance 2 inches on Half Round Bastard. * Safe or Cut Back.										
14	12.00	13.70	14.70		13.40	15.30	16.40		10	8.10	9.70		6.40	7.50		9.70	7.50	Round Gulleting, Blunt, take Pitsaw price.										
15	14.70	16.90	18.10		16.40	18.80	20.10		11	10.70	12.10		8.30	9.10		12.10	9.10											
16	16.50	18.90	20.10		18.40	21.00	22.40		12	12.50	14.70		9.50	11.00		14.70	11.00											
17	20.50	22.70	24.40		22.80	25.30	27.10		13	15.90	17.50		12.10	13.10		17.50	13.10											
18	22.70	25.50	27.30		25.30	28.40	30.40		14	18.20	20.60		13.80	15.40		20.60	15.40											

Inches	Horse Rasps				File Rasps				Wood Files				Wood Rasps				Inches	Shoe Rasps				Inches	Knife			
	Beveled & Plain	¾ Rasp	Tanged		Flat	Half-Round		Flat	Half-Round	Cabinet	Flat	Half-Round	Cabinet	Flat	Half-Round	Cabinet		Flat	Half-Round	Oval	Flat		2d Cut	Smooth		
6					\$7.40	\$8.10		6	\$4.30	\$6.10	\$8.10		\$7.40	\$8.10	\$10.10	6	\$8.10	\$8.10	\$9.30	4	\$5.40	\$6.10	\$6.40			
7					8.60	9.30		7	4.80	7.00	9.30		8.60	9.30	11.70	7	9.30	9.30	10.10	5	6.10	6.70	7.10			
8					9.40	10.10		8	5.30	7.50	10.10		9.40	10.10	12.80	8	10.10	10.10	12.20	6	6.90	7.50	7.90			
9					11.40	12.20		9	6.30	8.50	12.20		11.40	12.20	15.50	9	12.20	12.20	13.70	7	7.80	8.50	8.90			
10	\$3.40	\$10.70	\$12.80		12.80	13.70		10	7.00	9.10	13.70		12.80	13.70	17.50	10	13.70	13.70	16.80	8	8.50	9.10	9.50			
11	11.40	12.90	15.20		15.50	16.80		11	8.60	10.70	16.80		15.50	16.80	20.70	11	16.80	16.80	18.70	9	9.40	10.60	11.30			
12	12.80	14.40	16.80		17.50	18.70		12	9.70	11.80	18.70		17.50	18.70	22.80	12	18.70	18.70	22.40	10	10.10	11.50	12.30			
13	15.20	17.00	19.60		20.90	22.40		13	11.80	14.10	22.40		20.90	22.40	26.80	13	22.40	22.40		11	12.20	13.70	14.60			
14	17.80	20.10	23.10		23.20	24.80		14	13.30	15.50	24.80		23.20	24.80	29.60	14	24.80	24.80		12	13.70	15.20	16.10			
15	20.90	23.60	27.30		27.80	29.70		15	16.00	18.50	29.70		27.80	29.70	33.90					13	16.30	17.90	19.20			
16	24.40	27.50	32.20		30.80	32.90		16	17.80	20.60	32.90		30.80	32.90	36.90					14	18.20	19.90	21.20			
17	28.90	31.50			36.20	38.90		17	21.50	24.70	38.90		36.20	38.90	42.40	Last Makers Rasps										
18	32.90	36.20			40.90	43.60		18	23.90	27.50	43.60		40.90	43.60	46.90	One inch advance on Cabinet Rasp										

Nicholson "XF" Swiss Pattern Files



See page 236 for listing

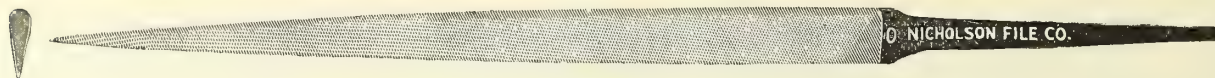
We are also in position to furnish Vantier Genuine Swiss Files Prices on application

*Cuts Nos. 6, 7 and 8 have two safe edges.

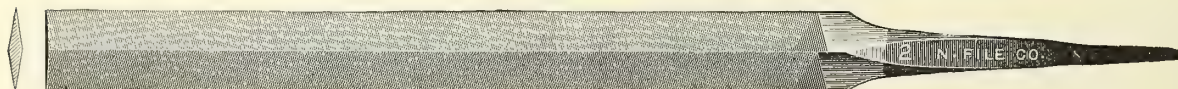
Nicholson "XF" Swiss Pattern Files



Equaling



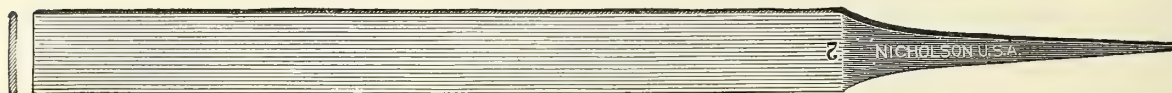
Pippin



Slitting



Drill or Joint—Square Edge, Thick—Two Safe Sides



Drill or Joint—Round Edge, Thin—Two Safe Sides

Nicholson "XF" Die Sinkers Files



Flat—One Safe Edge



Flat



Square



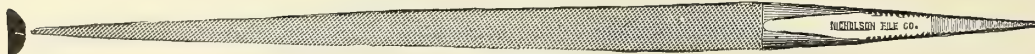
Lozenge



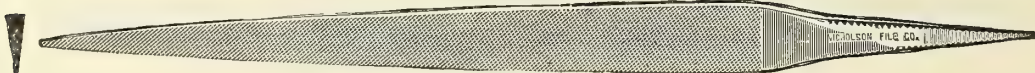
Three Square



Round



Half Round



Knife



Auriform



Oval



Oval—One Sharp Edge



Flat—Two Round Edges

See page 236 for listing

We are also in position to furnish Vautier Genuine Swiss Files. Prices on application

Nicholson "XF" Needle Files



Round



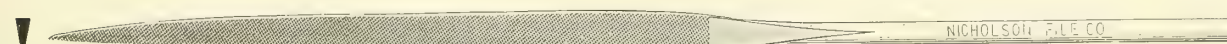
Half Round



Flat



Oval



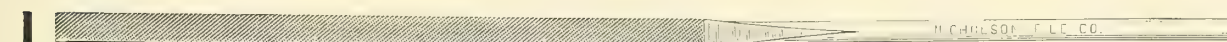
Knife



Square



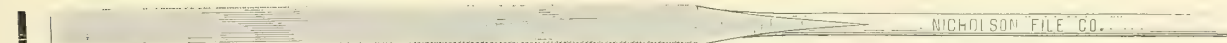
Three Square



Equaling



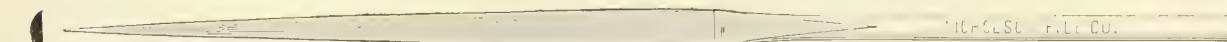
Barrette—Safe Back



Drill or Joint—Square Edges
Two Safe Sides



Slitting



Marking—Safe Flat Side



Coil—Two Safe Edges

See page 236 for listing

We are also in position to furnish Vautier Genuine Swiss Files. Prices on application

Nicholson "XF" Swiss Pattern Files

Regular cuts carried in stock are Nos. 00, 0, 2, 4 and 6, other numbers furnished at short notice if desired. Prices per dozen

Hand One Safe Edge							Pillar, Pillar Narrow, Pillar Extra Narrow Two Safe Edges					3-Square and Metal Saw			
No.	00-2	3-4	5	6	7	8	No.	00-2	3-4	5-6	7-8	No.	00-2	3-5	6-8
2 & 2½"	\$1.85	\$1.95	\$2.05	\$2.20	\$2.35	\$2.50	2 & 2½"	\$1.65	\$1.70	\$1.75	\$1.85	2"	\$1.75	\$1.75	\$1.75
3	2.20	2.30	2.40	2.60	2.90	3.10	3	1.85	1.95	2.05	2.15	2½"	2.20	2.35	2.50
3½	2.45	2.60	2.75	3.00	3.25	3.50	3½	2.10	2.20	2.35	2.45	3	2.20	2.35	2.50
4	2.70	2.85	3.00	3.25	3.55	3.80	4	2.35	2.50	2.60	2.75	3½	2.40	2.55	2.75
4½	3.15	3.35	3.55	3.85	4.25	4.45	4½	2.75	2.85	3.00	3.25	4	2.85	3.00	3.20
5	3.45	3.65	3.95	4.40	4.75	5.00	5	3.05	3.20	3.40	3.60	4½	3.20	3.35	3.55
6	4.10	4.40	4.65	5.00	5.55	6.05	6	3.30	3.50	3.65	3.90	5	3.45	3.60	3.85
7	5.50	5.75	6.05	6.65	7.25	7.75	7	4.15	4.40	4.75	5.00	6	4.40	4.55	4.75
8	6.30	6.60	7.15	7.75	8.30	9.30	8	5.50	5.80	6.05	6.60	7	5.80	6.15	6.60
9	8.25	8.80	9.60	9.90	10.50	11.60	9	6.30	6.65	7.15	7.90	8	7.40	7.95	8.50
10	9.55	9.90	10.50	11.10	11.50	12.30	10	8.55	8.80	9.30	9.70	9	8.50	9.20	9.50
12	12.30	12.60	13.60	14.00	14.70	15.50	12	11.20	12.00	14.10	15.50	10	9.15	9.55	9.90
14	15.00	15.00	16.00	17.00	18.20	19.50						12	11.20	11.60	12.00

Knife				Warding					Half Round				Crossing		
No.	00-2	3-4	5-6	No.	00-2	3-4	5-6	7-8	No.	00-2	3-5	6-8	00-2	3-5	6-8
2"	\$1.75	\$1.75	\$1.75	2"	\$1.50	\$1.65	\$1.75	\$1.90	2"	\$1.75	\$1.85	\$1.95	\$1.65	\$1.65	\$1.65
2½	2.30	2.40	2.50	2½	1.80	1.90	2.00	2.20	2½	2.30	2.40	2.60	2.20	2.25	2.35
3	2.30	2.45	2.55	3	1.85	1.95	2.10	2.25	3	2.30	2.40	2.60	2.25	2.30	2.40
3½	2.85	2.95	3.05	3½	2.20	2.30	2.40	2.65	3½	2.50	2.70	2.95	2.50	2.55	2.85
4	3.30	3.40	3.55	4	2.60	2.85	3.10	3.35	4	2.75	3.40	3.70	3.40	3.60	3.85
4½	3.85	4.00	4.30	4½	3.00	3.25	3.45	3.80	4½	3.10	3.90	4.30	3.95	4.35	4.65
5	4.30	4.55	4.85	5	3.30	3.55	3.85	4.20	5	3.45	4.30	4.65	4.40	4.95	5.50
6	4.95	5.50	6.05	6	4.10	4.40	4.65	4.95	6	4.40	5.25	5.90	5.25	5.90	6.60
7	6.60	7.15	7.70	7	5.05	5.50	6.10	6.70	7	6.05	7.15	7.95	7.40	8.10	8.75
8	8.80	9.20	9.60	8	6.10	6.60	7.20	7.80	8	7.45	8.75	9.55	8.50	9.25	10.10
9	9.90	10.45	11.00	9	7.40	8.25	8.80	9.40	9	9.90	12.10	13.20	11.00	13.50	15.20
10	10.30	10.70	11.10	10	9.00	9.60	10.00	10.40	10	10.70	13.80	16.20	11.50	14.30	16.90
12	12.30	12.70	13.10	12	11.40	12.20	12.60	13.00	12	12.90	16.90	19.30	14.70	18.50	22.00

Barrette Safe Back				Square				Round			Cant and Barrette Cut All Sides				Crochet and Pippin			
No.	00-2	3-5	6-8	No.	00-2	3-5	6-8	00-2	3-5	6-8	00-2	3-5	6-8	No.	00-2	3-5	6-8	
2"	\$1.70	\$1.70	\$1.70	2"	\$1.20	\$1.20	\$1.20	\$.90	\$.90	\$.90	\$2.20	\$2.20	\$2.20	2"	\$1.65	\$1.90	\$2.20	
2½	2.05	2.15	2.25	2½	1.30	1.30	1.30	1.05	1.05	1.05	2.85	2.95	3.05	2½	2.20	2.45	2.75	
3	2.10	2.15	2.25	3	1.35	1.35	1.35	1.05	1.05	1.05	2.85	2.95	3.05	3	2.20	2.50	2.75	
3½	2.45	2.55	2.65	3½	1.60	1.60	1.60	1.25	1.25	1.25	3.70	3.85	3.95	3½	2.60	2.85	3.15	
4	3.40	3.50	3.60	4	2.20	2.35	2.50	1.75	1.85	1.95	4.40	4.60	4.80	4	3.15	3.45	3.70	
4½	3.85	4.05	4.30	4½	2.50	2.70	2.85	1.90	2.05	2.25	5.50	5.95	6.05	4½	3.55	3.95	4.15	
5	4.70	4.95	5.25	5	2.75	2.90	3.05	2.05	2.30	2.50	6.05	6.30	6.55	5	3.85	4.30	4.70	
6	6.05	6.30	6.60	6	3.55	3.75	3.95	2.55	2.85	3.15	7.35	7.60	7.75	6	4.95	5.40	5.75	
7	7.70	8.00	8.25	7	4.40	4.65	4.95	3.30	3.85	4.40	8.60	8.90	9.10	7	6.60	7.15	7.70	
8	9.15	9.35	9.55	8	5.50	6.05	6.60	4.40	4.95	5.50	10.00	10.40	10.60	8	8.25	8.75	9.15	
10	12.30	12.50	12.80	9	6.05	6.80	7.75	5.50	6.60	7.70				10	11.60	12.00	12.45	
12	15.50	15.70	16.00	10	7.15	8.00	8.80	7.15	8.25	9.55								
				12	8.80	9.60	10.40	9.30	10.10	11.30								

Inches.....	2	2½	3	3½	4	4½	5	6	7	8	10	12
Equaling, all cuts.....	\$1.50	\$1.75	\$1.80	\$2.20	\$2.75	\$3.25	\$3.70	\$4.25	\$4.95	\$6.90	\$10.00	\$13.50
Slitting, all cuts.....	1.95	2.20	2.20	2.60	3.50	4.40	5.25	6.70	8.20	9.40	12.60	16.00
Round Straight, all cuts.....			1.10	1.50	1.90	2.10	2.30	2.75	3.85	5.05		
Drill or Joint, Round or Square Edge, all cuts.....			1.95	2.10	2.35	2.70	3.05	3.70	4.40	4.95		
Thickness of Drill or Joint, Thin, inch.....			.02	.03	.04	.05	.06	.08	.09	.10		
Thickness of Drill or Joint, Thick, inch.....			.06	.07	.08	.09	.10	.12	.13	.14		

Needle Files

Die Sinkers

Assorted Shapes

Nos. 0-1-2
3 inches \$2.15
3½ inches 2.50

Round Handle

	Round	Other Shapes	Assorted
10 cm. or 4 inches.....	\$.95	\$1.50	\$1.45
12 cm. or 4¾ inches.....	.95	1.50	1.45
14 cm. or 5½ inches.....	1.10	1.65	1.60
16 cm. or 6¼ inches.....	1.25	1.90	1.85

Square Handle or Escapement

	Round	Square	Other Shapes	Assorted
14 cm. or 5½ inches.....	\$1.20	\$1.40	\$2.00	\$1.90

Of the following twelve varieties, viz: Round, Half-Round, Flat, Oval, Knife, Square, Three-Square, Slitting, Equaling, Joint, Barrette and Marking (if Round Handle) or Half-Round Blunt (if Square Handle).
Put up in dozens, either assorted (one of each kind) or in kinds. Assorted dozens will always be sent when order does not state otherwise

Coil, two safe edges, round handle 6¼ inches, dozen..... \$2.40

Widths of Hand and Pillar Files

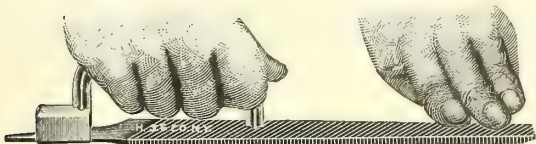
Length inches.....	2	2½	3	3½	4	4½	5	6	7	8	10	12	14
Width in decimal parts of an inch stated as near as practicable	.33	.38	.43	.48	.53	.58	.62	.72	.81	.90	1.09	1.27	1.45
Hand.....	.23	.26	.29	.32	.35	.38	.42	.48	.54	.60	.73	.85	
Pillar.....	.17	.19	.22	.24	.27	.29	.31	.36	.41	.45	.55	.64	
Pillar Narrow.....	.12	.13	.14	.16	.18	.19	.21	.24	.27	.30	.36	.42	
Pillar Extra Narrow.....													

Pillar, Pillar Narrow, and Pillar Extra Narrow, with one or both edges cut, take same list price as with two safe edges.

Other regular widths not listed take regular list prices. List Revised November 1, 1913

See pages 228, 233, 234 and 235 for Shapes, Cuts, Etc.

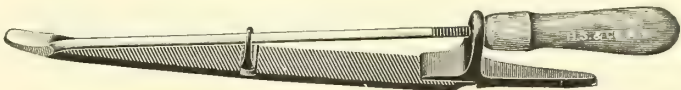
Surfacing File Handles and Holders



Malleable Iron Handles

This handle is quickly adjusted to any kind of file. Leaves a perfectly flat surface and the entire length of the file can be used.

No. 523	For 4 and 6-inch files, each.....	\$.65
No. 522	For 8 and 10-inch files, each.....	.75
No. 521	For 12 and 14-inch files, each.....	.85



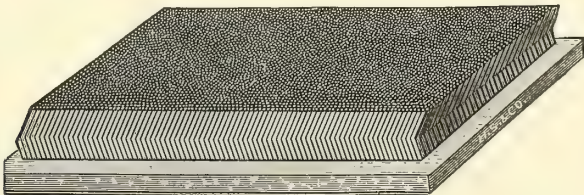
Nicholson Holders

The advantages of the Surface File Holder consist in not only being able to hold and conveniently use a file for surface work, but in being able to bend or curve it slightly when desired.

No. 4	Holding files from 10 to 12 inches, each.....	\$1.25
No. 5	Holding files 14 inches and longer, each.....	1.50

File Cleaners

H. S. & Co.

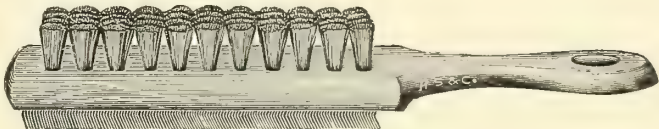


Carding—In Strips 1½ Inches Wide

Fine or coarse, by the lineal foot.....Foot \$.50



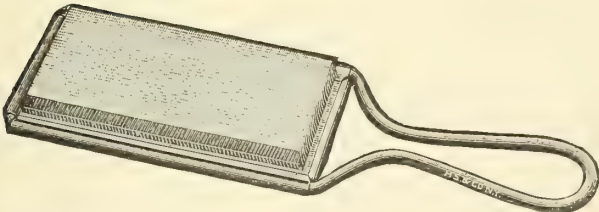
No. 1 Wire File Card, dozen.. \$2.75



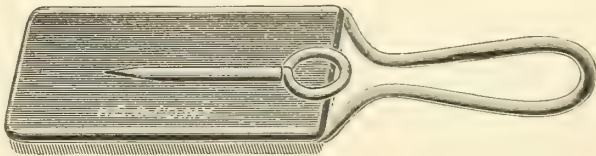
No. 2 Wire File Card and Bristle Brush, dozen. \$4.84

Substantially made of the best material, the carding being firmly secured to the holder. Each brush is provided with a scorer or metal piece for removing chips or pin pieces from the file teeth

Colton



Front View



Back View

Has a steel back frame and face with tempered steel wire brush. Very durable and economical Each cleaner supplied with a picker to remove solder and other hard substances from file teeth

No. 10	Dozen.....	\$2.50
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Carvers Files and Rasps

French



No. 1



No. 5



No. 2



No. 6



No. 3



No. 7



No. 4



No. 8

The Wood Carver Files have the same shapes as the Rasps, the only difference being in the cutting surface

In ordering, be sure to state whether Files or Rasps are wanted

Files

Inches.....	6
Dozen.....	\$5.10

7
\$5.70

8
\$6.75

Rasps

Inches.....	6
Dozen.....	\$5.10

7
\$5.70

8
\$6.75

9
\$7.95

Auger Bit Files

Genuine Moore



7-inch, dozen..... \$2.50

Wood Rasps

French

These French Rasps are especially recommended for their exceptionally high quality and durability. Their cutting quality is unequalled and on account of their extreme hardness and fine temper can be used on marble as well as wood.



10-Inch Cabinet



10-Inch Round



10-Inch Half Round

Illustrations show center sectional view. Full size

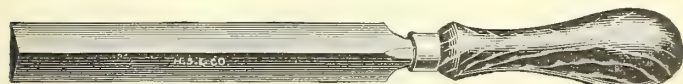
Inches	Cabinet Second Cut Dozen	Cabinet Smooth Dozen	Inches	Round Second Cut Dozen	Round Smooth Dozen	Inches	Half Round Second Cut Dozen	Half Round Smooth Dozen
5	\$3.60	\$3.90	4	\$2.20	\$2.60	4	\$2.35	\$2.75
6	3.75	4.20	5	2.60	3.00	5	2.70	3.15
7	4.50	4.80	6	2.95	3.25	6	3.15	3.60
8	5.30	5.70	7	3.60	3.90	7	3.60	4.00
9	5.85	6.10	8	4.30	4.80	8	4.20	4.95
10	6.50	7.65	9	4.85	5.50	9	4.95	5.75
11	7.50	8.90	10	5.85	7.00	10	5.85	7.15
12	9.00	10.35	11	6.75	8.25	11	7.15	8.40
13	10.75	11.90	12	8.40	9.30	12	8.65	9.75
			13	10.35	11.40	13	11.00	12.00

Machinist Scrapers

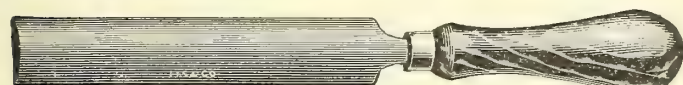
Nicholson



Three Square



Cant



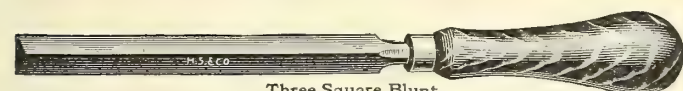
Half Round Blunt



Round Blunt



Mill Blunt



Three Square Blunt

Length, including handle, 9 inches

Set of six..... \$2.75
Either style, each..... .46

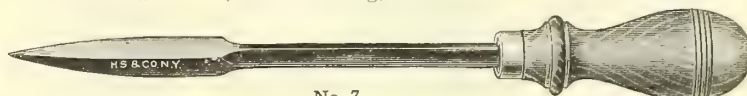
Exceptionally fine quality. Made of the same grade of steel as the celebrated Nicholson Files.

H. S. & Co.



No. 6

No. 6 Double End, 10 inches long, dozen..... \$14.00



No. 7

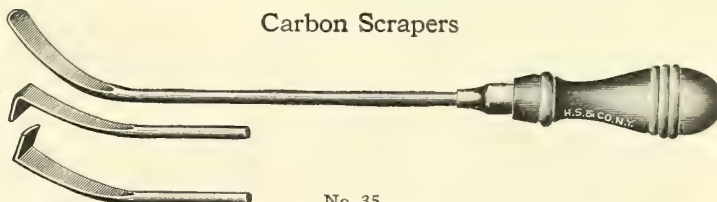
Inches..... 6 8 10
No. 7 Three Square, concave, hardwood handle, dozen..... \$9.20 10.80 14.00



No. 8

Inches..... 6 8 10
No. 8 Half Round, concave, hardwood handle, dozen..... \$9.20 10.80 14.00

Carbon Scrapers



No. 35

No. 35 Round red fibre finish handles; polished and blued blades. Three to a set in box..... \$.85



No. 3

No. 3 Rosewood handle, 3 1/4-inch blade. The blade is made of the finest tool steel, ground concave. Will hold a good cutting edge and is easily sharpened. Just the tool for scraping bearings, etc., dozen..... \$7.20

Toolmakers Scrapers

H. S. & Co.



No. 1



No. 1A



No. 2



No. 2A



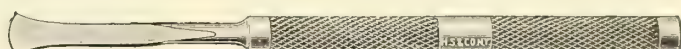
No. 3



No. 3A



No. 3B



No. 4



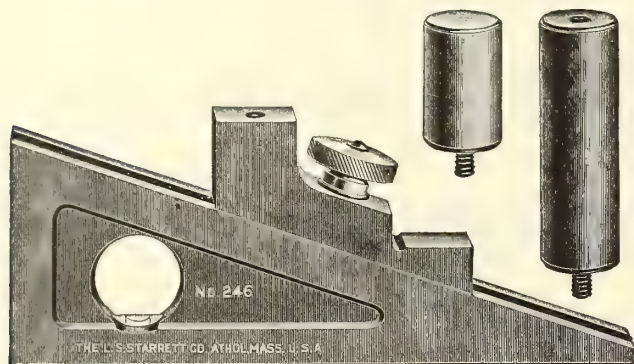
No. 5

No. 1	Triangular, hollow ground on sides, each.....	\$.40
No. 1A	Triangular, extra slim hollow ground on sides, each.....	.40
No. 2	Half round, curved, each.....	.50
No. 2A	Half round, straight, each.....	.45
No. 3	Flat, 5/16 inch wide, each.....	.40
No. 3A	Flat, 1/4 inch wide, each.....	.40
No. 3B	Flat, 3/8 inch wide, each.....	.40
No. 4	Round end, each.....	.45
No. 5	Diamond point, each.....	.45
No. 03	Consisting of three different tools, Nos. 1, 2 and 3..	1.00
No. 09	Set consisting of nine different tools, as above.....	3.00

They are made in one piece from a selected grade of material best adapted for producing serviceable tools for particular work in scraping and finishing; the handles are solid and have the proper weight for delicacy of touch, and are knurled the full length for gripping securely.

The scraping edges are expertly finished and uniformly hardened with care to last and give the best results on all kinds of surfaces. Handles are treated with a gunmetal finish.

Planer and Shaper Gauge



Starrett No. 26

Made from drop-forgings, nicely finished, case-hardened and ground. Designed to supply the great need of planer, shaper and milling machine workers for an instrument by which to set a cutter, planer or shaper tool to plane or mill any desired thickness without the "cut and try" process. The gauge with extensions will give any measure from $\frac{1}{2}$ inch to $5\frac{1}{2}$ inches.

For planer work: Set the adjustable slide (using a scale caliper or micrometer) so that one of its seats, with or without the extensions, will measure the height or thickness wanted, place it under the planer or shaper tool, raising or lowering the tool until it touches the seat. Remove the gauge and the work will come as measured.

For milling machine work: After the gauge is set to thickness of work wanted, place it on the table or seat for the work, raising or lowering the cutter to touch the gauge. It may also be used for a slot or a height gauge.

For a plumb: Place the right-angle end to the base against the work and read the bevel. This will go in places where nothing else can be used.

Each \$3.75

Tool-Maker Buttons

With Screws and Washers for Jig Work



Starrett No. 495

These Buttons are hardened and ground to standard size, and are used to locate holes to be chucked and bushed for jigs where positive accuracy is required. To use: Lay out the jig piece, prick punch, drill and tap for button screws and smooth off burr raised by tapping. Fasten on the buttons, strap the pieces to an angle iron, place same on a surface plate where, by aid of a surface gauge, height gauge or other instrument the buttons (with holes larger than the screws) are brought to the desired location. Now strap the angle iron with button pieces to lathe face plate, bringing one of the buttons to run true with the center aided by test gauge. This done, remove the button and chuck and ream the hole. Repeat the operation with the other buttons until all the holes are chucked.

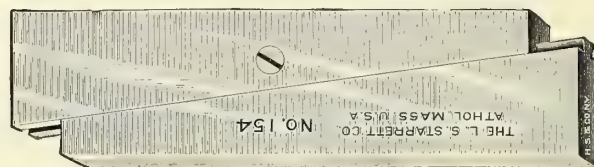
The buttons are furnished screwed to a small plate, which makes a convenient holder for them when not in use.

Set of four Buttons with screws and washers

No. 494A	.300 x 1 inch	2.00
No. 494A	.300 x $\frac{1}{2}$ inch	2.00
No. 494B	.400 x $\frac{1}{2}$ inch	2.00
No. 494C	.500 x $\frac{1}{2}$ inch	2.00
Taps (.125-40)	to use with above, each	.25

A special circular on the Button Scheme will be sent on request

Adjustable Parallels



Starrett No. 154

These Parallels will be found very convenient for use in connection with milling, planer and shaper vises, taking the place of the large number usually required, also for leveling up work on planer, drill press, etc. They give any height from $\frac{3}{8}$ inch to $2\frac{1}{4}$ inches.

Number	Length Inches	Thickness Inch	Capacity Inches	Each
154A	$1\frac{3}{4}$	$\frac{9}{32}$	$\frac{3}{8}$ - $\frac{1}{2}$	\$.75
154B	$2\frac{1}{8}$	$\frac{9}{32}$	$\frac{1}{2}$ - $\frac{11}{16}$	.90
154C	$2\frac{11}{16}$	$\frac{9}{32}$	$\frac{11}{16}$ - $\frac{15}{16}$	1.00
154D	$3\frac{9}{16}$	$\frac{9}{32}$	$\frac{15}{16}$ - $1\frac{1}{16}$	1.25
154E	$4\frac{3}{16}$	$\frac{9}{32}$	$1\frac{1}{16}$ - $1\frac{3}{4}$	1.50
154F	$5\frac{1}{16}$	$\frac{9}{32}$	$1\frac{3}{4}$ - $2\frac{1}{4}$	1.75

Ground Flat Stock

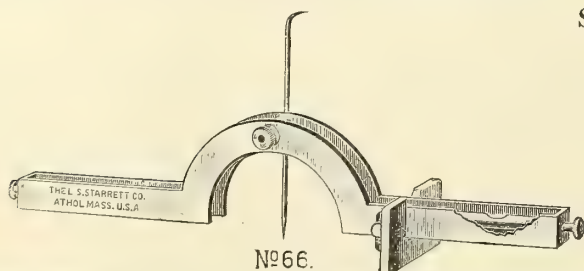
This Stock is of service not only in tool work for making flat gauges, test tools, "jig work," etc., but in all work requiring steel of a definite thickness.

This steel is of first quality, cut the length of the sheet, annealed and ground to within a limit of .001 inch of the given thickness.

Size, Inches	Approximate Weight	Pound	Size, Inches	Approximate Weight	Pound
1-64	Ounces		5-32	Pounds	
2 x18	3	\$3.00	1 x18	$\frac{7}{8}$	\$.60
$2\frac{1}{2}$ x18	$3\frac{1}{2}$	3.00	$1\frac{1}{2}$ x18	$1\frac{1}{8}$	.60
3 x18	4	3.00	2 x18	$1\frac{3}{4}$	.50
$3\frac{1}{2}$ x18	$4\frac{1}{2}$	3.00	$2\frac{1}{2}$ x18	2	.50
4 x18	$5\frac{1}{2}$	3.00	3 x18	$2\frac{1}{2}$	.50
1-32			$3\frac{1}{2}$ x18	$2\frac{3}{4}$	.50
2 x18	6	1.25	4 x18	$3\frac{1}{4}$	.50
$2\frac{1}{2}$ x18	7	1.25	3-16		
3 x18	8	1.25	1 x18	1	.50
$3\frac{1}{2}$ x18	9	1.25	$1\frac{1}{2}$ x18	$1\frac{1}{2}$	.50
4 x18	11	1.25	2 x18	2	.45
1-16	Pounds		$2\frac{1}{2}$ x18	$2\frac{1}{2}$	.45
1 x18	$\frac{3}{8}$	.90	3 x18	3	.45
$1\frac{1}{2}$ x18	$\frac{1}{2}$	.90	$3\frac{1}{2}$ x18	$3\frac{1}{2}$	.45
2 x18	$\frac{3}{4}$	.80	4 x18	4	.45
$2\frac{1}{2}$ x18	$\frac{7}{8}$	.80	7-32		
3 x18	1	.80	1 x18	$1\frac{1}{8}$	.50
$3\frac{1}{2}$ x18	$1\frac{1}{8}$	.80	$1\frac{1}{2}$ x18	$1\frac{3}{4}$	.50
4 x18	$1\frac{3}{8}$	.80	2 x18	$2\frac{1}{4}$	.45
3-32			$2\frac{1}{2}$ x18	$2\frac{7}{8}$	.45
1 x18	$\frac{1}{2}$	.75	3 x18	$3\frac{1}{2}$	.45
$1\frac{1}{2}$ x18	$\frac{3}{4}$	.75	$3\frac{1}{2}$ x18	4	.45
2 x18	1	.65	4 x18	$4\frac{5}{8}$	.45
$2\frac{1}{2}$ x18	$1\frac{1}{4}$	.65	1-4		
3 x18	$1\frac{1}{2}$	.65	1 x18	$1\frac{3}{8}$	.45
$3\frac{1}{2}$ x18	$1\frac{3}{4}$	.65	$1\frac{1}{2}$ x18	2	.45
4 x18	2	.65	2 x18	$2\frac{5}{8}$	.40
1-8			$2\frac{1}{2}$ x18	$3\frac{1}{4}$	.40
1 x18	$\frac{5}{8}$	.60	3 x18	4	.40
$1\frac{1}{2}$ x18	1	.60	$3\frac{1}{2}$ x18	$4\frac{1}{2}$	.40
2 x18	$1\frac{3}{8}$	.50	4 x18	$5\frac{1}{8}$	.40
$2\frac{1}{2}$ x18	$1\frac{3}{4}$	.50			
3 x18	2	.50			
$3\frac{1}{2}$ x18	$2\frac{1}{4}$	.50			
4 x18	$2\frac{5}{8}$	.50			

Locomotive Guide Liner

Starrett No. 66

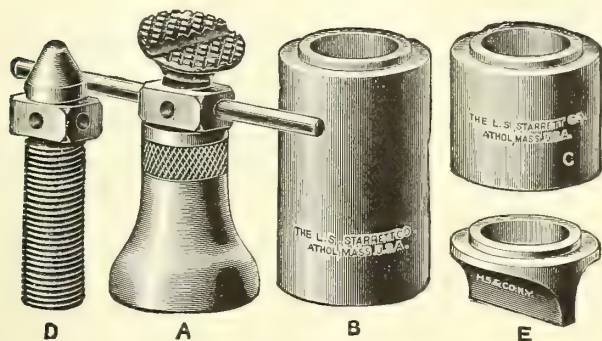


No. 66.

This instrument was devised after many urgent requests from intelligent mechanics, there having been nothing of the kind on the market. The lightness of this tool, combined with strength and accuracy together with an adjustable level in each end, adapting it to be used either side up and the convenient way of adjusting the pointer, all go to make it just the thing needed. Length over all, 14 inches; span of arch $3\frac{1}{4}$ inches.

Each \$3.00

Little Giant Jack Screws



Starrett

Designed for tool-room use, for leveling up work on a planer-bed or under an upright drill, setting up machinery, etc. All parts are case-hardened.

No. 190. The Jack (A) is 1¼ inch diameter at the base and has a range from 2¼ to 3¾ inches. It will raise 1,000 pounds or more. Two extension bases (B and C) are made to fit the base of the main part (A) and are 2 inches and 1 inch high respectively. With these two extensions used singly or together a reach from 2¼ to 6½ inches may be obtained.

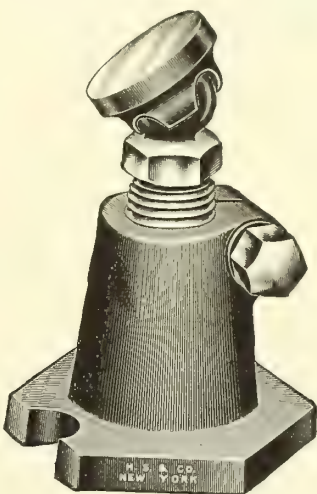
An auxiliary pointed screw (D) is supplied to be used in place of the screw with swivel cap in certain places where it may be preferable. The base (E) is also provided, for use in cases where such a shape may be desirable.

No. 191. A smaller size is made, 1 inch diameter. Part A, 1½ inches high; B, 1 inch; and C, ½ inch. With this size, adjustments from 1½ to 3½ inches are obtainable.

Jack (A) either No. 190 or No. 191	\$.75
Extension Base (B) either No. 190 or No. 191	.20
Extension Base (C) either No. 190 or No. 191	.15
Extension Base (E) either No. 190 or No. 191	.15
Extra Screw (D) either No. 190 or No. 191	.15
Complete, either No. 190 or No. 191	1.40

Sent complete unless otherwise ordered

Planer Jacks

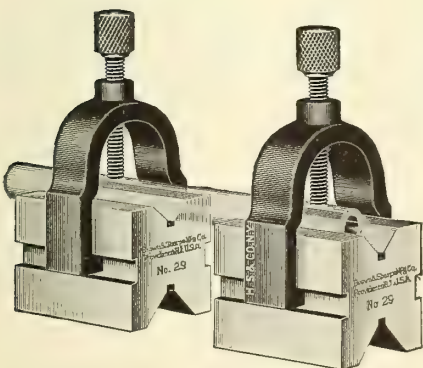


Armstrong

Designed to displace the haphazard devices and methods quite generally in use for leveling work on machine tools, and a glance will show any mechanic their convenience and utility. A set on a machine will greatly reduce the proportion of time required for preliminary arrangements as compared with the actual machine time on the job, and will, moreover, by their perfect adjustability and solidity, insure good, true surfaced work.

Number	Height Contracted Inches	Height Extended Inches	Weight Pounds	Each
1	2¾	3¾	1½	\$1.00
2	3¾	5¼	3	1.50
3	5¼	7½	6	2.00
4	7½	12	12	3.00

V-Blocks and Clamps



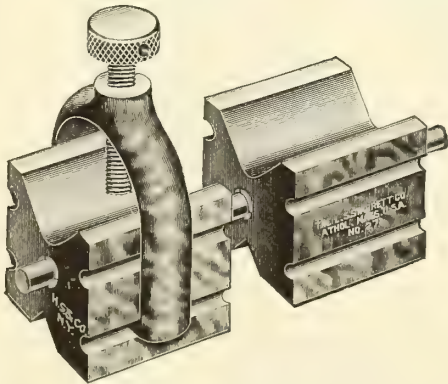
Brown & Sharpe No. 750

Made of tool steel hardened, with the sides ground parallel and the V grooves carefully ground central and parallel to the bottom and sides. Made and sold only in numbered pairs, so that the V-grooves in blocks of the same numbers are always in alignment.

Each block is approximately 1¼ x 1¼ x 1¾ inches in size and will take work to 1¼ inches in diameter.

They are not sold singly.

Set as shown \$4.00



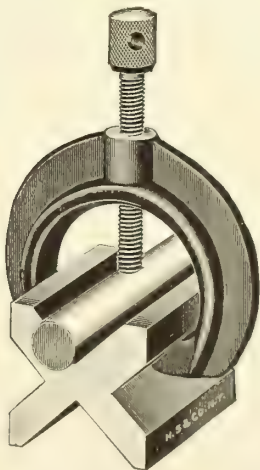
Starrett No. 271

All steel, case hardened

May be used close together or separated and are kept in line by a spindle passing through friction bushing. They will be found convenient when holding pieces with shoulders, which may rest between the blocks. Are 1¼ inches square and will hold round pieces to 1¼ inches diameter. The two grooves in each side take up the length and hold the clamp for small or large work.

No. 271A	Two Blocks	\$2.00
No. 271B	Clamp	.75
No. 271C	Set complete	2.75

Will be sent complete unless otherwise ordered



Starrett No. 268

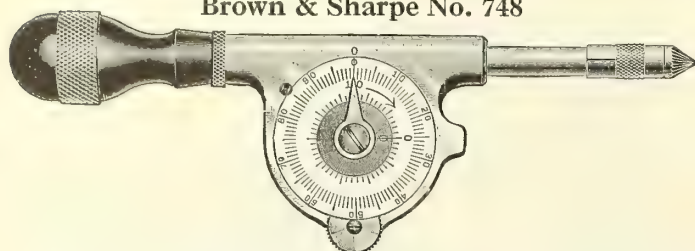
Furnished in pairs. The size of each is 2 x 1½ inches. The clamp will hold a round piece 1½ inches in diameter firmly in the groove of the blocks.

No. 268A	Two Blocks	\$1.00
No. 268B	Clamp	.50
No. 268C	Set, complete	1.50

Will be sent complete unless otherwise ordered

Speed Indicators

Brown & Sharpe No. 748



For use in determining the velocity of shafts and spindles running in either direction. Registers on either side, the front side being used to determine the velocity of shafts and spindles running in one direction and the reverse side the speed of those running in the opposite direction. Thus the confusion and errors that arise where all readings are taken from one dial are avoided.

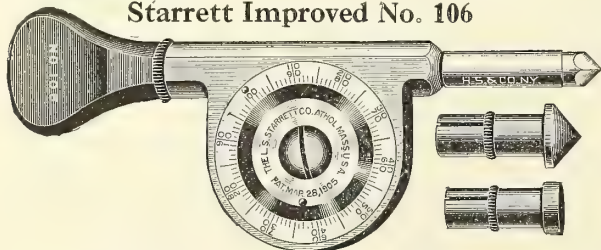
The dials register units and tens by means of a revolving pointer and, in addition, the front dial registers hundreds up to 5000 by means of a rotating disk in the center. This disk will register when either side is used.

Quick use of the tool is greatly facilitated by means of a small knurled wheel on the side of the case which, when turned, reverts the rotating disk on the front dial to the starting point. The pointers are readjusted by simply turning the indicator spindle.

The Indicator is small, light and convenient to handle. All of the working mechanism is encased and the case is heavily nicked with a dull finish. The point is of steel, hardened, and can be readily removed when worn.

Each \$5.50
In Morocco Case, each 6.00

Starrett Improved No. 106



The working parts are inclosed like a watch, and as well made. The graduations show every revolution, and with two rows of figures read both right and left as the shaft may run. While looking at the watch, each hundred revolutions may be counted by allowing the oval-headed pin on the revolving disk to pass under the thumb as the instrument is pressed to its work.

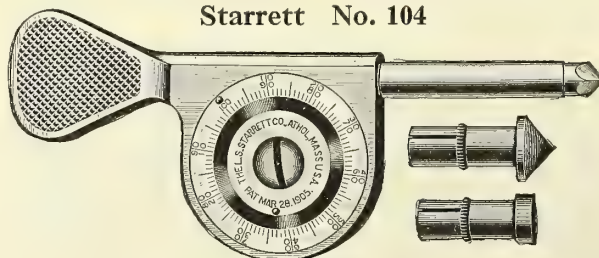
A late improvement in this Indicator consists in the rotating disk, which, being carried by friction, may be moved to the starting point where the raised knobs coincide. When the spindle is placed in connection with the revolving shaft, pressing the raised knob with the thumb will prevent the disk from rotating, while the hand of the watch gets to the right position to take the time. By releasing the pressure the disk is liberated for counting the revolutions of the shaft when every 100 may be noted by feeling the knob pass under the thumb lightly pressed against it, thus relieving the eye, which has only to look on the watch to note the time.

The instrument is nickel-plated, and has a rubber handle, so that it will not heat the fingers when run at high speed.

In Pasteboard Box, each \$1.50
In Leatherette Case, each 2.00

Sent in pasteboard box unless otherwise ordered

Starrett No. 104



Nickel-plated

May be run at highest speed required without heating, and this on account of our frictionless bearing against which the inner end of the spindle revolves.

The working parts of this Instrument are encased, and the dial plate has two rows of figures, reading right or left, as the shaft may run.

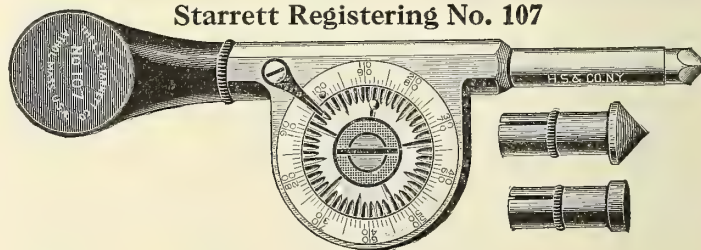
A late improvement in this Indicator consists in the rotating disk, which, being carried by friction, may be moved to the starting point where the raised knobs coincide. When the spindle is placed in connection with the revolving shaft, pressing the raised knob with the thumb will prevent the disk from rotating, while the hand of the watch gets to the right position to take the time. By releasing the pressure the disk is liberated for counting the revolutions of the shaft when every 100 may be noted by feeling the knob pass under the thumb lightly pressed against it, thus relieving the eye which has only to look on the watch to note the time.

In Pasteboard Box, each \$1.00
In Leatherette Case, each 1.50

We supply the Indicators with a spindle $7\frac{1}{2}$ inches long for use on dairy machines, etc., for 50 cents extra

The Indicator in pasteboard box (list \$1.00) will be sent unless otherwise ordered

Starrett Registering No. 107



Nickel-plated

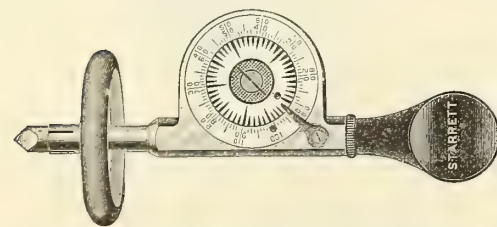
Devised to automatically register hundreds as well as units and tens, and thus relieve the mind from keeping tally; also to furnish a better registering indicator at a more reasonable cost than has been on the market heretofore. The instrument will register 5,000 revolutions. The large dial is graduated into one hundred lines, each one representing a revolution of the spindle. The small dial has fifty lines cut upon its face, each representing one hundred revolutions of the spindle (or one complete turn of the large dial). A spring finger trip attached to the case engages with one of the lines in the small dial and holds it from revolving until the large dial makes one complete turn, when the trip pin passing under the spring trip lifts it, and the dial is frictionally carried along by the large plate one line, thus showing that one hundred revolutions of the spindle have been made. The instrument has a hard rubber handle, making a safe insulator when used on electrical machinery.

In Pasteboard Box, each \$3.00
In Leatherette Case, each 3.50

Sent in pasteboard box unless otherwise ordered

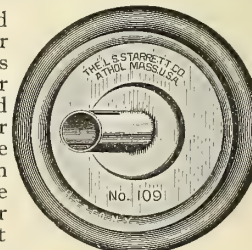
Surface Speed Attachment

This attachment applied to a Starrett Speed Indicator is designed to show the number of lineal feet per minute the periphery of a shaft or pulley is running and thus enable a workman to know if the speed is too fast, or is too slow to get the most work the tool will stand. For instance, the speed of a cone pulley being turned needs to be changed at every step. Heretofore it has been all guesswork as to the number of feet per minute the periphery of the work is traveling. It may be so fast as to heat and spoil the tool, or it may not be nearly fast enough to perform what should be done. The same is true when shifting the tool from the hub to the rim of a pulley. The rubber-banded indicator wheel may be instantly slipped off or on the spindle of any Starrett Speed Indicator, and when held against the periphery of a shaft or



pulley a half minute or so, the number of feet the surface is traveling may be obtained by dividing by 2 the number of revolutions, shown on the dial of the indicator, as each revolution of the indicator wheel shows six inches; twice around, one foot. A close approach to accuracy is not claimed for this attachment, but it will be found very convenient and adequate for the purposes intended, as suggested above.

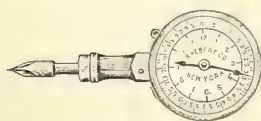
No. 109 Each \$.50



Speed Indicators and Counters

Hebert Duplex Speed Indicator

Ball Bearing. Direct Reading
Indestructible Crystal
Insulated Shaft



Cut One-half Size

When placed in connection with the shaft it revolves without registering. When ready, press down the lever under the index finger, as shown in cut, and it immediately commences to register.

No matter in which direction the shaft turns, the hands always turn and register to the right, same as in a watch, so in no case is it necessary to read backwards.

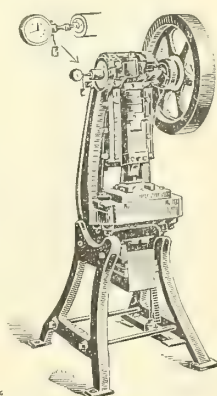
Each.....\$6.00

Hebert Punch Press Counter

An automatic counting device attached to a press to aid in keeping a record of the number of pieces stamped is often found convenient and saving of time, each stroke of the press being registered. Registers to 1200 and repeats. Can be thrown out of action or re-set to zero when desired.

Attached to shaft with two small screws. Quickly detached by loosening set screw when desired for use as Speed Indicator.

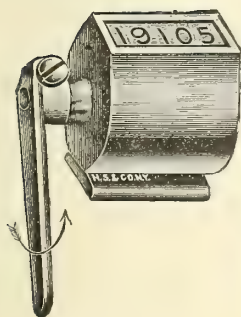
Each.....\$6.50



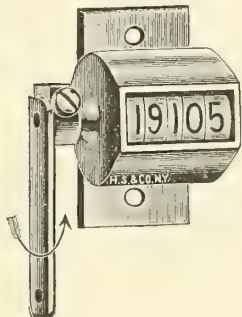
As Applied to Punch Press

Veeder Counters

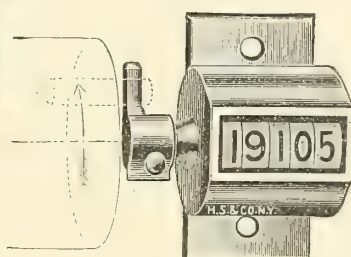
Cuts full Size



No. 1 Ratchet



No. 2 Ratchet



No. 4 Revolution

These instruments are for use in automatically counting the parts produced by, or the number of movements or revolutions of, machinery of all descriptions, notably punch presses and automatic machinery.

No. 1 will register, on a small movement of the lever, up to 99,999 when the next movement returns the counter to zero.

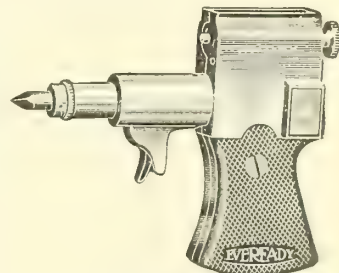
No. 2 is the same as No. 1, except that it has a flange instead of a gib base.

No. 4 requires a complete movement of the shaft for each registration. It can be furnished with a gib base if required. If run backwards, it subtracts. Can also be furnished with the window in the center of the flange at a small extra cost.

No. 1	Each.....	\$1.00
No. 2	Each.....	1.00
No. 4	Each.....	1.00

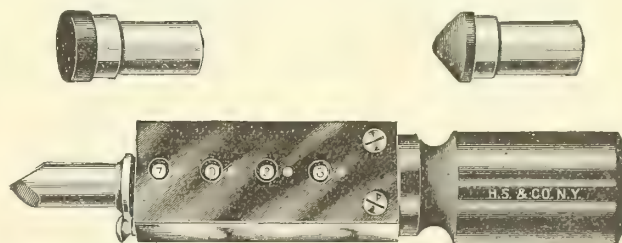
Eveready Revolution Counter

This Counter has many valuable features. Its shape is such that it is easy to handle. When the point is placed against a revolving shaft the spindle of the counter revolves with the shaft but does not register until the trigger is pulled. When the trigger is released the instrument stops registering instantly, although the spindle may still be against the shaft and revolving. The revolutions are shown in figures in the head of the Counter. Turning the knurled knob sets the Counter back to zero instantly. This instrument counts forward—from zero up—no matter in which direction shaft is revolving. Built to stand the hard service an instrument of this kind is subject to.



Each.....\$5.00
In Leather Case, with Male and Female Rubber Tips, each.....6.00

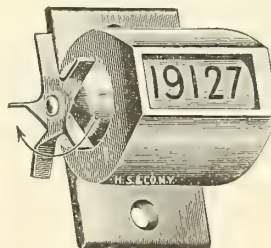
Initiative Revolution Counter



Will register from 0 to 10,000 in either direction and can easily be set to zero from any number. The count is read like an ordinary number, all digits being lined up in a row. This feature has many advantages over the puzzling way of reading with a pointer and dial. Its compact size, its easy way of registering and the fact that the recording does not need to be read backward make the "Initiative" Revolution Counter most perfect, durable and handy.

Has insulated rubber handle to guard against electric shocks. In Plush-lined Morocco Case, each.....\$5.00

Veeder Star Counter



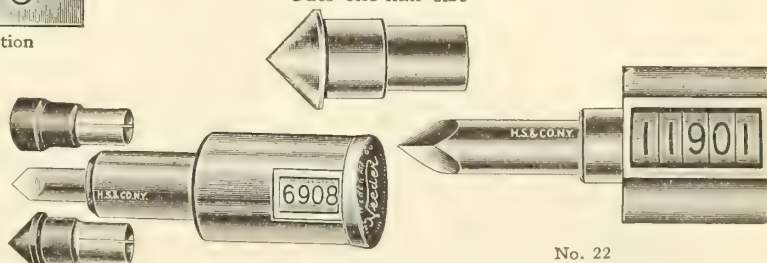
Cut Full Size

This instrument registers one figure when the star wheel is moved one point, or one-fifth of a revolution. Is adapted for all machines where the speed is not great, nor the motion continuous. The star wheel is $\frac{3}{4}$ inch in diameter and is kept from spinning by a friction brake on the shaft.

No. 7, each.....\$1.25

Veeder Speed Counters

Cuts one-half size



No. 21. With Clutch

No. 21 Clutch Counter does not register although the point may be engaged, until the end of the instrument is pressed. When the pressure is removed registration stops at once. The number of revolutions is determined by reading before and after the operation.

Each.....\$3.00

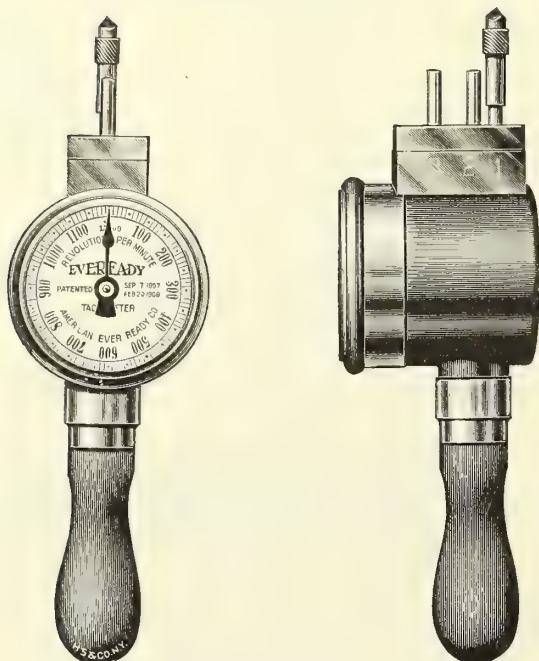
No. 22 Counter is designed to supply the demand for a low priced but durable and accurate instrument. It has no clutch mechanism.

Each.....\$1.25

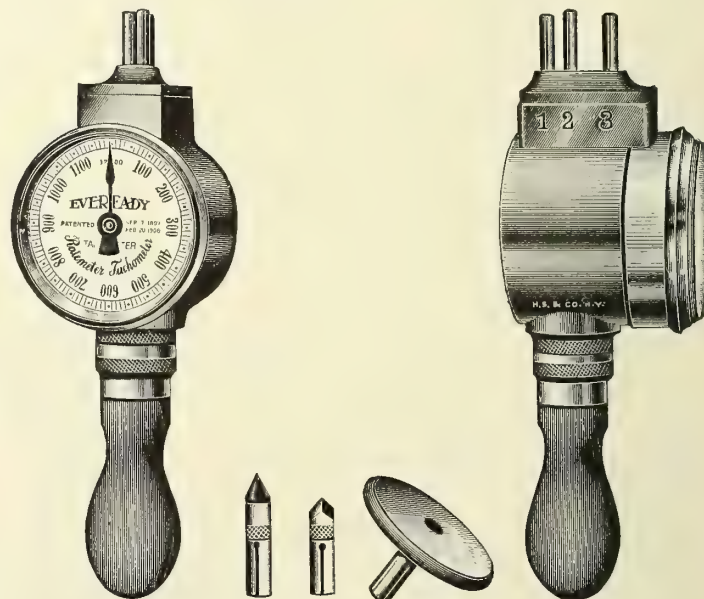
Speed Indicating Devices

Eveready

Hand Tachometers



Combination Tachometer and Rate Meter



Light, of convenient shape, and require but a slight pressure against the shaft to take a reading. The hand pointing directly to the speed at which the machine is running, readings can be taken quickly, the element of time requiring no consideration. All variations in the speed or pumping are easily detected with this instrument.

Since it makes no difference in the reading whether the shaft is revolving right or left, this Tachometer can be used on either end of the shaft. Is not affected by heat or cold.

Spindle 1 reading indicates actual R. P. M.

Spindle 2 reading, multiplied by 2, gives actual R. P. M.

Spindle 3 reading, divided by 2, gives actual R. P. M.

Spindles 2 and 3 are for the purpose of reading high and low speeds, not otherwise within the range of the instrument.

Diameter of dial $2\frac{1}{4}$ inches.

Depth of case $2\frac{1}{4}$ inches.

Length 7 inches. Weight 18 ounces.

Complete with steel and rubber points, in finely finished case.

No. 121. Range 1 to 2,400 R.P.M., each..... \$30.00
No. 122. Range 200 to 9,600 R.P.M., each..... 30.00

This instrument, besides being a Hand Tachometer, can be used as a Rate Meter or Cut Meter, to determine the rate of movement in feet per minute of any moving object. It is a valuable and necessary equipment for the modern factory, as the cutting speeds of tools, belt speeds, hoisting speeds, etc., can be quickly ascertained. The indicator hand points directly to the number of feet the material per minute—no need to time the operation. Operates in either direction. Length 7 inches. Weight 18 ounces.

Complete with steel and rubber points and rubber tired disc. In finely finished case.

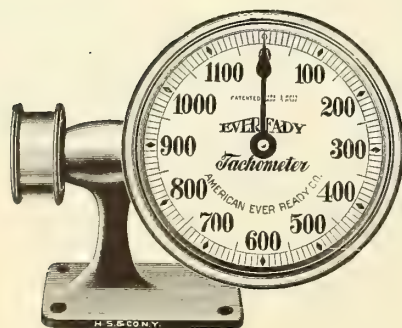
No. 161 Each..... \$35.00

Stationary Tachometers

Economical operation of machinery has become a vital factor in the proper management of manufacturing plants. The "Eveready" Tachometer shows instantly whether a machine is running at its proper speed. Connected with a revolving shaft it indicates the exact number of revolutions per minute. There is no need to time the Tachometer with a watch. The hand points to the speed at which the machine is running and varies only as the speed of the machine varies, indicating any variation, and the amount of the variation, from the normal. The hand moves in one way, clockwise, whether the shaft is turning right or left.

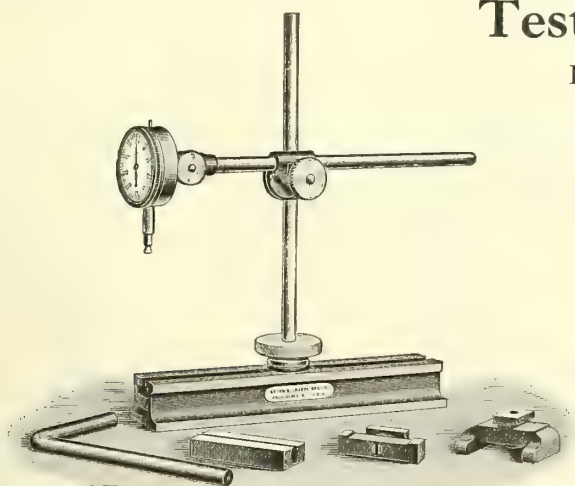
No. 101 4-inch Dial, each..... \$40.00
No. 102 6-inch Dial, each..... 50.00
No. 103 8-inch Dial, each..... 60.00

In ordering specify the diameter of the dial, the normal working speed, the maximum speed and whether the dial is to be placed to the right or left of the driving wheel.



Test Indicators

Brown & Sharpe



Dial No. 730

Diameter of dial, $1\frac{3}{4}$ inches. Spindle has $\frac{1}{4}$ inch movement.
Length of base, $8\frac{1}{2}$ inches. Width, $2\frac{1}{4}$ inches

This Indicator is especially serviceable to those erecting or inspecting machines in determining the inaccuracy in a surface or the movement of a spindle or arbor, etc.

The parts are adjustable to any angle. The arm can be removed from the post and used independently, as in the tool post of a lathe. The points are removable to permit the use of different forms.

The movement of the measuring surface that bears upon the work is magnified a number of times and indicated by the pointer. The dial reads to .001 inch, has a white enamel face and is adjustable to allow the setting of the zero to any required position.

Stops for use on the under side of the base, a split block and an angular post are furnished.

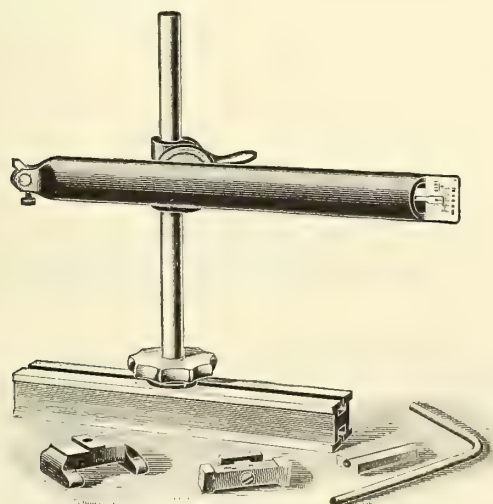
Metric measure. Also made with Metric Dial and reads to $\frac{1}{100}$ mm.

English or Metric measure, each..... \$20.00

Dial No. 732

This Indicator differs from No. 730 only in the range and size. It is designed for a heavier class of work. Diameter of dial, $2\frac{1}{4}$ inches. Spindle has $\frac{1}{2}$ inch movement. Length of base, 10 inches; width, 3 inches.

English or Metric measure, each..... \$35.00



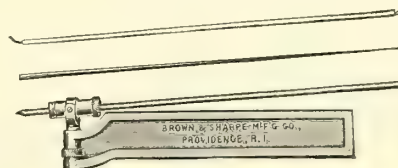
No. 735

This Indicator is especially useful to those erecting or inspecting machines. The parts are adjustable to any angle. The movement of the point is magnified a number of times by the length of the index finger and its movement may be read upon the graduations shown. The indexing finger may be brought to zero by the knurl headed screw shown, whatever may be the position of the arm. A split block and angular post are furnished with the indicator.

Also made to read to $\frac{1}{500}$ mm.

Length of base, 8 inches; height of post, 9 inches.

English or Metric measure, each..... \$15.00



Lathe No. 736

The Lathe Test Indicator is for use in setting centrally any point or hole in a piece of work to be operated upon in a lathe or upon a face plate. It is also well adapted for testing lathe centers, shafting or other work held between centers, the inside or outside of cylinders, pulleys, etc., and all work of a similar class.

The tool is made of steel and is of such a size as to be held conveniently in the tool post of a lathe. The bar, $\frac{15}{16}$ inch wide and $\frac{3}{8}$ inch thick, is drop forged and formed at the end to receive a Universal joint for supporting the finger holder. The Universal joint recommends itself by its simplicity of construction. A clamp nut is provided for clamping the joint when it is desired to have only a vertical movement to the finger, as in testing pieces held between centers, the inside or outside of pulleys, etc. The bushing, which holds the finger, is split, thus allowing the finger to be adjusted to lengths required and clamped in position.

The bar and all wearing parts are hardened.

The finger holder is furnished with two fingers, either one of which can be quickly attached; one finger is ground to an angle of 60 degrees and the other is bent for inside and outside testing.

A spiral spring is provided for holding the finger against the work with an even pressure.

Each tool is neatly packed in a box, fitted to receive the various parts.

Each..... \$3.00



No. 738

The B. & S. Indicator is designed to meet the steadily increasing demand for an Indicator that is universal in its movement.

This Indicator is intended for use in setting centrally any point or hole in a piece of work to be operated upon in a lathe or upon a face plate, also for testing lathe centers, shafting and other work held between centers, the inside and out side diameters of cylinders, pulleys, etc., and work of a similar nature.

The shank is made of hardened steel and is designed to be held in the tool post of a lathe. By means of the swivel at one end of the shank, the Indicator may be adjusted either upwards or downwards and readings obtained.

The Indicator point is of steel, hardened, and is made spherical, allowing of pressure being brought upon it by the work from any angle and readings taken.

The readings are obtained by means of the pointer and scale on the top of the case. The scale is graduated to read to approximately .007 inch either side of zero. In this way, the amount that the piece may run out of true, both under and over size, is easily ascertained.

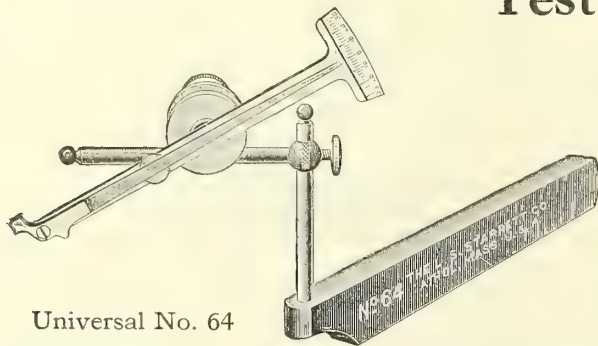
Metric measure. This Indicator is also made to read to metric measurements, reading to approximately 1 mm. either side of zero by hundredths of 1 mm.

No. 738 English or Metric measure, each..... \$5.75

Morocco Case, each..... .50

Test Indicators

Starrett



Universal No. 64

This Indicator may be used to test inside, outside or surface work. It can be instantly attached to the spindle or the needle of any surface gauge and used in connection with same to show the slightest variation in thousandths. It may be clamped to a flat or round support, varying in size from a surface gauge needle up to $\frac{3}{8}$ inch, flat or round. A special holder, as shown in cut, is designed to go in the tool-post of a lathe, adapting it for use to show the accuracy of all sorts of lathe work, turning, chucking, or locating and centering work on face plate. The head of the needle has three working points, equally distant from its fulcrum, so the telltale needle will vibrate, reading in thousandths, when work is in contact with either point—in front, above or below it. When in front, the spring operating the telltale needle needs to be reversed to throw point of needle up instead of down, as when used above or below the work. This may be instantly done by a slight turn of the disk to which the vibrating spring is attached. The working parts of the head are hardened. In setting the indicator, bring the contact point against the work so that the needle will point to 0, when any variation either way will show.

Indicator may be used in connection with surface gauges as shown in small cut.

Indicator only, each	\$2.50
Tool-post Holder, without arm, each	.75
Tool-post Holder, with arm, each	1.00
Indicator, with Tool-post Holder and arms, complete, each	3.50

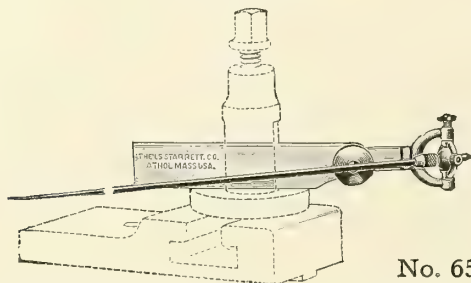
Sent complete unless otherwise ordered.

No. 64M

Same as above, except that it is graduated to show variations of $\frac{1}{100}$ th of a millimeter. Prices as above.

Center Tester

Starrett

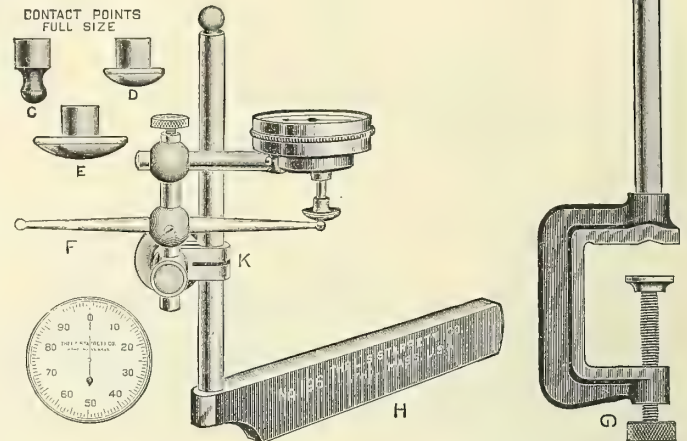


No. 65

This instrument was designed to use in adjusting and locating centrally any point or hole in a piece of work operated upon in a lathe chuck or on a face-plate; also to test the truth of lathe centers or a shaft between the centers, the instrument being held in the tool post.

The Tester is of improved design and nicely made. The indicating needle passes through the ball, having a split stem, forming a chuck for holding the needle adjusted to any desired length. The ball is pivoted to form a universal joint, but may be instantly converted into a single joint for tilting motion by only tightening the knurled nut, adapting it for both inside and outside surface contact. A steel bead, not shown in the cut, and carried on the needle, slips over the point of same when used for inside work. The instrument is joined to a tool-post shank by a flexible steel ribbon with sufficient spring to properly hold the needle in contact with the work. It is a tool needed in every up-to-date tool room.

Each	\$2.50
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Universal Dial No. 196

This Indicator is simple, reliable, easily read and very sensitive. The slightest pressure upon the contact point produces a movement of the hand on the dial. The circumference of the dial is divided into 100 equal spaces, each one representing a movement of the contact point of one-thousandth of an inch. One revolution of the hand therefore indicates $\frac{1}{10}$ inch, the capacity of the instrument being two-tenths. By bringing the contact point against the work with just enough pressure to give the hand one full turn, then setting it at 0, an opportunity is given for one full revolution of the hand to both right and left of 0, showing a rise or drop in the work and the amount of variation. A most valuable feature is the adjustable dial. By turning the knurled rim the dial may be instantly moved to bring the 0 mark to any point desired in relation to the hand. Each Indicator is fitted with three hardened contact points adapted to different classes of work. The special tool post and sleeve as shown above are useful in lathe work. For general work the indicator, with sleeve B, is adapted for use with 9-inch or 12-inch surface gauges.

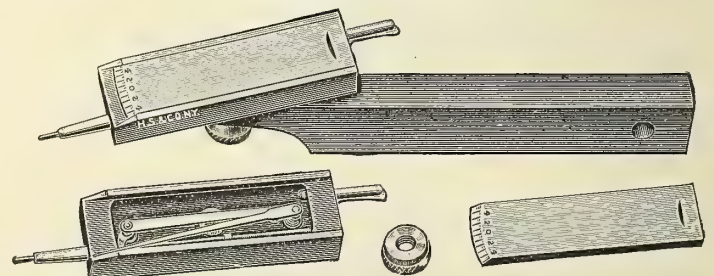
The clamp G permits attaching the indicator to large lathe and planer tools, milling arbors, etc.

The attachment F more than doubles the value of the Indicator, adapting it for use inside of holes, to reach over blockings on face plates, etc.

No. 196A	Indicator with all attachments, as shown, each	\$10.75
No. 196B	Indicator only, with 3 contact points, each	7.00
No. 196F	Hole attachment, each	1.50
No. 196G	Clamp, each	.75
No. 196H	Tool post, each	.75
No. 196K	Sleeve, each	.75
	Extra contact points, each	.10

No. 196A, Indicator complete, will be sent unless otherwise ordered.

Koch Universal



The Indicator proper consists of a rectangular steel case which carries the pointer, lever, and other mechanism and is adapted to swivel freely at the end of a holder which may be used in the lathe, shaper, or miller. The indicator head may also be attached to the post of a surface gauge and used for a variety of bench-plate work, or it may be placed on either of its flat sides and operated in conjunction with size blocks and parallels for testing work. The contact point for external and internal operations are at opposite ends of the indicator and by loosening the clamp nut underneath the device is readily swiveled end for end to bring either point desired into contact with the work.

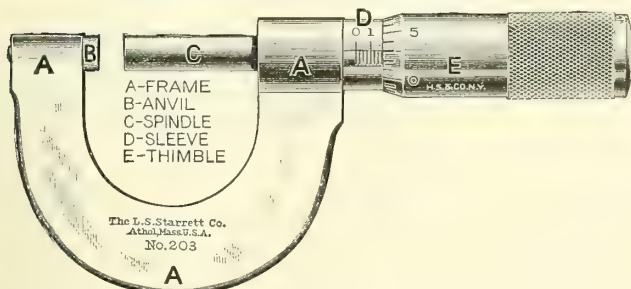
Each graduation represents .001 inch movement of the plunger or .002 movement of the bell crank.

The instrument has a valuable safety feature in that the plunger operates away from instead of against the lever, preventing any of the delicate parts being broken by a sudden or excessive jolt of the plunger.

Each	\$4.00
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Micrometer Calipers

How to Read a Micrometer



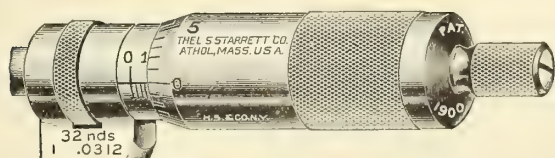
The spindle C is attached to the thimble E at the point H. The part of the spindle which is concealed within the sleeve and thimble is threaded to fit a nut in the frame A. The frame being held stationary, the thimble E is revolved by the thumb and finger and the spindle C being attached to the thimble revolves with it, and moves through the nut in the frame, approaching or receding from the anvil B. The article to be measured is placed between the anvil B and the spindle C. The measurement of the opening between the anvil and the spindle is shown by the lines and figures on the sleeve D and the thimble E.

The pitch of the screw threads on the concealed part of the spindle is 40 to an inch. One complete revolution of the spindle therefore moves it longitudinally one fortieth (or twenty-five thousandths) of an inch. The sleeve D is marked with 40 lines to the inch, corresponding to the number of threads on the spindle. When the micrometer is closed, the beveled edge of the thimble coincides with the line marked 0 on the sleeve, and the 0 line on the thimble agrees with the horizontal line on the sleeve. Open the micrometer by revolving the thimble one full revolution, or until the 0 line on the thimble again coincides with the horizontal line on the sleeve; the distance between the anvil B and the spindle C is then $\frac{1}{40}$ or (.025) of an inch; and the beveled edge of the thimble will coincide with the second vertical line on the sleeve. Each vertical line on the sleeve indicates a distance of $\frac{1}{40}$ of an inch. Every fourth line is made longer than the others, and is numbered 0, 1, 2, 3, etc. Each numbered line indicates a distance of four times $\frac{1}{40}$ of an inch, or one-tenth.

The beveled edge of the thimble is marked in twenty-five divisions, and every fifth line is numbered, from 0 to 25. Rotating the thimble from one of these marks to the next moves the spindle longitudinally $\frac{1}{25}$ of twenty-five thousandths, or one thousandth of an inch. Rotating it two divisions indicates two thousandths, etc. Twenty-five divisions will indicate a complete revolution, .025 or $\frac{1}{40}$ of an inch.

To read the micrometer, therefore, multiply the number of vertical divisions visible on the sleeve by 25, and add the number of divisions on the bevel of the thimble, from 0 to the line which coincides with the horizontal line on the sleeve. Multiply this number by 25, and add the number of divisions shown on the bevel of the thimble, 3. The micrometer is open one hundred and seventy-eight thousandths. ($7 \times 25 = 175 + 3 = 178$.)

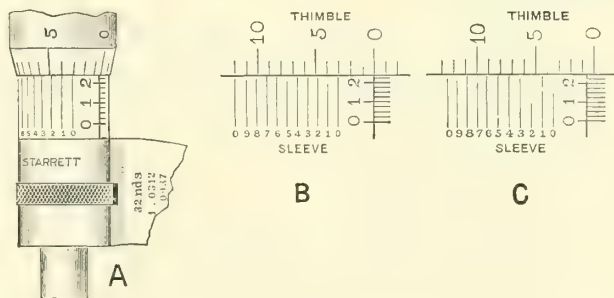
Ratchet Stop for Micrometers



In using this device, the ratchet slips by the pawl when more than a certain amount of pressure is applied, and so prevents the measuring spindle from turning farther and perhaps springing the instrument.

It is valuable where a number of measurements have to be taken quickly and especially where measurements are taken by more than one person with the same micrometer, as by its use the same amount of pressure is applied to the objects measured, in each case.

How to Read a Ten-Thousandths Micrometer



Readings in ten-thousandths of an inch are obtained by the use of a vernier, so named from Pierre Vernier, who invented the device in 1631. As applied to a micrometer this consists of ten divisions on the adjustable sleeve, which occupy the same space as nine divisions on the thimble. The difference between the width of one of the ten spaces on the sleeve and one of the nine spaces on the thimble is therefore one-tenth of a space on the thimble. In engraving B the third line from 0 on thimble coincides with the first line on the sleeve. The next two lines on thimble and sleeve do not coincide by one-tenth of a space on thimble; the next two, marked 5 and 2, are two-tenths apart, and so on. In opening the tool, by turning the thimble to the left, each space on the thimble represents an opening of one-thousandth of an inch. If therefore the thimble be turned so that the lines marked 5 and 2 coincide, the caliper will be opened two-tenths of one thousandth or two ten thousandths. Turning the thimble further, until the line 10 coincides with the line 7 on the sleeve, as in engraving C, the caliper has been opened seven ten thousandths, and the reading of the tool is .2257.

To read a ten-thousandths micrometer, first note the thousandths as in the ordinary micrometer, then observe the line on the sleeve which coincides with a line on the thimble. If it is the second line, marked 1, add one ten thousandth; if the third, marked 2, add two ten thousandths, etc.

Gauges vs. Micrometer Calipers

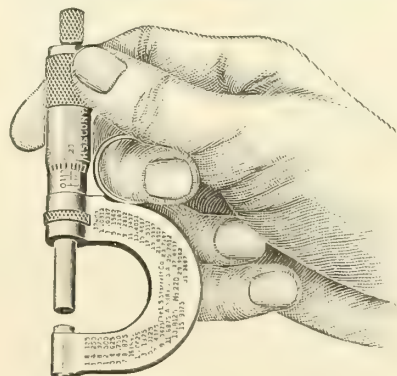
Owing to the confusion frequently occurring over the different "Standard" Gauges, we suggest as a very safe way to avoid errors, the use of the Micrometer Caliper.

These are made to measure thousandths or ten thousandths of an inch accurately.

They are simple, so that any boy of ordinary intelligence may be taught to use one in a very few minutes.

They have easy arrangements for re-adjustment when worn, and insure practically accurate measurements, expressed decimally; which are easy of interpretation and, when carefully rendered, save all confusion.

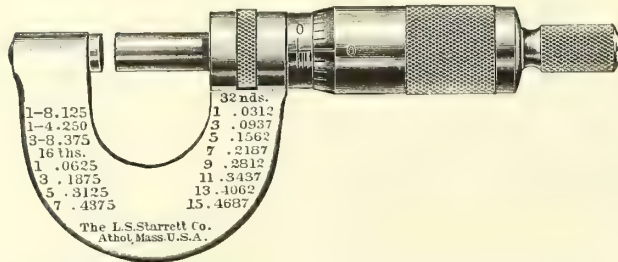
Finger Ring for Micrometers



Finger Ring can be supplied on any Starrett Micrometer at an extra cost of 75 cents.

Micrometer Calipers

Starrett



Half Inch English Measure; 13 mm. Metric Measure

With Lock Nut and Ratchet Stop

	Each
No. 215 English Measure, 0 to 1/2 inch by 1,000ths.....	\$5.00
No. 219 English Measure, 0 to 1/2 inch by 10,000ths.....	6.00
No. 215M Metric Measure, 0 to 13 mm. by 100ths of mm....	5.00

Without Lock Nut; with Ratchet Stop

No. 216 English Measure, 0 to 1/2 inch by 1,000ths.....	\$4.50
No. 218 English Measure, 0 to 1/2 inch by 10,000ths.....	5.50
No. 216M Metric Measure, 0 to 13 mm. by 100ths of mm....	4.50
Leather Case.....	.50

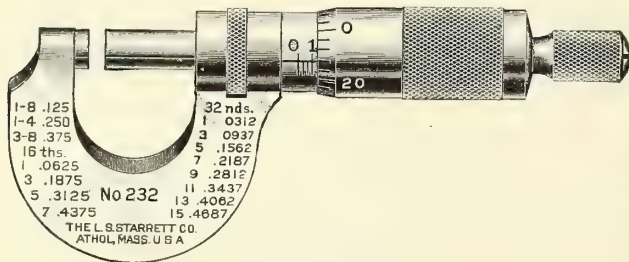
One Inch English Measure; 25 mm. Metric Measure

With Lock Nut and Ratchet Stop

No. 3 English Measure, 0 to 1 inch by 1,000ths.....	\$6.00
No. 113 English Measure, 0 to 1 inch by 10,000ths.....	7.00
No. 3M Metric Measure, 0 to 25 mm. by 100th of mm.....	6.00

Without Lock Nut or Ratchet Stop

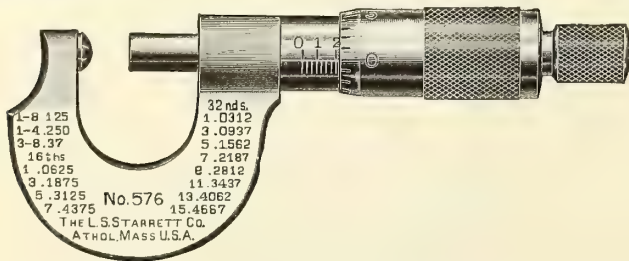
No. 203 English Measure, 0 to 1 inch by 1,000ths.....	5.00
Leather Case.....	.50



With Short Anvil

With Lock Nut and Ratchet Stop

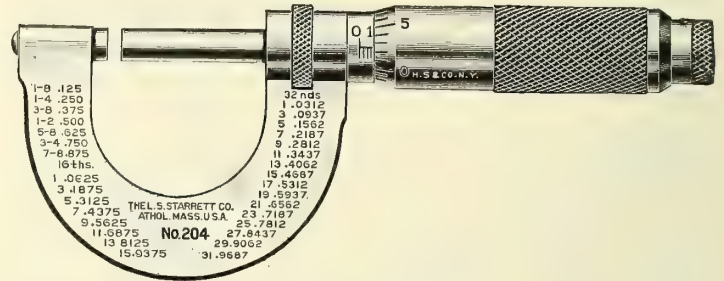
No. 230 English Measure, 0 to 1 inch by 1,000ths.....	\$6.00
No. 231 English Measure, 0 to 1 inch by 10,000ths.....	7.00
No. 232 English Measure, 0 to 1/2 inch by 1,000ths.....	5.00
No. 233 English Measure, 0 to 1/2 inch by 10,000ths.....	6.00
Leather Case.....	.50



For Measuring Tubing

Without Lock Nut; With Ratchet Stop

	Each
No. 576 English Measure, 0 to 1/2 inch by 1,000ths.....	\$5.00
No. 576M Metric Measure, 0 to 13mm. by 100ths of mm.....	5.00
Leather Case.....	.50



Quick Adjusting

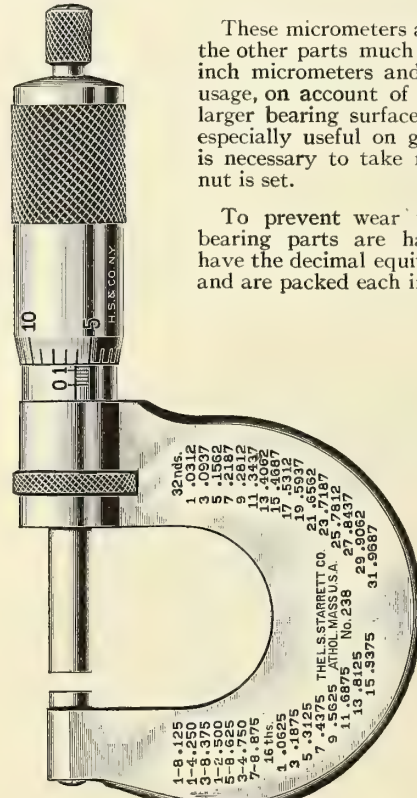
This is a tool which the mechanical world has been seeking for years. After long study and much experimenting a micrometer has been produced which can be instantly opened or closed to any point within its capacity. And this is done without impairing its accuracy or sensitiveness in the slightest degree. Forty complete revolutions of the screw are required to open or close an ordinary one-inch micrometer its full length, taking approximately 20 seconds. This time is practically all saved by the use of this new tool.

To operate the micrometer it is only necessary to press with the finger against the end of the plunger. This immediately releases the nut, disengaging it from the screw, when any adjustment within an inch may be instantly made. Releasing the pressure, the nut instantly engages the screw, when fine adjustments may be made in the usual way.

	Each
No. 204 English Measure, 0 to 1 inch by 1,000ths.....	\$10.00
No. 205 English Measure, 0 to 1 inch by 10,000ths.....	11.00
No. 204M Metric Measure, 0 to 25 mm. by 100ths of mm....	10.00
Leather Case.....	.50

These micrometers are made with the frame and the other parts much heavier than the regular one-inch micrometers and will last longer under hard usage, on account of their stiffness and because of larger bearing surface for the threads. They are especially useful on grinding work and wherever it is necessary to take measurements after the lock nut is set.

To prevent wear the measuring surfaces and bearing parts are hardened. These micrometers have the decimal equivalents stamped on the frame and are packed each in a strong wooden box.



Heavy

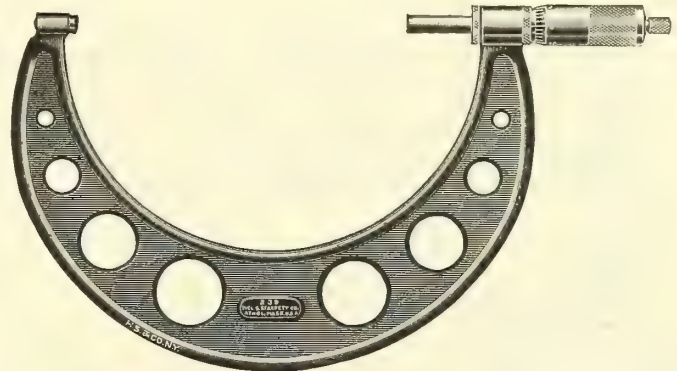
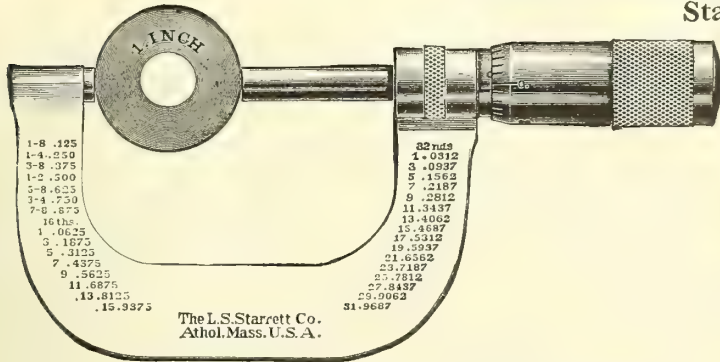
With Ratchet Stop and Lock Nut

	Each
No. 238 English Measure, 0 to 1 inch by 1,000ths.....	\$7.00
No. 238M Metric Measure, 0 to 25 mm. by 100ths of mm....	7.00

Note—All Metric Micrometers are furnished without table of decimal equivalents

Micrometer Calipers

Starrett



Two Inch English Measure; 50 mm. Metric Measure

With Lock Nut and Standard; Without Ratchet Stop Each

No. 217 English Measure, 1 to 2 inches by 1,000ths..... \$6.00

With Lock Nut, Ratchet Stop and Standard

No. 2 English Measure, 1 to 2 inches by 1,000ths..... 6.50

No. 213 English Measure, 1 to 2 inches by 10,000ths..... 7.50

No. 2M Metric Measure, 25 to 50 mm. by 100ths..... 6.50

Leather Case..... .75

A standard one-inch gauge, to be used in adjusting the Caliper, is sent with each one of the above.



Attachment for Micrometers

By means of which a 2-inch micrometer may be instantly converted into a 1-inch tool, will be furnished, when ordered, with any of the above 2-inch or 50-millimeter micrometers.

No. 212 English Measure, each..... \$2.00

No. 212M Metric Measure, each..... 2.00



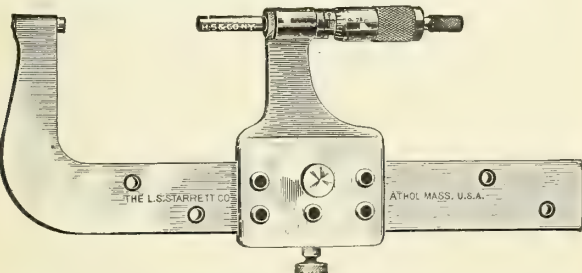
Micrometer Heads

Length from shoulder to lock nut $\frac{1}{4}$ inch, $\frac{1}{2}$ inch diameter. These heads are easily attached to tools or machines when fine measurements are required. They have ratchet stops and lock nuts and are graduated to read to thousandths of an inch. They will be furnished without ratchet or lock nut when so desired, at same price.

No. 263 English Measure, 0 to 1 inch by 1,000ths. Each... \$3.50

No. 263M Metric Measure, 0 to 25 mm. by 100ths. Each... 3.50

No. 363 English Measure, 0 to 1 inch by 10,000ths. Each... 4.50



Patent Six-inch Micrometers

This micrometer will measure round work to $4\frac{1}{4}$ inches, and flat work to 6 inches. It weighs 21 ounces, and is rigid and accurate. It can be quickly set to exact position, from 1 inch to 6 inches, by inserting a plug as shown. A valuable feature of this tool is a set of six independent holes through both the movable part and the beam, each hole being bushed with hardened steel bushings, ground and lapped to fit the plug, which locates to exactness the various inch settings.

No. 128 English Measure, 6 inches. Each..... \$20.00

No. 128M Metric Measure, 15 cm. Each..... 20.00

Leather Case, extra. Each..... 1.50

English Measure

Set No. 239A, consisting of No. 238 one inch, with decimal equivalents on frame, and No. 239, sizes 2 to 6 inch. Sent in strong wooden boxes.

Set, \$57.00 With standards, \$63.00

Sent with standards unless otherwise ordered.

Set No. 239B, consisting of No. 238 one inch, with decimal equivalents on frame, and sizes 2 to 12 inch of No. 239. Sent in strong wooden boxes.

Set, \$150.00 With standards, \$171.00

Sent with standards unless otherwise ordered.

Note—All Metric Micrometers are furnished without table of decimal equivalents

Sets

Metric Measure

Set No. 239 AM., consisting of No. 238 M, 0 to 25 mm., and No. 239M, sizes 25 to 150 mm. Sent in strong wooden boxes.

Set, \$57.00 With standards, \$63.00

Sent with standards unless otherwise ordered.

Set No. 239 BM, consisting of No. 238 M, 0 to 25 mm., and sizes 25 to 300 mm. of No. 239. Sent in strong wooden boxes.

Set, \$150.00 With standards, \$171.00

Sent with standards unless otherwise ordered.

These micrometers were designed to meet the exacting demands of heavy and severe usage. The spindle and screw portion is of larger area than in the regular micrometer, thus insuring longer wear and greater rigidity; those from two inches to six inches inclusive, are made from drop-forgings, and the larger sizes, from seven inches to twelve inches, from steel castings. The bearing parts and measuring surfaces are hardened to prevent wear, and the same means provided for adjustment as in our other micrometers. Made with lock nut and ratchet stop. Sizes are stamped to show their capacity.

No. 239 English Measure

Each

1 inch to 2 inches, \$8.00 With standard, \$9.00

Leather case extra, \$.75

2 inches to 3 inches, \$9.00 With standard, 10.00

Leather case extra, \$1.25

3 inches to 4 inches, \$10.00 With standard, 11.15

Leather case extra, \$1.75

4 inches to 5 inches, \$11.00 With standard, 12.35

Leather case extra, \$2.00

5 inches to 6 inches, \$12.00 With standard, 13.50

Leather case extra, \$2.25

6 inches to 7 inches, \$13.00 With standard, 15.00

7 inches to 8 inches, 14.00 With standard, 16.20

8 inches to 9 inches, 15.00 With standard, 17.40

9 inches to 10 inches, 16.00 With standard, 18.60

10 inches to 11 inches, 17.00 With standard, 19.80

11 inches to 12 inches, 18.00 With standard, 21.00

No. 239 M Metric Measure

Each

25 to 50 mm., \$8.00 With standard, \$9.00

Leather case extra, \$.75

50 to 75 mm., \$9.00 With standard, 10.00

Leather case extra, \$1.25

75 to 100 mm., \$10.00 With standard, 11.15

Leather case extra, \$1.75

100 to 125 mm., \$11.00 With standard, 12.35

Leather case extra, \$2.00

125 to 150 mm., \$12.00 With standard, 13.50

Leather case extra, \$2.25

150 to 175 mm., \$13.00 With standard, 15.00

175 to 200 mm., 14.00 With standard, 16.20

200 to 225 mm., 15.00 With standard, 17.40

225 to 250 mm., 16.00 With standard, 18.60

250 to 275 mm., 17.00 With standard, 19.80

275 to 300 mm., 18.00 With standard, 21.00

Leather cases not supplied for sizes above 6 inches or 150 mm.

Micrometers sent without case, and with standards unless otherwise ordered. Each size sent in a strong wooden box.

Micrometer Calipers

Starrett

These micrometers meet the demand for accurate gauges at a low price. They are better adapted for general use than the vernier or bar micrometer, as they can be set quickly for the different measurements and are more easily read.

Each micrometer is graduated to read by thousandths of an inch, is furnished with our patent lock nut, and is sent with or without ratchet stop as desired.

The frames are drop-forged from bar steel and are nicely finished.

The 1 inch has the decimal equivalents stamped on the frame. The other sizes are marked to show their capacity.

Standards for use in adjusting these micrometers will be furnished when desired at prices given below.

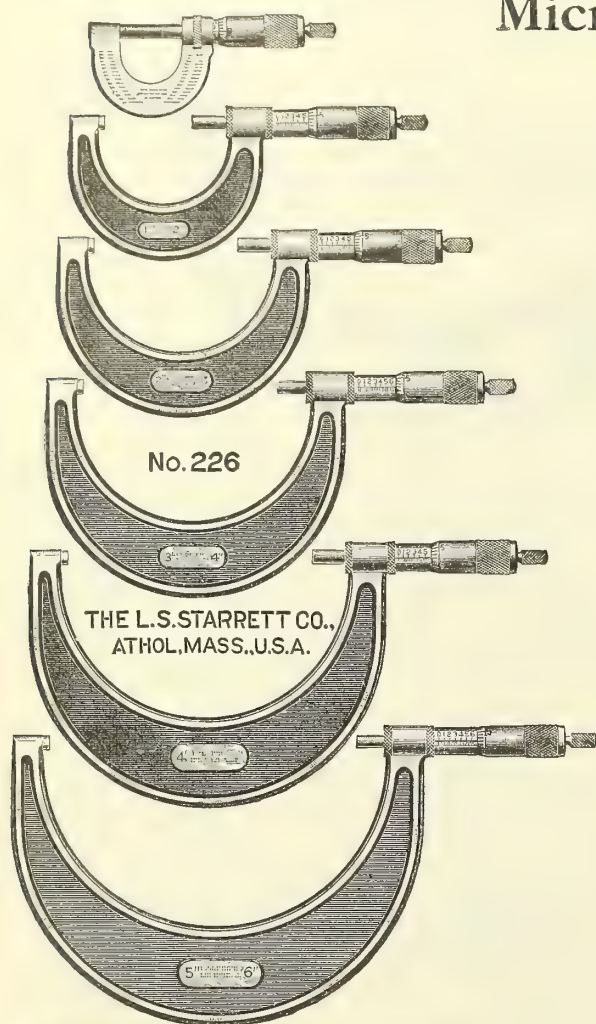
Micrometers will be supplied singly or in sets as desired, and will be sent with ratchet stop and without leather case or standard unless otherwise ordered. A reduction is made in the price when sold in sets.

No. 226 English Measure

Size Inches	Range Inches	Without Ratchet Stop Each	With Ratchet Stop Each	With Standard Extra Each
1	0 to 1	\$5.50	\$6.00	
2	1 to 2	4.50	5.00	\$1.00
3	2 to 3	6.00	6.50	1.00
4	3 to 4	6.50	7.00	1.15
5	4 to 5	7.25	7.75	1.35
6	5 to 6	8.00	8.50	1.50

No. 226 M Metric Measure

Size MM.	Range MM.	Without Ratchet Stop Each	With Ratchet Stop Each	With Standard Extra Each
25	0 to 25	\$5.50	\$6.00	
50	25 to 50	4.50	5.00	\$1.00
75	50 to 75	6.00	6.50	1.00
100	75 to 100	6.50	7.00	1.15
125	100 to 125	7.25	7.75	1.35
150	125 to 150	8.00	8.50	1.50



In Sets

The cases for these micrometers are well made and nicely finished.

They are covered with morocco leather and lined with velvet.



Case for Set of Three

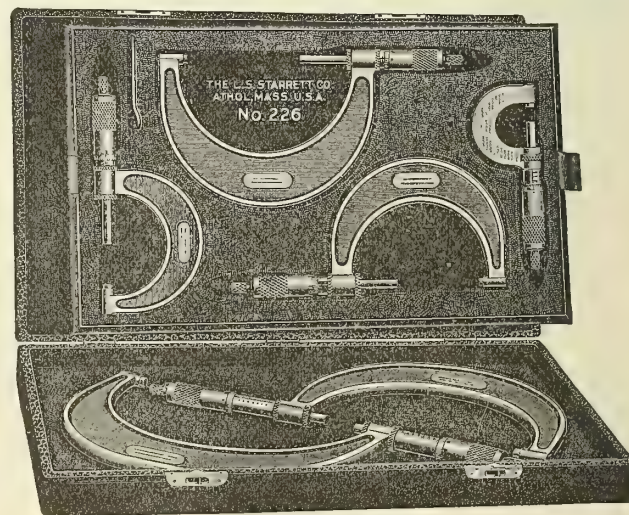
English Measure Sets, No. 226

Set of three Micrometers from 0 to 3 inches

Each	Each
Without ratchet stop . . . \$15.50	With ratchet stop . . . \$17.00
Without ratchet stop in case . . . 17.50	With ratchet stop in case . . . 19.00
Set of six Micrometers, including all sizes from 0 to 6 inches	
Without ratchet stop . . . \$36.00	With ratchet stop . . . \$39.00
Without ratchet stop in case . . . 40.00	With ratchet stop in case . . . 43.00

Cases only

For Set of three Micrometers, each . . . \$2.00



Case for Set of Six

Metric Measure Sets, No. 226 M

Set of three Micrometers from 0 to 75 mm.

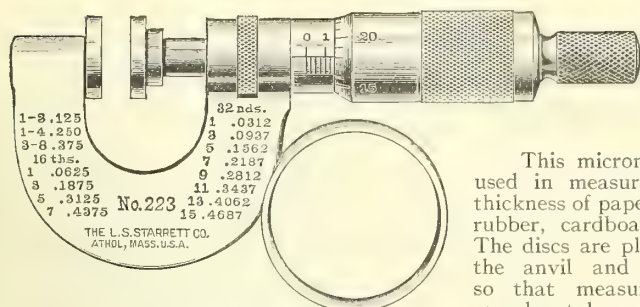
Each	Each
Without ratchet stop . . . \$15.50	With ratchet stop . . . \$17.00
Without ratchet stop, in case . . . 17.50	With ratchet stop in case . . . 19.00
Set of six Micrometers, including all sizes from 0 to 150 mm.	
Without ratchet stop . . . \$36.00	With ratchet stop . . . \$39.00
Without ratchet stop, in case . . . 40.00	With ratchet stop in case . . . 43.00

Cases only

For Set of six Micrometers, each . . . \$4.00

Micrometer Calipers

Starrett



This micrometer is used in measuring the thickness of paper, sheet rubber, cardboard, etc. The discs are placed on the anvil and spindle so that measurements can be taken without compressing the articles

Paper Gauge with Ring

measured. Measures all sizes less than $\frac{11}{32}$ of an inch by thousandths of an inch.

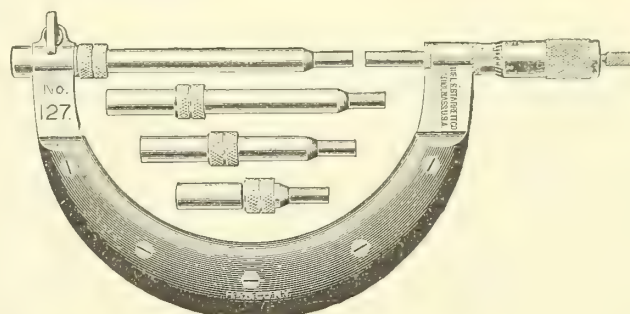
	With Ratchet Stop	Each
No. 223	English Measure	\$6.75
No. 223M	Metric Measure	6.75

	With Lock Nut and Ring without Ratchet Stop	
No. 223	English Measure	\$6.25
No. 223M	Metric Measure	6.25
No. 225	Same as 223, without Ring.	

	With Ratchet Stop	
No. 225	English Measure	\$6.00
No. 225M	Metric Measure	6.00

	Without Ratchet Stop	
No. 225	English Measure	\$5.50
No. 225M	Metric Measure	5.50
Leather Case, extra.		.50

Metric micrometers are furnished without table of decimal equivalents.



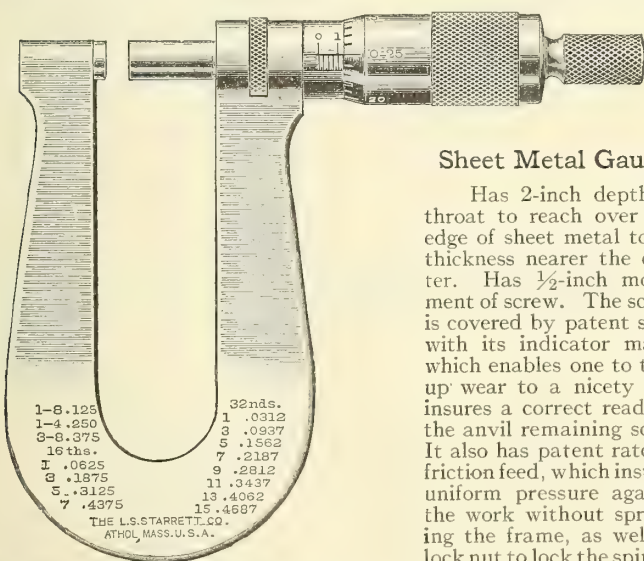
Large

These gauges were designed and made to meet the requirements of the Government in making big guns and other work in the Ordnance Department of Government shops, where they are now used. The frames are cut from steel plates, nicely finished. The sides are covered with hard rubber, put on with brass screws, preventing inaccuracy through expansion caused by change in temperature when held in warm hands. The micrometer screw adjusts one inch, reading $\frac{1}{1000}$ of an inch, and is provided with lock nut. The different length tail spindles, forming anvils, are interchangeable and have positive stops to set against their socketed seats. The adjusting collars on these anvils have notches to facilitate the removal of dirt, which would prevent them from setting accurately against the seat. The contact ends of spindles are slightly convex, to prevent catching on cylindrical work. Furnished with ratchet stop or speeded screw thumb piece, as desired.

	English Measure	Each
No. 127A	0 to 4 inches	\$25.00
No. 127B	4 to 8 inches	37.00
No. 127C	8 to 12 inches	50.00

	Metric Measure	
No. 127MA	0 to 100 mm	\$25.00
No. 127MB	100 to 200 mm	37.00
No. 127MC	200 to 300 mm	50.00

Furnished in case without extra charge. Prices on larger sizes quoted on application.

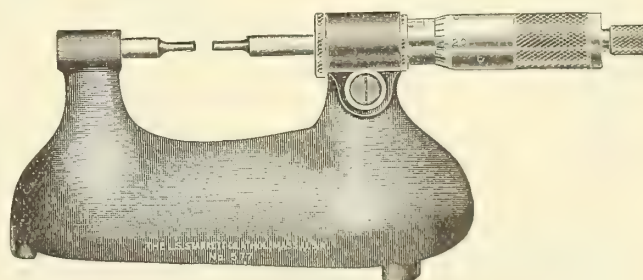


Sheet Metal Gauge

Has 2-inch depth of throat to reach over the edge of sheet metal to its thickness nearer the center. Has $\frac{1}{2}$ -inch movement of screw. The screw is covered by patent shell with its indicator mark, which enables one to take up wear to a nicety and insures a correct reading, the anvil remaining solid. It also has patent ratchet friction feed, which insures uniform pressure against the work without springing the frame, as well as lock nut to lock the spindle

firm when desired to make a solid gauge. Decimal equivalents are stamped on the frame. Weight of gauge, 3 ounces.

No. 222	English Measure	\$6.00
No. 222M	Metric Measure	6.00
Leather Case, extra.		.75



Bench

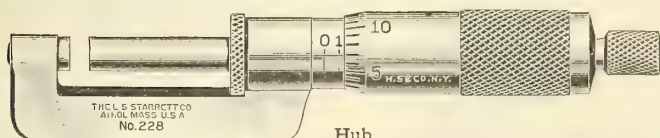
For measurements by thousandths or ten thousandths up to one inch. This caliper is made with a heavy base, which makes a very rigid and accurate tool, and will be found of advantage to inspectors, watch-makers, etc., who need to take fine measurements on work of such a class that it can be better inspected when used on a bench. This micrometer can also be supplied with regular anvil and spindle in place of those shown in cut when so desired.

Made with lock nut and ratchet stop. Can be supplied without ratchet stop at reduction of 50 cents from price given.

	English Measure	Each
No. 577 A, with fine points .075 diameter, reading by thousandths		\$7.50
No. 577 B, with regular points .235 diameter, reading by thousandths		7.00
No. 577 C, with fine points .075 diameter, reading by ten thousandths		8.50
No. 577 D, with regular points .235 diameter, reading by ten thousandths		8.00

	Metric Measure	
No. 577MA, with fine points .075 diameter		7.50
No. 577MB, with regular points .235 diameter		7.00

Metric Micrometers are furnished without table or decimal equivalents



Hub

This micrometer is especially useful in the manufacture of cutters and such articles where exact hub lengths are required.

The frame will easily pass through a $\frac{3}{4}$ -inch hole. The micrometer is made for measurements by thousandths up to one inch or 25 mm. Has lock nut and ratchet stop.

To one inch or 25 mm. Has lock nut and rubber stop.		
No. 228	English Measure	\$6.00
No. 228M	Metric Measure	6.00
Leather Case		.50

Metric Micrometers are furnished without table or decimal equivalents

Micrometer Calipers

Starrett Inside

When linear measurements are beyond the capacity of the ordinary micrometer it is frequently necessary to have a more accurate instrument than the rule or steel tape. The inside micrometers shown here were designed for and are now used by the Government in navy yards and arsenals. They consist of steel tubes with telescoping extensions combined with a one-inch screw micrometer movement. The tubes are accurately graduated and figured in inches and set to the inch marks showing the length wanted, and are firmly held by a knurled locking nut. The ends of the rods have hardened steel anvils. Combinations are possible which give a range from 32 to 107 inches and with micrometer accuracy over the whole range. A case is furnished with each set.

No. 121

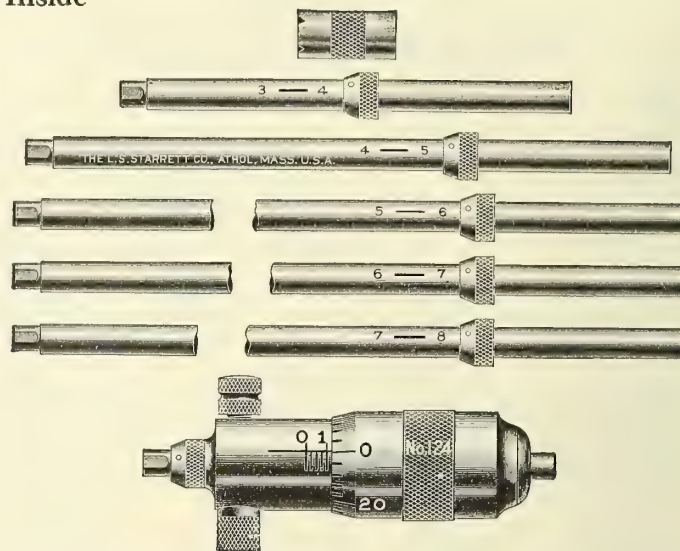
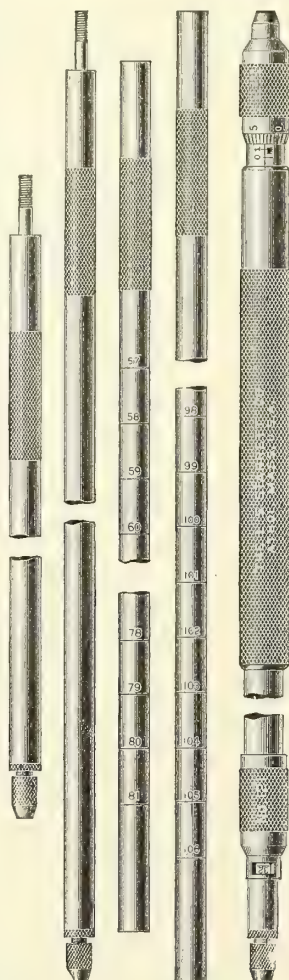
Set A Stock with one rod, 32 to 57 inches.....	Set \$25.00
Set B Stock with two rods, 32 to 82 inches.....	30.00
Set C Stock with three rods, 32 to 107 inches.....	35.00

No. 121M

Metric

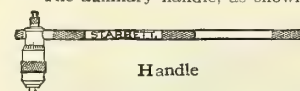
Same as above, but made to read in hundredths of a millimeter.

Set A Stock with one rod, 800 mm. to 1440 mm.....	Set \$25.00
Set B Stock with two rods, 800 mm. to 2070 mm.....	30.00
Set C Stock with three rods, 800 mm., to 2700 mm.....	35.00



The micrometer screw in the head has $\frac{1}{2}$ inch movement in sets A and B, one inch in set C, and by means of the extension rods furnished, the sizes as given for each set can be obtained. The extension rods are provided with a collar, against which the rods are conveniently and accurately set in the micrometer head. In setting these rods, see that the zero mark on the collar coincides with the zero mark on the micrometer head. With the rods are sent standard gauges or rings to slip on the rods, under the collars, to further extend the rod. The contact surfaces are all hardened, and provision is made for adjustment, to compensate for wear of the screw and contact surfaces.

The auxiliary handle, as shown in cut, can be used with sets A, B and D. The handle is screwed in the side of the micrometer head, in place of the knurled ear screw, which can be removed, thus fitting the tool for use in places too small for the hand. Handle is 50 cents extra.



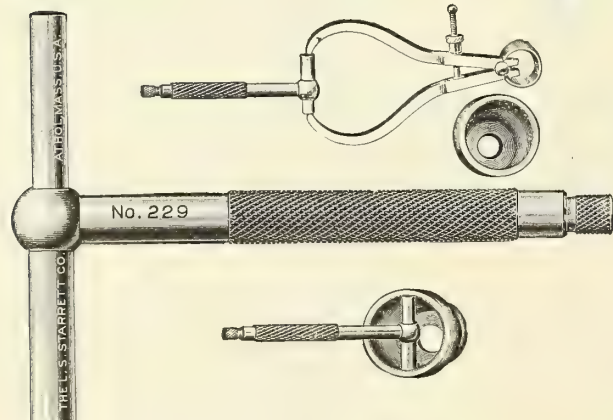
No. 124 English Measure. No. 124 M Metric Measure

Set	Number of Rods	Range	With Case Set	Without Case Set
A	6	2 to 8 inches	\$5.25	\$4.50
A	6	50 to 200 mm.	5.25	4.50
B	10	2 to 12 inches	6.50	5.50
B	10	50 to 300 mm.	6.50	5.50
C	4	8 to 32 inches	8.00	6.50
C	4	200 to 800 mm.	8.00	6.50
D	10	2 to 32 inches	12.50	11.00
D	10	50 to 800 mm.	12.50	11.00

Sent with Case unless otherwise ordered. Set D is a combination of Sets A and C

Telescoping Inside Gauges

Starrett



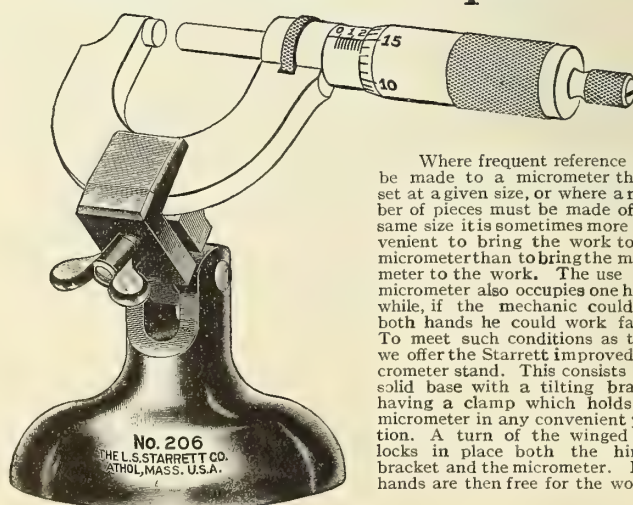
These are instruments from which the exact size of holes or slots can be taken by an outside caliper or micrometer, so that shrink, close or loose fits, varying in thousandths, or less, can be made and measured.

To use the instrument to measure a hole: Compress the telescoping head and lock the plunger by a slight turn of the knurled screw in the end of the handle. Insert the head inside the hole, release the lock and the plunger will expand across the hole to a fit. Now lock the plunger by a slight turn of the screw, withdraw and caliper over the ends of the head with a micrometer, which will give the exact size of the hole. The ends of each telescope head are hardened and are made on a radius of the smallest hole it will enter. These instruments are more reliable than ordinary leg calipers on account of the tendency of the legs of the latter to spring and of the points to catch in blow holes or other depressions. They can be used, of course, either in fitting cylinders to holes or holes to cylinder.

The gauges are made in sizes to enter holes from $\frac{1}{2}$ inch to 6 inches.

No. 229A Range $\frac{1}{2}$ inch to $\frac{3}{4}$ inch, each.....	\$1.50
No. 229B Range $\frac{3}{4}$ inch to $1\frac{1}{4}$ inches, each.....	1.75
No. 229C Range $1\frac{1}{4}$ inches to $2\frac{1}{8}$ inches, each.....	2.00
No. 229D Range $2\frac{1}{8}$ inches to $3\frac{1}{2}$ inches.....	2.50
No. 229E Range $3\frac{1}{2}$ inches to 6 inches, each.....	3.00

Stands for Outside Micrometer Calipers

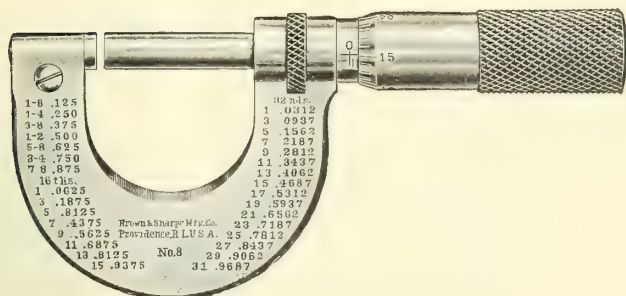


Where frequent reference is to be made to a micrometer that is set at a given size, or where a number of pieces must be made of the same size it is sometimes more convenient to bring the work to the micrometer than to bring the micrometer to the work. The use of a micrometer also occupies one hand, while, if the mechanic could use both hands he could work faster. To meet such conditions as these we offer the Starrett improved micrometer stand. This consists of a solid base with a tilting bracket having a clamp which holds the micrometer in any convenient position. A turn of the winged nut locks in place both the hinged bracket and the micrometer. Both hands are then free for the work.

No. 206 Each.....	\$2.00
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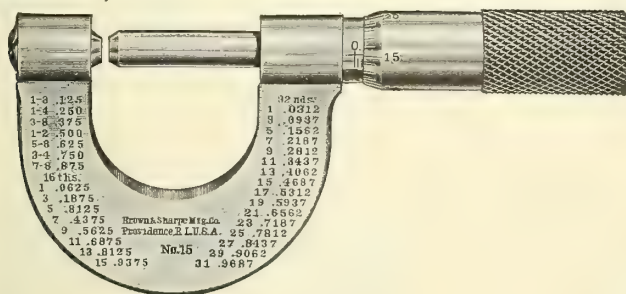
Micrometer Calipers

Brown & Sharpe

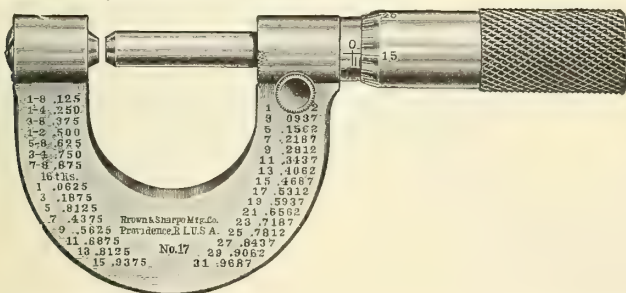


With Clamp Ring, as shown

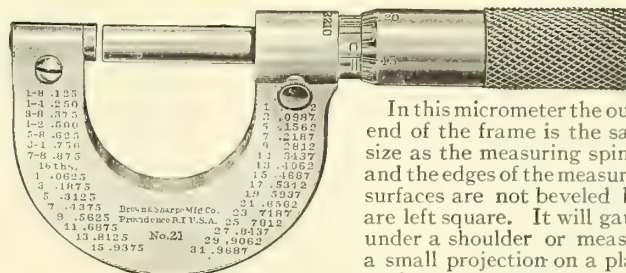
No. 5	English Measure, 0 to $\frac{1}{2}$ inch, by 1000ths	Each \$4.50
No. 5	Metric Measure, 0 to 13 mm. by 100ths	4.50
No. 7	English Measure, 0 to $\frac{1}{2}$ inch by 10,000ths	5.50
No. 8	English Measure, 0 to 1 inch by 1,000ths	5.50
No. 8	Metric Measure, 0 to 25 mm. by 100ths	5.50
No. 10	English Measure, 0 to 1 inch by 10,000ths	6.50
	Ratchet Stop, extra	.50
	Morocco Case, extra	.50



No. 15	English Measure, 0 to 1 inch by 1,000ths	Each \$5.00
No. 15	Metric Measure, 0 to 25 mm. by 100ths	5.00
No. 16	English Measure, 0 to 1 inch by 10,000ths	6.00
	Ratchet Stop, extra	.50
	Morocco Case, extra	.50

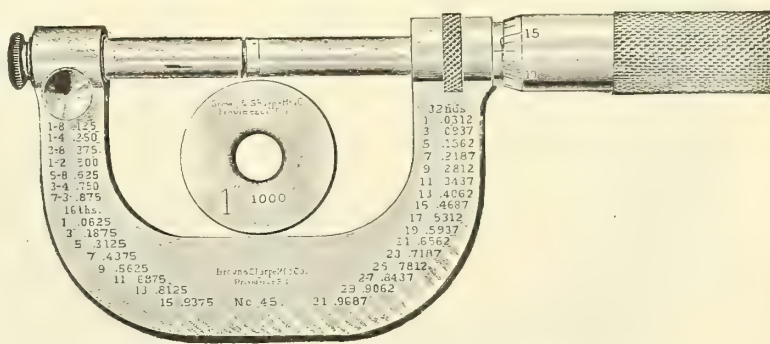


No. 17	English Measure, 0 to 1 inch by 1,000ths	Each \$5.50
No. 17	Metric Measure, 0 to 25 mm. by 100ths	5.50
No. 18	English Measure, 0 to 1 inch by 10,000ths	6.50
	Ratchet Stop, extra	.50
	Morocco Case, extra	.50



In this micrometer the outer end of the frame is the same size as the measuring spindle and the edges of the measuring surfaces are not beveled but are left square. It will gauge under a shoulder or measure a small projection on a plane surface.

A clamp screw is provided by which the measuring spindle can be held in any desired position. Each No. 21 English Measure, 0 to 1 inch by 10,000ths. \$6.50
Ratchet Stop, extra. .50
Morocco Case, extra. .50

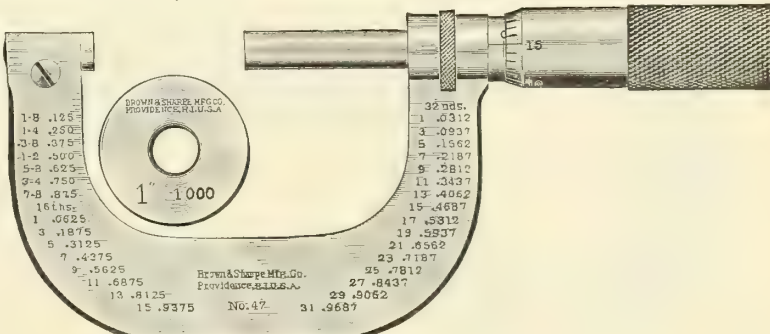


With Clamp Ring and Standard

No. 45	English Measure, 0 to 2 inches by 1,000ths	Each \$8.00
No. 45	Metric Measure, 0 to 50 mm. by 100ths	8.00
No. 46	English Measure, 0 to 2 inches by 10,000ths	9.00

A standard 1-inch gauge, to be used in adjusting the Caliper, is sent with each one of the above.

Ratchet Stop, extra	\$.50
Morocco Case, extra	.75



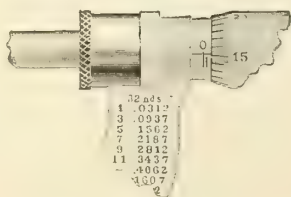
With Clamp Ring and Standard

No. 47	English Measure, 1 to 2 inches by 1,000ths	Each \$6.00
No. 47	Metric Measure, 25 to 50 mm. by 100ths	6.00
No. 48	English Measure, 1 to 2 inches by 10,000ths	7.00

A standard 1-inch gauge, to be used in adjusting the Caliper, is sent with each one of the above.

Ratchet Stop, extra	\$.50
Morocco Case, extra	.75

Spindle Protector No. 1



This Spindle Protector is an attachment which will fit any Brown & Sharpe 1-inch Micrometer, and also Micrometers Nos. 30 to 53 inclusive, listed on this and the following pages.

It consists of a metal cap containing a felt washer which fits tightly over the spindle in the manner shown above. It protects the spindle bearing from dust, emery grit, etc., without interfering with the action of the spindle or the clamp ring.

The capacity of the Caliper is slightly lessened by the application of the Protector. When ordering, customer should give the diameter of the micrometer frame.

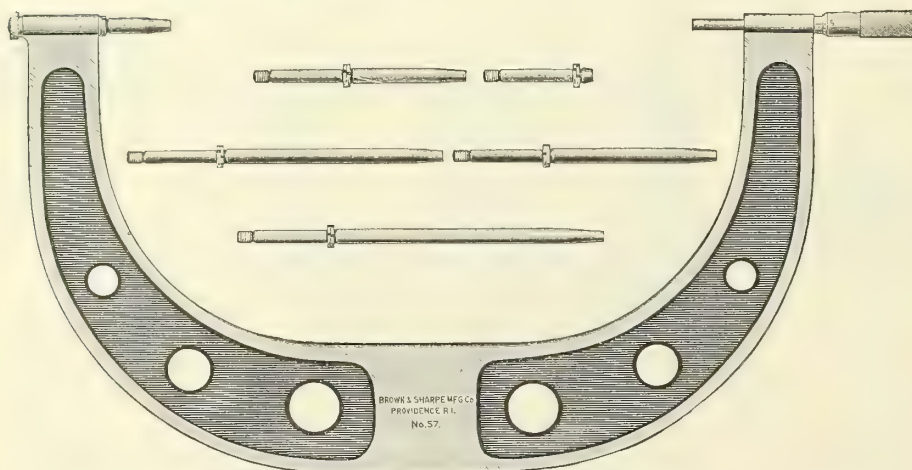
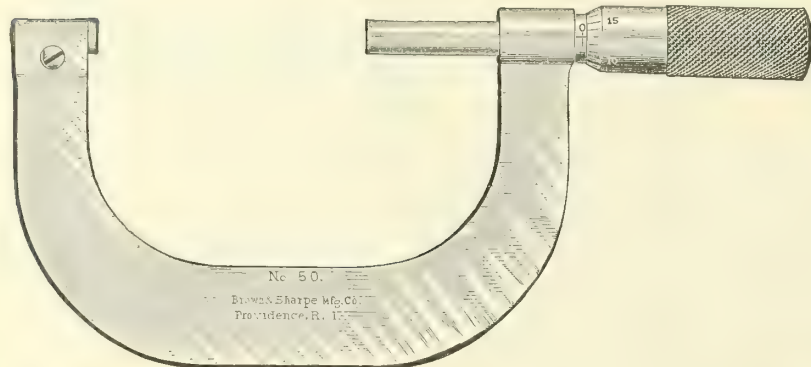
Note—All Metric Micrometers are furnished without table of decimal equivalents

SINCE
1848

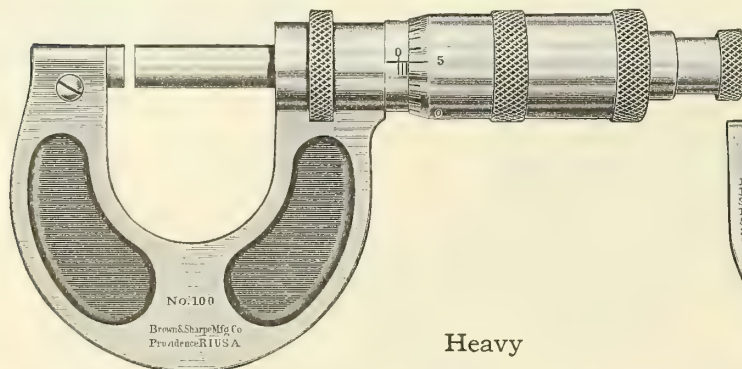
HAMMACHER SCHLEMMER & CO. NEW YORK

Micrometer Calipers

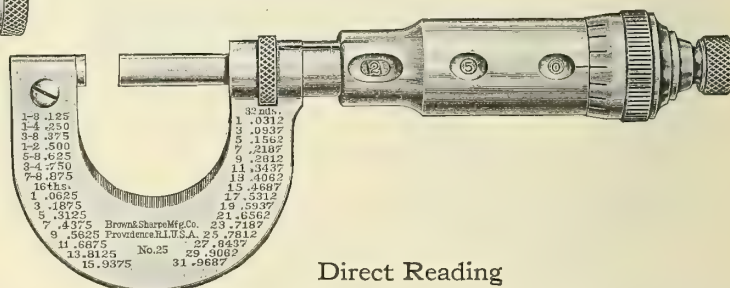
Brown & Sharpe



Six anvils are furnished and measure respectively, 11 to 12 inches, 10 to 11 inches, 9 to 10 inches, 8 to 9 inches, 7 to 8 inches and 6 to 7 inches.
With Standards..... \$31.10 Without Standards..... \$20.00
Sent with Standards unless otherwise ordered. If Ratchet Stop is wanted, add \$.50 to above prices.



Heavy



Direct Reading

Designed to meet the demands of constant and severe usage under adverse conditions, such as the dirt and moisture of grinding rooms or wherever it is desired to take frequent measurements with the clamp ring set.

Frame is made of heavy I-section with a much heavier spindle and threaded portion than is usually put in calipers. This permits greater stiffness and insures longer life to the screw under adverse conditions because of larger bearing surface for the threads.

The bearing parts and measuring surfaces are hardened to prevent wear and means are provided to compensate for wear.

Ratchet stops and a clamp ring firmly hold the spindle and preserve the setting.

Number	Range English Inches	Range Metric MM.	Each	With Standard	Morocco Case Extra
100	0 to 1	0 to 25	\$7.00	.....	\$ .75
102	1 to 2	25 to 50	8.00	\$9.00	1.00
104	2 to 3	50 to 75	9.00	10.00	1.25
106	3 to 4	75 to 100	10.00	11.15	1.75
108	4 to 5	100 to 125	11.00	12.35	2.00
110	5 to 6	125 to 150	12.00	13.50	2.25

Without Lock Nut

No. 50	English Measure, 2 to 3 inches by 1,000ths...	\$7.00
No. 50	Metric Measure, 50 to 75 mm. by 100ths....	7.00
No. 51	English Measure, 2 to 3 inches by 10,000ths..	8.00

With Lock Nut

No. 52	English Measure, 2 to 3 inches by 1,000ths...	7.50
No. 52	Metric Measure, 50 to 75 mm. by 100ths....	7.50
No. 53	English Measure, 2 to 3 inches by 10,000ths..	8.50

Ratchet Stop, extra \$.50 Standard, extra .50
Morocco Case, extra \$1.00

Furnished with Standard unless otherwise ordered

No. 55 English Measure, 3 to 6 inches by 1,000ths
No. 55 Metric Measure, 75 to 150 mm. by 100ths

Three anvils are furnished: the long anvil measures from 3 to 4 inches; the intermediate from 4 to 5 inches, and the short one from 5 to 6 inches.

Each anvil is provided with separate means of adjustment for wear. They are easily and quickly inserted in the frame and are held solidly to their bearings by a knurled nut.

Means of adjustment for the measuring screw are also provided.

With Standards..... \$14.00
Without Standards..... 10.00
If Ratchet stop is wanted, add \$.50 to above prices.

Sent with Standards unless otherwise ordered

No. 57 English Measure, 6 to 12 inches, by 1,000ths.

No. 57 Metric Measure, 150 to 300 mm. by 100ths.

Presents an entirely new feature, in that thousandths of an inch can be read in exact figures without the necessity of calculation with the aid of graduation lines. The mechanical principle of a screw free to move in a fixed nut, used in our regular line of Micrometers and with which mechanics are familiar, is retained.

The figures showing in the opening nearest the frame indicate the movement of the spindle by tenths of an inch. Those in the next opening register the movement by hundredths of an inch, while the figures in the last opening indicate the movement by thousandths. In addition, the thimble on the end of the sleeve is graduated in connection with a line on the sleeve and to read to thousandths of an inch. By means of these lines, fractional parts of a thousandth may be estimated.

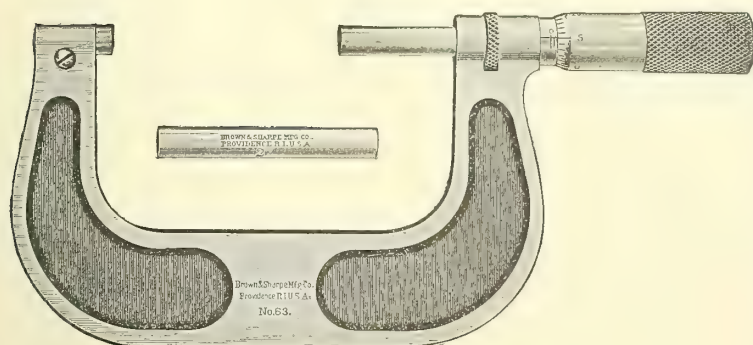
The registering mechanism is so constructed that the dials are positively locked and the Micrometer cannot get out of adjustment and read incorrectly.

Parts not subject to wear or stress are made of an alloy to eliminate weight. All other parts are made of steel, the spindle and anvil being hardened. The Caliper may be adjusted for wear on anvil, or for looseness in the thread, same as on the regular line of Micrometers.

No. 25. English Measure, 0 to 1 inch, in Morocco Case, \$12.00

Micrometer Calipers

Brown & Sharpe



These Micrometers are made to meet the demand for an inexpensive, yet accurate measuring tool. They are more convenient for general use than the bar Micrometer or Vernier, as they can be more readily set for the different measurements and are more easily handled where rapid measurements are required.

The frame is of I-section, thus combining the greatest rigidity and strength with lightness.

Number	Range English Inches	Range Metric Millimeters	Without Standards Each	With Standards Each	Morocco Case Extra
61	1 to 2	25 to 50	\$5.00	\$6.00	\$.75
*62	1 to 2	25 to 50	6.00	7.00	.75
63	2 to 3	50 to 75	6.00	7.00	1.00
*64	2 to 3	50 to 75	7.00	8.00	1.00
65	3 to 4	75 to 100	6.50	7.65	1.50
67	4 to 5	100 to 125	7.25	8.60	1.75
69	5 to 6	125 to 150	8.00	9.50	2.00
71	6 to 7	150 to 175	9.00	10.60	
72	7 to 8	175 to 200	10.00	11.70	
73	8 to 9	200 to 225	11.00	12.80	
74	9 to 10	225 to 250	12.00	13.90	
75	10 to 11	250 to 275	13.00	15.00	
76	11 to 12	275 to 300	14.00	16.10	
77	12 to 13	300 to 325	15.50	17.70	
78	13 to 14	325 to 350	17.00	19.30	
79	14 to 15	350 to 375	19.00	21.40	
80	15 to 16	375 to 400	21.00	23.50	
81	16 to 17	400 to 425	23.00	25.60	
82	17 to 18	425 to 450	25.00	27.70	
83	18 to 19	450 to 475	27.00	29.80	
84	19 to 20	475 to 500	30.00	32.90	

*62 and 64 differ from the others only in reading to ten thousandths. For Ratchet Stop, add 50 cents to above prices.

In Sets

This Set is inexpensive, accurate and trustworthy for inspecting the finished product as well as for general shop use. For many classes of work they are more convenient than the Vernier Caliper.

The 1-inch Caliper is the standard type with decimal equivalents stamped on the frame and is provided with a clamp ring; the 2, 3, 4, 5 and 6-inch Calipers have frames of I-section, which combines the greatest rigidity and lightness.

Each micrometer is graduated to read to thousandths of an inch, or hundredths of a millimeter.

English or Metric Measure

No. 135 Six Micrometers, 0 to 6 Set	
inches or 0 to 150 mm.	\$36.00
With Ratchet Stops.	39.00
With Standards.	42.00
With Standards and Ratchet Stops. . .	45.00
Leather Case, extra. Each.	4.00
No. 136 Six Micrometers, 0 to 6 inches	
or 0 to 150 mm.	43.50
With Standards.	49.50
With Ratchet Stops.	46.50
With Standards and Ratchet Stops. . .	52.50
Leather Case, extra. Each.	4.00

This Set differs from Micrometer Set No. 135 only in being graduated to read to ten-thousandths of an inch.

In substantial wooden case.

English or Metric Measure

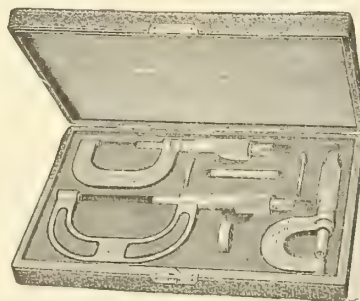
No. 137 Six Micrometers, 6 or 12 Set	
inches or 150 mm. to 300 mm.	\$68.00
With Standards.	79.10
With Ratchet Stops.	71.00
With Standards and Ratchet Stops. . .	82.10
No. 139 Four Calipers, measuring	
from 12 to 16 inches or 300 mm. to	
400 mm.	72.00
With Standards.	81.40
With Ratchet Stops.	74.00
With Standards and Ratchet Stops. . .	83.40
No. 140 Four Calipers, measuring	
from 16 to 20 inches or 400 mm. to	
500 mm.	104.00
With Standards.	115.00
With Ratchet Stops.	106.00
With Standards and Ratchet Stops. . .	117.00

English or Metric Measure

No. 131 Three Micrometers, Nos. 8 Set	
47 and 52, 0 to 3 inches or 0 to 75 mm. .	\$18.50
With Standards.	19.50
With Ratchet Stops.	20.00
With Standards and Ratchet Stops. . .	21.00
Case, extra. Each.	2.00

English Measure

Set No. 132 Three Micrometers, Nos.	
10, 48 and 52, 0 to 3 inches by ten	
thousandths.	21.50
With Standards.	22.50
With Ratchet Stops.	23.00
With Standards and Ratchet Stops. . .	24.00
Case, extra. Each.	2.00



This Set of Micrometers forms an inexpensive set of accurate and convenient reference tools for inspecting the finished product as well as for general shop use.

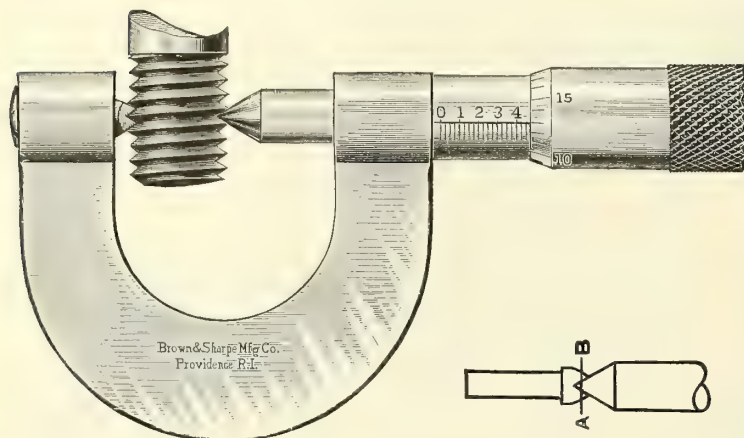
Each Micrometer is graduated to read to thousandths of an inch, or hundredths of a millimeter. The set is neatly arranged in a substantial case lined with velvet and covered with leather.

English Measure

No. 133 Three Micrometers, Nos.	
11, 61 and 63, 0 to 1 inch or 0 to 75	
mm.	\$15.50
With Standards.	17.50
With Ratchet Stops.	17.00
With Standards and Ratchet Stops. . .	19.00
Case, extra. Each.	2.00
Sent with Standards and without Ratchet Stops unless otherwise ordered.	
No. 134 Three heavy Micrometers,	
Nos. 100, 102 and 104, 0 to 3	
inches or 0 to 75 mm., with Ratchet	
Stops.	\$24.50
With Standards and Ratchet Stops. . .	26.50
Case, extra. Each.	2.00
Sent with Standards unless otherwise ordered.	

Micrometer Calipers

Brown and Sharpe Screw Thread



The distinctive feature in the construction of this micrometer is that the end of the movable spindle is pointed and the fixed end or "anvil" is V shaped. Enough is taken from the end of the point and the bottom of the V is carried down low enough, so that they will not rest on the bottom or top of the thread to be measured but on the cut surface. As the thread itself is measured, it will be seen that the actual outside diameter of the piece does not enter into consideration.

As we measure one-half of the depth of the thread from the top, on each side, the diameter of the thread as indicated by the micrometer, or the pitch diameter, is the full size of the thread less the depth of one thread.

When the point and anvil are in contact the 0 represents a line drawn through the plane A, B, and if the micrometer is opened, say to .500, it represents the distance of the two planes .500 inch apart.

Number	Capacity Inches	Range Threads Per Inch	Form of Thread	Each
150	1 1/2	48 to 64	V and U. S.	\$7.00
152	1	8 to 13	V and U. S. or Whitwh. Std.	7.50
153	1	14 to 20	V and U. S. or Whitwh. Std.	7.50
154	1	22 to 30	V and U. S.	7.50
155	1	32 to 40	V and U. S.	7.50
156	2	4 1/2 to 7	V and U. S. or Whitwh. Std.	9.00
157	2	8 to 13	V and U. S.	9.00
158	2	14 to 20	V and U. S.	9.00
159	2	22 to 30	V and U. S.	9.00

These Calipers can also be furnished in metric sizes for V and U. S. or Whitworth Standards.

Tables for Use in Connection with Screw Thread Micrometer Calipers

$$\text{Caliper Reading or Pitch Diameter for V Threads} = D - \frac{.866}{N}$$

V Threads

Diameter	Threads Per Inch	Caliper Reading or Pitch Diameter		Diameter* Inches	Threads Per Inch	Caliper Reading or Pitch Diameter	
		D — .866	.866			D — .866	.866
D	N	D — .866	N	D	N	D — .866	N
64			.0135	1/4	24	.2139	.0361
62			.0140	1/4	20	.2067	.0433
60			.0144	1/8	20	.2692	.0433
58			.0149	1/8	18	.2644	.0481
56			.0155	3/8	18	.3269	.0481
54			.0160	3/8	16	.3209	.0541
52			.0167	1/2	16	.3834	.0541
50			.0173	1/2	14	.3756	.0619
48			.0180	1/2	14	.4381	.0619
46			.0188	1/2	13	.4334	.0666
44			.0197	1/2	12	.4278	.0722
42			.0206	1/2	14	.5006	.0619
40			.0217	1/2	12	.4903	.0722
38			.0228	3/8	11	.5463	.0787
36			.0241	3/8	10	.5384	.0866
34			.0255	3/8	10	.6009	.0866
32			.0271	3/8	10	.6634	.0866
30			.0289	7/8	9	.7788	.0962
28			.0309	1	8	.8918	.1082
26			.0333	1 1/8	8	1.0168	.1082
				1 1/4	7	1.1263	.1237
				1 1/2	6	1.3557	.1443

$$\text{Caliper Reading or Pitch Diameter for U. S. Threads} = D - \frac{.6495}{N}$$

U. S. Standard Threads

Diameter	Threads Per Inch	Caliper Reading or Pitch Diameter		Diameter Inches	Threads Per Inch	Caliper Reading or Pitch Diameter	
		D — .6495	.6495			D — .6495	.6495
D	N	D — .6495	N	D	N	D — .6495	N
64			.0101	1/4	20	.2175	.0325
62			.0105	1/8	18	.2764	.0361
60			.0108	1/8	16	.3344	.0406
58			.0112	1/8	14	.3911	.0464
56			.0116	1/2	13	.4501	.0499
54			.0120	1/8	12	.5084	.0541
52			.0125	3/8	11	.566	.0590
50			.0130	3/8	10	.6851	.0649
48			.0135	7/8	9	.8029	.0721
46			.0141	1	8	.9188	.0812
44			.0148	1 1/8	7	1.0322	.0928
42			.0155	1 1/4	7	1.1572	.0928
40			.0162	1 3/8	6	1.2668	.1082
38			.0171	1 1/2	6	1.3918	.1082
36			.0180	1 5/8	5 1/2	1.507	.1180
34			.0191	1 3/4	5	1.6201	.1299
32			.0203	1 7/8	5	1.7451	.1299
30			.0217	2	4 1/2	1.8557	.1443
28			.0232	2 1/2	4	2.3376	.1624
26			.0250	3	3 1/2	2.8145	.1855
24			.0271	3 1/2	3 1/4	3.3002	.1998
22			.0295	4	3	3.7835	.2165

*These figures give the outside diameter for screws with threads cut theoretically sharp. As it is not practical to make these threads sharp the outside diameter will measure less than the figures given, the pitch diameter remaining the same. The pitch diameter for taps should be larger than for screws.

$$\text{Caliper Reading or Pitch Diameter, Whitworth Threads} = D - \frac{.640}{N}$$

Whitworth Standard Threads

Diameter	Threads per Inch	Caliper Reading or Pitch Diameter	
		D — .640	.640
D	N	D — .640	N
1/4	20	.2180	.0320
5/16	18	.2769	.0355
3/8	16	.3350	.0400
1/2	14	.3918	.0457
5/8	12	.4467	.0533
3/4	12	.5092	.0533
7/8	11	.5668	.0582
1	11	.6293	.0582
1 1/8	10	.6860	.0640
1 1/4	10	.7485	.0640
1 1/2	9	.8039	.0711
1 3/4	9	.8664	.0711
2	8	.9200	.0800
2 1/8	7	1.0336	.0914
2 1/4	7	1.1586	.0914
2 1/2	6	1.2834	.1066
2 3/4	6	1.3934	.1066
3	5	1.4970	.1280
3 1/4	5	1.6220	.1280
3 1/2	4 1/2	1.7328	.1422
3 3/4	4 1/2	1.8578	.1422
4	4 1/2	1.9828	.1422

$$\text{Caliper Reading or Pitch Diameter, A.S.M.E. Standard} = D - \frac{.6495}{N}$$

Same form of Thread as the U. S. Standard

A. S. M. E. Standard Threads

Number	Basic and Maximum Outside Diameter	Threads per Inch	Caliper Reading or Maximum Pitch Diameter	
			D — .6495	.6495
	D	N	D — .6495	N
0	.060	80	.0519	.0081
1	.073	72	.064	.0090
2	.086	64	.0759	.0101
3	.099	56	.0874	.0116
4	.112	48	.0985	.0135
5	.125	44	.1102	.0148
6	.138	40	.1218	.0162
7	.151	36	.1330	.0180
8	.164	36	.146	.0180
9	.177	32	.1567	.0203
10	.190	30	.1684	.0217
12	.216	28	.1928	.0232
14	.242	24	.2149	.0271
16	.268	22	.2385	.0295
18	.294	20	.2615	.0325
20	.320	20	.2875	.0325
22	.346	18	.3099	.0361
24	.372	16	.3314	.0406
26	.398	16	.3574	.0406
28	.424	14	.3776	.0464
30	.450	14	.4036	.0464

As there is no standard of diameter for the finer pitches the columns for diameter and caliper reading, or pitch diameter, are left blank. The column on the right gives the number to be subtracted from the diameter to obtain the caliper reading, or pitch diameter.

Micrometer Calipers

Brown & Sharpe



Heads

These Micrometer Heads are easily attached to machines or tools where fine measurements are required.

No. 290 English or Metric Measure Half-Inch **No. 294 English or Metric Measure One Inch**

Graduated to read to thousandths of an inch or hundredths of a millimeter.

With or without Ratchet Stop. Each \$3.00

The 1/2 inch Micrometer Heads differ from the 1 inch only in the size and range.

Length from lower end of barrel to shoulder, 3/8 inch; diameter of barrel, 3/8 inch.

No. 291 English Measure

Graduated to read to ten thousandths of an inch.

With or without Ratchet Stop. Each \$4.00

This tool differs from Micrometer Head No. 290 only in being graduated to read to ten thousandths as well as thousandths of an inch.

Graduated to read to thousandths of an inch or hundredths of a millimeter.

With or without Ratchet Stop. Each \$3.50

Length, from lower end of barrel to shoulder, 3/4 inch; diameter, 3/8 inch.

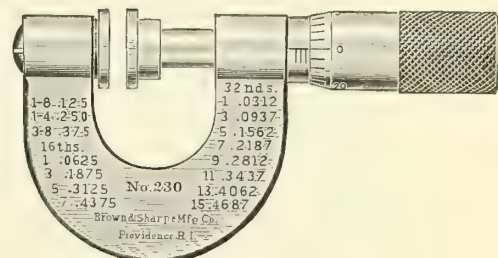
No. 295 English Measure

Graduated to read to ten-thousandths of an inch.

With or without Ratchet Stop. Each \$4.50

This tool differs from Micrometer Head No. 294 only in being graduated to read to ten thousandths as well as thousandths of an inch.

Furnished with Clamp Ring if desired



Paper Gauge No. 230 English or Metric Measure

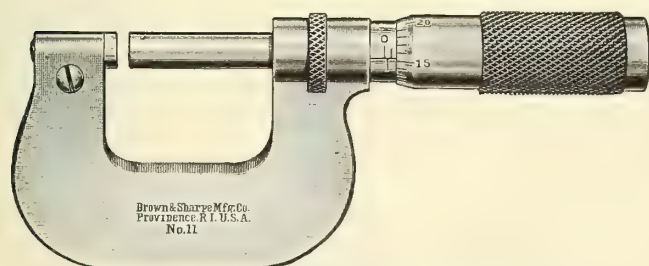
Range, 0 to 3/4-inch or 0 to 9 mm.

Each \$5.50
With Ratchet Stop 6.00
Morocco Case. Extra50

This Caliper measures all sizes less than three-eighths of an inch, by thousandths of an inch.

In measuring the thickness of paper, sheet rubber or other yielding substances, it is advantageous to use discs or washers on the ends of the measuring spindle and adjusting screw. The comparatively large sizes have less tendency to compress the objects measured and enable accurate measurements to be quickly obtained.

This Caliper is also made to measure to hundredths of a millimeter. When so made the table of decimal equivalents is omitted.



No. 11 English or Metric Measure

Range, 0 to 1-inch or 0 to 25 mm.

Each \$5.50
With Ratchet Stop 6.00
Morocco Case. Extra50

This Caliper is new in design, it differs from the others in the type of frame, and method of graduating.

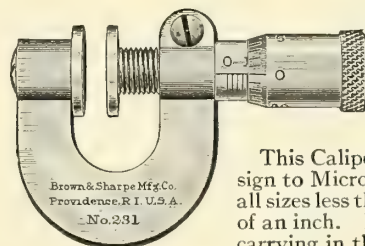
The graduations on the hub that run parallel to the axis of the screw run alternately one above and one below the measuring line. Those above the measuring line are for 0, 50, 100, 150, etc.; those below are for 25, 75, 125, etc. This is an important feature, as it facilitates reading the Caliper at a glance, and eliminates to a certain extent errors likely to arise through reading too rapidly close graduations. The cut illustrates the style of graduations.

This Caliper measures all sizes less than an inch by thousandths of an inch.

The adjustment of the measuring screw to compensate for wear is made by a taper nut.

Every Caliper is provided with a Clamp Ring which clamps the spindle and preserves the setting.

Metric Measure. This Caliper is also made to measure all sizes less than twenty-five millimetres by hundredths of a millimetre.

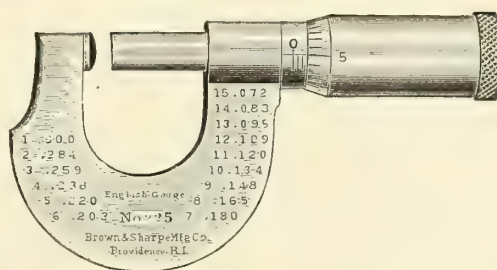


Pocket Paper Gauge No. 231 English Measure

Range, 0 to 1/4-inch

Each \$5.00
In Morocco Case 5.50

This Caliper, shown full size, is similar in design to Micrometer Caliper No. 230. It measures all sizes less than one-quarter inch by thousandths of an inch. It will be found well adapted for carrying in the pocket.



Tubing No. 225

This Caliper, shown full size, is designed especially to meet the demand for an instrument to measure accurately the thickness of tubing and is well adapted for use in tube works, boiler shops, bicycle manufacturing, etc.

It will measure the thickness of tubing from 5/16-inch inside diameter upwards by thousandths of an inch.

The anvil or fixed measuring point is rounded on the end so that it touches at only one point on the inside of the tube and, the end of the movable spindle being flat, touches at only one point on the outside, thus giving the exact thickness of the tube.

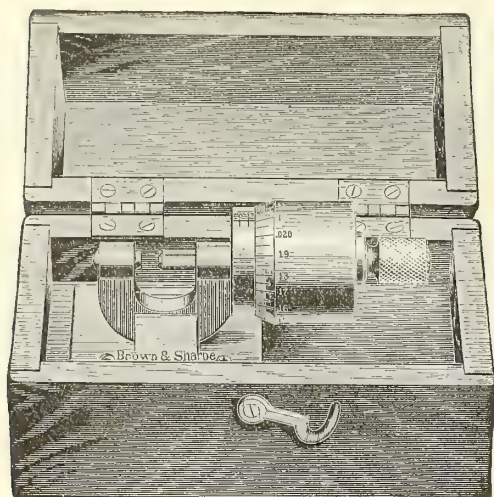
English or Metric Measure

Range, 0 to 1/2-inch or 0 to 13 mm.

Each \$4.50
With Ratchet Stop 5.00
Morocco Case. Extra50

Micrometer Calipers

Brown & Sharpe



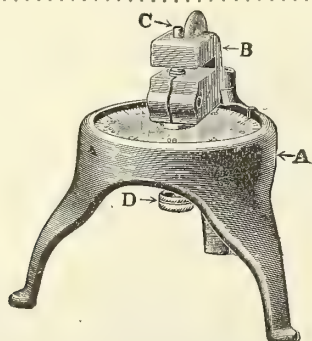
No. 233

This Caliper is shown half size and measures all sizes less than $\frac{1}{2}$ inch by ten-thousandths of an inch. The measurements can be read directly from the barrel; the screw has fifty threads and the barrel is divided into two hundred equal parts.

This Caliper is found of service to wire drawers, watch-makers and others who desire fine measurements and whose work is of such a class that a Micrometer Caliper can be used when placed on a bench.

This Caliper is also made to measure all sizes less than thirteen millimetres by hundredths of a millimetre.

No. 233 English or Metric Measure, range 0 to $\frac{1}{2}$ inch, in case Each.....\$15.00



Sheet Metal No. 220

This Micrometer measures to $\frac{1}{4}$ inch by thousandths of an inch. It is a convenient tool for jewelers, silversmiths, sheet metal rollers and workers, rubber and paper manufacturers, type founders, etc.

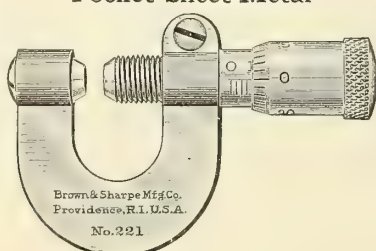
The frame A supports the measuring mechanism. The arm B holds the measuring screw D and the adjusting screw C.

The knurled thumb screw D operates the measuring screw and the movable dial.

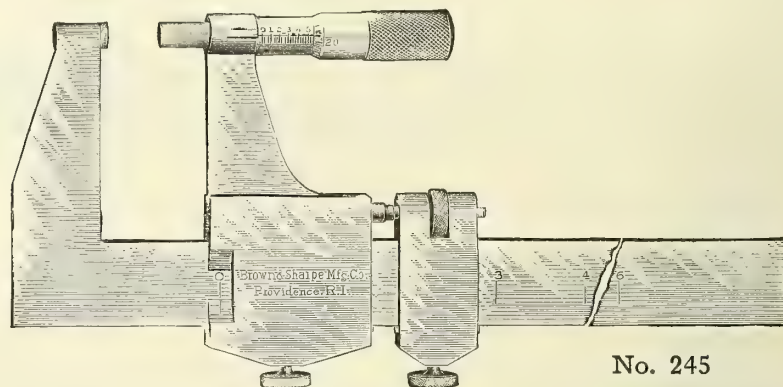
The movable dial is of German silver and the graduations are read by means of the pointer shown at the right of arm B. Provision is made for compensation for wear.

Each.....\$10.00

Pocket Sheet Metal



No. 221 English Measure, 0 to $\frac{3}{16}$ inch, by 1000ths.....\$4.00
With Ratchet Stop.....4.50
Morocco Case. Extra......50



No. 245

No. 245 English or Metric Measure, range, 0 to 6 inches length, 4 inches diam. or 0 to 150 mm. length, 100 mm. diam., each....\$30.00
With Ratchet Stop, each.....30.50

This Caliper, shown about half size, measures all sizes to six inches in length and four inches in diameter, by thousandths of an inch.

The outer end of the frame is the same size as the measuring spindle and the edges of the measuring surfaces are not beveled but are left square.

The slide can be set accurately by means of the graduated lines on the bar.

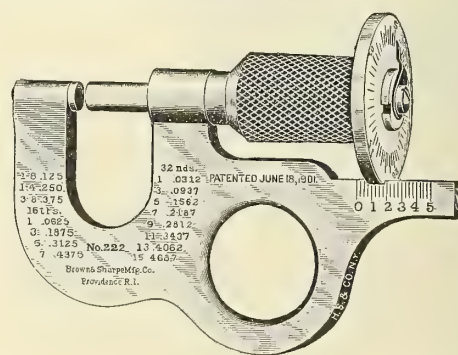
All parts of inches are obtained by means of the micrometer screw. This Caliper is also made to measure all sizes less than 150 mm. in length and 100 mm. in diameter by hundredths of a millimetre.

No. 246 English or Metric Measure, range, 0 to 12 inches length, 6 inches diam. or 0 to 300 mm. length, 150 mm. diam., each....\$35.00
With Ratchet Stop, each.....35.50

This Caliper, similar in design to Micrometer Caliper No. 245, is made to measure all sizes to twelve inches in length and six inches in diameter by thousandths of an inch.

No. 248 English or Metric Measure, range, 0 to 24 inches length, 6 inches diam. or 0 to 600 mm. length, 150 mm. diam. each....\$45.00
With Ratchet Stop, each.....45.50

This Caliper, similar in design to Micrometer Caliper No. 245, is made to measure all sizes to twenty-four inches in length and six inches in diameter by thousandths of an inch.



Sheet Metal No. 222

This Micrometer is especially convenient for sheet metal workers and handlers.

By placing the middle finger of the right hand through the ring, the Micrometer is held at right angles to the sheet to be measured, and readings made while in this position. The thimble is operated by the forefinger and thumb of the same hand.

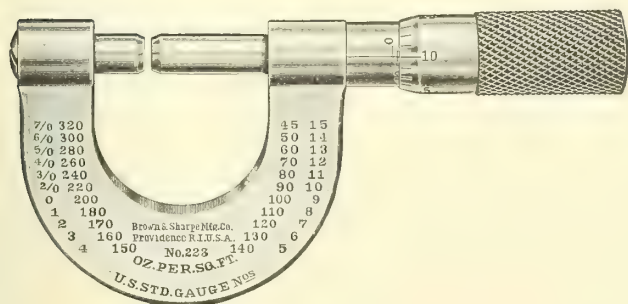
The Micrometer measures all sizes less than one-half of an inch by one-half thousandths of an inch and one-quarter thousandths are estimated.

To facilitate the reading of the Micrometer while held in position, the one-half thousandths readings are taken from the dial at the top of the spindle, the readings being indicated by the pointer; and the twenty-five thousandths readings, or those corresponding to the readings on the barrel of an ordinary Micrometer, are taken from the scale at the top of the frame.

English Measure, 0 to $\frac{1}{2}$ inch by 1,000ths.....\$5.50
Metric Measure, 0 to 13 mm. by 100ths.....5.50
Morocco Case. Extra.....50

Micrometer Calipers

Brown & Sharpe



No. 223 U. S. Standard Gauge for Sheet and Plate Iron and Steel

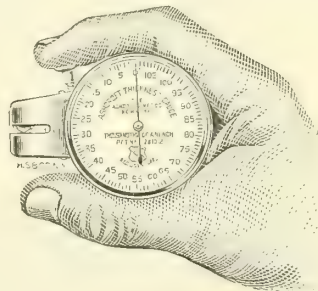
Range, 0 to 320 ounces per square foot

Each	\$5.00
With Ratchet Stop	5.50
Morocco Case. Extra .....	.50

This Caliper is shown nearly full size and is graduated to show the weight of sheet or plate iron or steel in ounces per square foot. It measures all thicknesses less than 0.000000, or approximately $\frac{1}{2}$ inch, each of the divisions on the thimble indicating an ounce and each division on the barrel, 20 ounces.

By the table of equivalents stamped on the frame of the Caliper, the gauge number of the sheet or plate can be quickly determined when its weight per square foot has been ascertained.

Ashcroft Instantaneous Thickness Gauge



For accurately and instantly determining the thickness to quarter thousandths of an inch of flat or curved sheet metal, tubing, leather, glass, wire, paper, insulating material for electrical apparatus, small watch parts, etc., etc.

Type "S," with special contact surfaces for measuring flat or curved sheet steel, brass, tin, silver, platinum, gold, watch glasses and dials, also cases, parts of miniature models, tubing, etc., not exceeding 0.11 inch in thickness. Each..... \$10.00

Type "X," with special contact surfaces for measuring wire, small drills, watch springs, dowel and cotter pins, and many other small parts of watches and apparatus, which have to be accurately measured, and are not over 0.11 inch in diameter or thickness. Each..... 10.00

Type "F," for measuring the thickness of paper, Bristol board, box board, glass, insulating materials for electrical apparatus, all kinds of paper stock in various sizes and many other sheet materials. Each..... 10.00

Type "R," with two flat contact surfaces. This type is made especially for rubber and leather. Each..... 10.00

Types "S," "X," "F" or "R" will be furnished with metric dial, if so specified.

Extra Black Morocco Cases. Each..... .50

Brown & Sharpe

No. 237 Rolling Mill Gauge, English or Metric Measure

Range, 0 to 1 inch or 0 to 25 mm.

Each	\$7.00
With Ratchet Stop	7.50
Morocco Case. Extra	1.50

This Caliper is designed for sheet metal workers' use, although it is also adapted for a wide range of other uses requiring a caliper of unusual depth. The opening in the frame is about 3 inches deep, a feature much appreciated, as it enables sheet metal to be more accurately measured than would be possible with an ordinary Micrometer.

No. 235. Rolling Mill Gauge, English or Metric Measure

Range, 0 to .400 inch or 0 to 12 mm.

Each, including Ratchet Stop	\$7.00
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This Caliper is similar to Micrometer Caliper No. 237, but the readings are taken from a disc mounted on the hub instead of the thimble. Dial reads to half thousandths or .01 mm. Opening in frame about $4\frac{1}{2}$ inches deep.

No. 238 Rolling Mill Gauge, English or Metric Measure

Range, 0 to $\frac{1}{2}$ inch or 0 to 13 mm.

Each	\$6.00
With Ratchet Stop	6.50

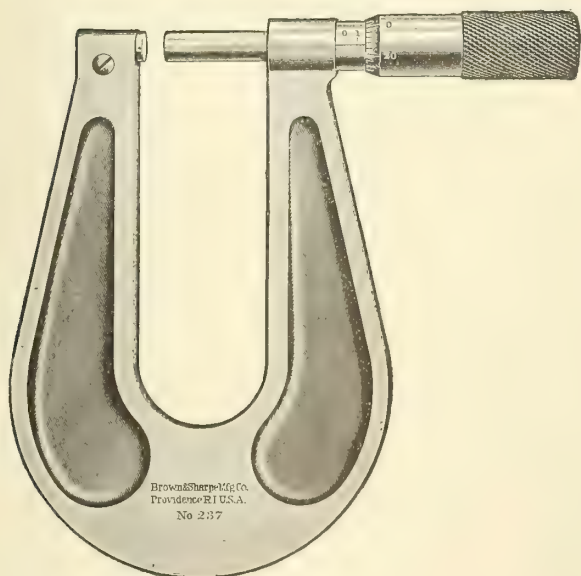
This Caliper differs from Micrometer Caliper No. 237 only in having a smaller range. Opening in frame about 2 inches deep.

No. 239 Rolling Mill Gauge, English or Metric Measure

Range, 0 to 1 inch or 0 to 25 mm.

Each	\$8.00
With Ratchet Stop	8.50

This Caliper differs from Micrometer Caliper No. 237 only in having a greater measuring capacity. Opening in frame about 6 inches deep.



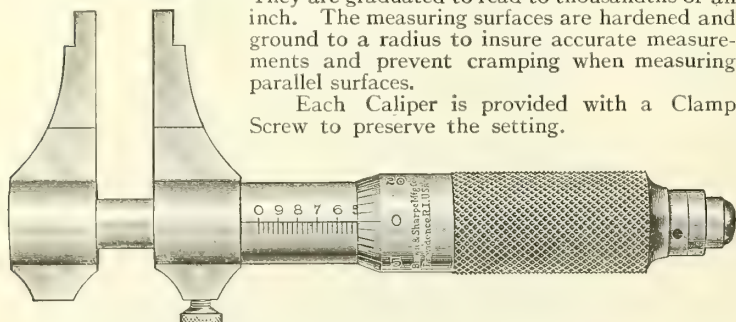
Micrometer Calipers

Brown & Sharpe

Inside

These Calipers are entirely new in design and intended to meet the demand for a tool adapted to measuring small internal dimensions. They are graduated to read to thousandths of an inch. The measuring surfaces are hardened and ground to a radius to insure accurate measurements and prevent cramping when measuring parallel surfaces.

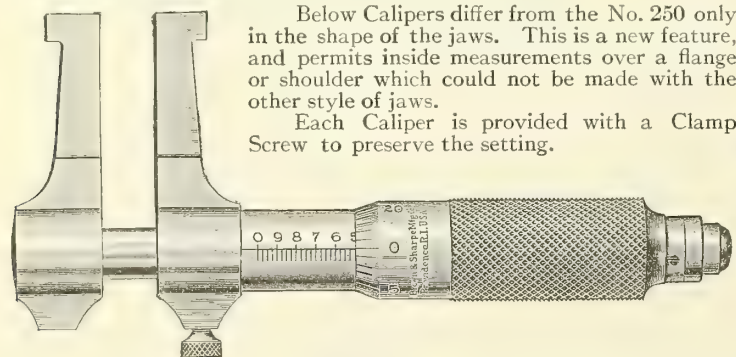
Each Caliper is provided with a Clamp Screw to preserve the setting.



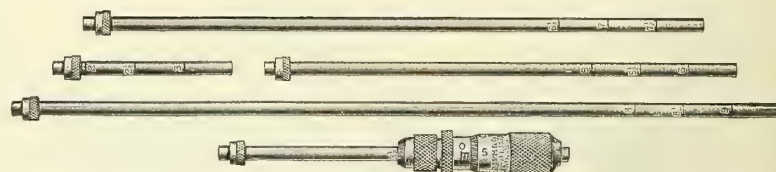
No. 250. English or Metric Measure, .200 to 1 inch, 5 to 25 mm. Each..... \$5.00
Morocco Case. Extra..... .50

Below Calipers differ from the No. 250 only in the shape of the jaws. This is a new feature, and permits inside measurements over a flange or shoulder which could not be made with the other style of jaws.

Each Caliper is provided with a Clamp Screw to preserve the setting.

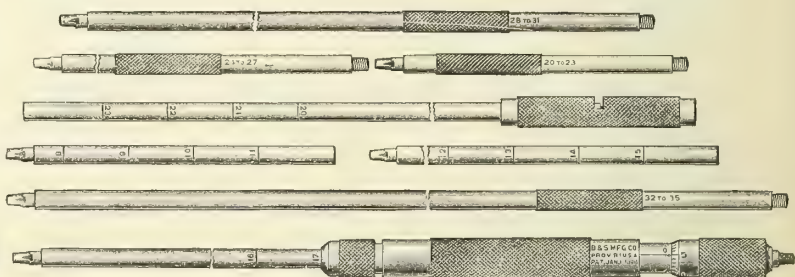


No. 252. English or Metric, 1/2 to 1 1/2 inches, or 13 to 38 mm. Each..... \$6.00
Morocco Case. Extra..... .50
No. 254. English or Metric, 1 to 2 inches, or 25 to 50 mm. Each..... 6.00
Morocco Case. Extra..... .50



This Micrometer consists of a holder with a micrometer screw and thimble graduated to read to thousandths of an inch and hundredths of a millimeter. The extension rods are graduated by a series of angular grooves of a form and depth that allow the clamping fingers to spring in and the adjustments quickly and positively made.

Number	Number of Rods	Range	Set Without Case	Set With Case
260	5	2 to 9 1/2 inches	\$4.50	\$5.25
260	6	50 to 230 mm.	4.50	5.25
261	7	2 to 12 1/2 inches	5.50	6.50
261	8	50 to 290 mm.	5.50	6.50



These Gauges consist of a holder with a micrometer screw and thimble graduated to thousandths of an inch and hundredths of a millimeter. The extension rods are graduated by a series of angular grooves of a form and depth that allow the clamping fingers to spring in and the adjustments quickly and positively made.

Number	Number of Rods	Range	Set Without Case	Set With Case
262	8	8 to 36 inches	\$7.50	\$9.00
262	8	200 to 900 mm.	7.50	9.00

Tubular Inside



The Tubular Inside Micrometers are distinctively new in design, being made of tubing, which renders them very light and convenient to handle, especially those of the longer lengths.

These Micrometers are designed for measuring the inside diameters of rings, cylinders, etc., setting calipers, comparing gauges and work of a similar nature. They are fitted at one end with a micrometer head having a 1/2 inch or 1 inch movement. The measuring points are hardened, and the faces are ground on a radius, thus adapting them especially for measuring parallel or curved surfaces.

Provision is made for adjustment to compensate for wear on the measuring surfaces by means of a knurled adjusting nut. Fibre grips are also provided to guard against inaccuracies due to the heat of the hand. The small sizes have only one grip, while the larger sizes have two.

Each Micrometer is fitted with a Clamp Screw, which clamps the spindle and preserves the setting.

No. 270, English Measure

Range in Inches	Each	Range in Inches	Each	Range in Inches	Each
2 to 2 1/2	\$3.50	12 to 13	\$4.50	26 to 27	\$5.50
2 1/2 to 3		13 to 14		27 to 28	
3 to 3 1/2		14 to 15		28 to 29	
3 1/2 to 4		15 to 16		29 to 30	
4 to 4 1/2	4.00	16 to 17	5.00	30 to 31	6.00
4 1/2 to 5		17 to 18		31 to 32	
5 to 6		18 to 19		32 to 33	
6 to 7		19 to 20		33 to 34	
7 to 8	4.00	20 to 21	5.00	34 to 35	6.50
8 to 9		21 to 22		35 to 36	
9 to 10		22 to 23		36 to 37	
10 to 11		23 to 24		37 to 38	
11 to 12		24 to 25	5.50	38 to 39	
		25 to 26		39 to 40	

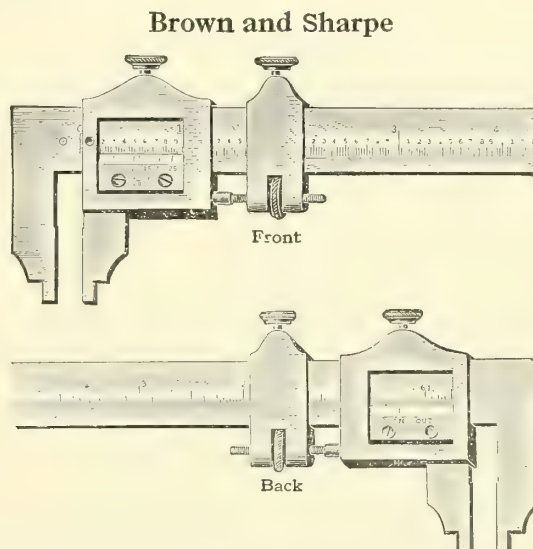
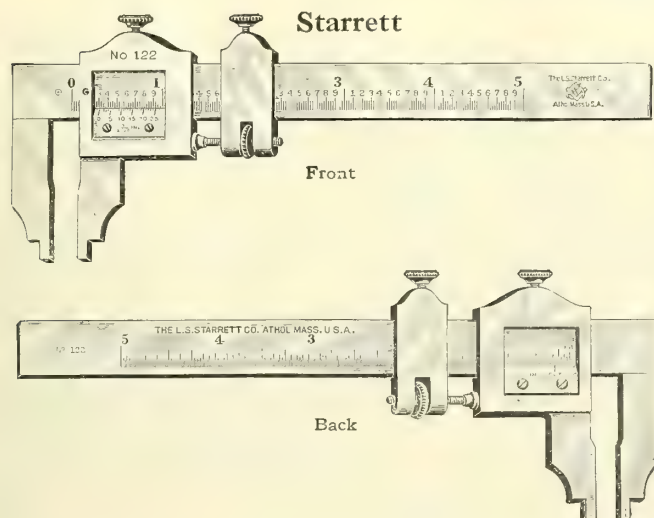
No. 272, Metric Measure

Range in Millimetres	Each	Range in Millimetres	Each	Range in Millimetres	Each
50 to 63	\$3.50	300 to 325	\$4.50	650 to 675	\$5.50
63 to 75		325 to 350		675 to 700	
75 to 88		350 to 375		700 to 725	
88 to 100		375 to 400		725 to 750	
100 to 113	4.00	400 to 425	5.00	750 to 775	6.00
113 to 125		425 to 450		775 to 800	
125 to 150		450 to 475		800 to 825	
150 to 175		475 to 500		825 to 850	
175 to 200	4.00	500 to 525	5.00	850 to 875	6.50
200 to 225		525 to 550		875 to 900	
225 to 250		550 to 575		900 to 925	
250 to 275		575 to 600		925 to 950	
275 to 300		600 to 625	5.50	950 to 975	
		625 to 650		975 to 1000	

These Micrometers are also furnished in sets packed in suitable wooden box, as follows:

Set No. 273. 7 Micrometers, 2 to 6 inches, or 50 to 150 mm..... \$25.00
Set No. 274. 13 Micrometers, 2 to 12 inches, or 50 to 300 mm..... \$49.00
Set No. 285. 41 Micrometers, 2 to 40 inches, or 50 to 1000 mm..... \$197.50

Vernier Calipers



Graduated English or Metric for outside and inside measure, and are warranted accurate. Points are placed on the beams and slides for setting dividers to transfer distances and full directions for using the Vernier are sent with each caliper.

The jaws are carefully hardened and accurately ground.

We can furnish a quarter inch cylindrical plug standard for testing the adjustment of the caliper when desired, \$3.00

Finely finished, plush lined wooden cases furnished without extra charge.

English Measure

Graduated on the front to read by means of the Vernier in 1000ths of an inch. Graduated in 64ths on the back.

Number	Size Inches	Length of Jaws Inches	Width of Jaws Inch	Each In Case
122	4	1 $\frac{9}{16}$	.250	\$13.00
122	6	1 $\frac{9}{16}$	.250	15.00
122	9	2 $\frac{3}{8}$	.300	18.00
122	12	2 $\frac{3}{8}$	.300	20.00
122	24	2 $\frac{3}{8}$	.300	25.00

Metric Measure

Same as No. 122, except that it is graduated on the front to read by means of the Vernier in 50ths of a millimeter and is graduated on the back in $\frac{1}{2}$ millimeters.

Number	Size MM.	Length of Jaws MM.	Width of Jaws MM.	Each In Case
122M	100	39.7	6	\$13.00
122M	150	39.7	6	15.00
122M	200	60	8	18.00
122M	300	60	8	20.00
122M	600	60	8	25.00

Metric and English Measure

Same as No. 122, except that it has a Vernier on each side and is graduated to read by means of the Verniers, on the front in 50ths of a millimeter and on the back in 1000ths of an inch, with jaws ground to metric widths as in No. 122M.

Number	Size MM.	Size Inches	Each In Case
122ME	100	4	\$13.00
122ME	150	6	15.00
122ME	200	9	18.00
122ME	300	12	20.00
122ME	600	24	25.00

English and Metric Measure

Same as No. 122, except that it has a Vernier on each side and is graduated to read by means of the Verniers on the front in 1000ths of an inch and on the back in 50ths of a millimeter, with jaws ground to English widths as in No. 122.

Number	Inches	Size MM.	Each In Case
122EM	4	100	\$13.00
122EM	6	150	15.00
122EM	9	200	18.00
122EM	12	300	20.00
122EM	24	600	25.00

These Vernier Calipers take inside as well as outside measurements. The jaws are hardened and ground. Points are placed on the bars and slides so that dividers can be set to transfer distances.

The smallest Vernier Caliper is well adapted for carrying in the pocket, and is known as a Pocket Vernier.

An explanation of the Vernier is sent with each Caliper.

A Standard is furnished when desired for testing the accuracy of the adjustment of the caliper.

English Measure

They are graduated on the front to read, by means of a Vernier, to thousandths of an inch, on the back to 64ths of an inch.

Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Each In Case
570	Pocket	1 $\frac{1}{2}$	$\frac{3}{4}$	\$10.50
570		6	1 $\frac{1}{4}$	15.00
570		12	2 $\frac{1}{4}$	20.00
570		24	2 $\frac{1}{4}$	25.00

Metric Measure

Same as No. 570, only in reading to metric measure, graduated to $\frac{1}{50}$ of a millimeter on one side and $\frac{1}{2}$ of a millimeter on the other.

Number	Size MM.	Length of Jaws MM.	Width of Jaws Closed MM.	Each In Case
571	Pocket	38	19	\$10.50
571		150	31	15.00
571		300	57	20.00
571		600	57	25.00

Metric and English Measure

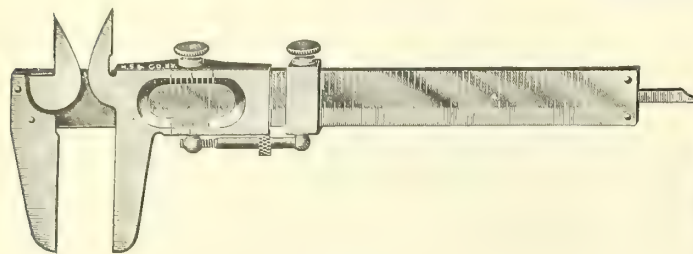
Same as No. 571, only in reading to both metric and English measure. They are graduated to read to $\frac{1}{50}$ of a millimeter on one side and to .001 of an inch on the other.

Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Each In Case
572	Pocket	1 $\frac{1}{2}$	$\frac{3}{4}$	\$10.50
572		6	1 $\frac{1}{4}$	15.00
572		12	2 $\frac{1}{4}$	20.00
572		24	2 $\frac{1}{4}$	25.00

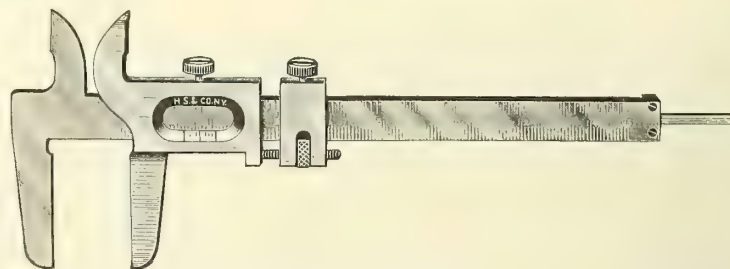
For instructions for reading, see page 262

Vernier Calipers

Columbia Pattern



Nos. 1, 2, 3 and 4
5-inch Bar



Nos. 10, 20, 30 and 40
6-inch Bar

The graduating lines are sharp and clean, which insures easy and accurate reading of the measurements.

Being flat and light, it can be conveniently carried in the side pocket.

Engineers and superintendents, in inspection work, will find this tool indispensable. In leather case.

	Each
No. 1 Polished, without Micrometer Screw	\$2.50
No. 2 Polished, with Micrometer Screw	3.50
No. 3 Nickel-plated, without Micrometer Screw	2.75
No. 4 Nickel-plated, with Micrometer Screw	3.75

Supplied in English (A) or English and Metric graduations (B), as follows:

A	Upper Scale:	$\frac{1}{16}$ indicating $\frac{1}{16}$ inch with Vernier.
A	Lower Scale:	$\frac{1}{64}$ indicating $\frac{1}{64}$ inch with Vernier.
B	Upper Scale:	$\frac{1}{16}$ indicating $\frac{1}{16}$ inch with Vernier.
B	Lower Scale:	Millimeters indicating $\frac{1}{10}$ mm., with Vernier.

English Graduations (A) supplied unless other specified

These Calipers combine three precision tools for measuring inside and outside diameters; also depth. These three measurements are obtained at one setting without deducting

An improvement on the Nos. 1, 2, 3 and 4. A strong tool adapted for hard usage in machine shops. In leather case.

	Each
No. 10 Polished, without Adjusting Screw	\$2.50
No. 20 Polished, with Adjusting Screw	3.50
No. 30 Nickel-plated, without Adjusting Screw	2.75
No. 40 Nickel-plated, with Adjusting Screw	3.75

Supplied in English (A) or English and Metric graduations (B), as follows:

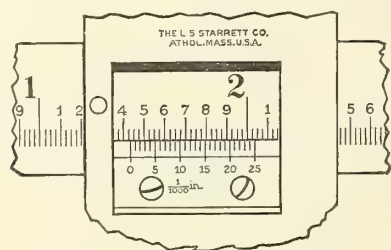
A	Upper Scale:	$\frac{1}{16}$ indicating $\frac{1}{16}$ inch with Vernier
A	Lower Scale:	$\frac{1}{64}$ indicating $\frac{1}{64}$ inch with Vernier
B	Upper Scale:	$\frac{1}{16}$ indicating $\frac{1}{16}$ inch with Vernier
B	Lower Scale:	Millimeters indicating $\frac{1}{10}$ mm. with Vernier

Instructions for Reading

Brown & Sharpe and Starrett

The scale of the tool is graduated in fortieths, or .025 of an inch, every fourth division, representing a tenth of an inch, being numbered. On the Vernier plate is a space divided into twenty-five parts and numbered 0, 5, 10, 15, 20, 25. The twenty-five divisions on the Vernier occupy the same space as twenty-four divisions on the scale.

The difference between of width of one of the twenty-five spaces on the Vernier and one of the twenty-four spaces on the scale is therefore $\frac{1}{25}$ of $\frac{1}{40}$ or $\frac{1}{1000}$ of an inch. If the Vernier is set so that the 0 line on the Vernier coincides with the 0 line on the scale, the next two lines will not coincide by $\frac{1}{1000}$ of an inch; the next two lines will be two thousandths apart, and so on.



To read the tool, note how many inches, tenths (or .100) and fortieths (or .025) the 0 mark on the Vernier is from the 0 mark on the scale; then note the number of divisions on the Vernier from 0 to a line which exactly coincides with a line on the scale.

In the engraving above, the Vernier has been moved to the right one and four-tenths and one-fortieth inches (1.425 inches), as shown on the scale, and the eleventh line on the Vernier coincides with a line on the scale. Eleven thousandths of an inch are therefore to be added to the reading on the scale, and the total reading is one and four hundred and thirty-six thousandth inches (1.436 inches), which is the distance the jaws of the tool have been opened.

In making inside measurements the width of the jaws as given in the list is to be added to the apparent readings on the side having the Vernier to allow for the space occupied by the measuring points. No such allowance is necessary when using the back side, without Vernier, as the two lines marked "in" and "out" indicate inside and outside measurements.

Columbia Pattern

Nos. 1, 2, 3 and 4

Furnished in two styles: The upper side of the bar in either style is always divided to read to 128ths of an inch. While the one is arranged to read to thousandths of an inch on the lower side of the bar, the other is designed to read to 10ths of millimeters.

($\frac{1}{16}$ inch.) The bar is divided into a line of inches numbered from 0 to 5. Each inch is divided into 16 parts.

On the sliding jaw is a line of divisions (called Vernier from name of inventor) of 8 parts.

The 8 parts on the Vernier correspond with 7 parts on the bar, consequently each division on the Vernier is smaller than each division on the bar by $\frac{1}{128}$ th of an inch.

If the movable jaw of the Caliper is pushed up to the other so that the first line (zero point) on the Vernier corresponds with that marked "0" on the bar, then the two next lines to the right will differ from each other by $\frac{1}{128}$ th of an inch, and so the difference will continue to increase $\frac{1}{128}$ th of an inch for each division, until they again correspond at the last line of the Vernier.

To read the distance the Caliper is opened. Commence by noting how many inches and 16ths the first line on the Vernier has been moved from the zero point on the bar.

Now count upon the Vernier the number of divisions until one is found which coincides with one on the bar which will be the number of 128ths to be added to the distance read off on the bar.

($\frac{1}{1000}$ inch.) The Vernier in this style shows a division of 20 which in extreme length correspond with 19.50 on the bar. These divisions differ therefore by $\frac{1}{1000}$ ths of an inch so that when reading the Vernier, $\frac{1}{1000}$ of an inch must be added every time the slide is moved to the right to make the next succeeding lines correspond.

($\frac{1}{10}$ mm.) The bar in this case is divided into a line of centimeters numbered from 0 to 12, each is divided into 10 parts or millimeters. The Vernier shows a division of 10 parts which correspond in extreme length with 9 mm.

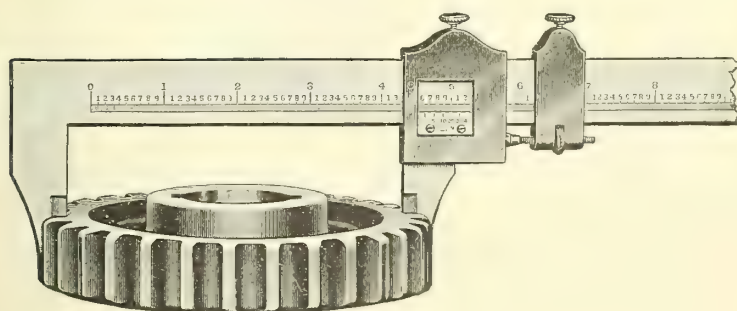
The difference therefore is $\frac{1}{10}$ mm. which must be added each time the slide is moved to the right to make the next succeeding line correspond.

Nos. 10, 20, 30 and 40 read as above, excepting divisions are in $\frac{1}{40}$ of an inch instead of $\frac{1}{64}$.

Vernier Calipers

Brown & Sharpe

Gear Tooth Depth



For Determining Accurately the Depth of Gear Teeth

Measuring the bottom diameter of gears provides an accurate check on the cutting operation and insures the duplication of any desired standard.

This tool, therefore, is found especially valuable in the automobile shop for measuring automobile transmission gears where it is impossible to use regular Vernier Calipers on account of the thickness of the jaws.

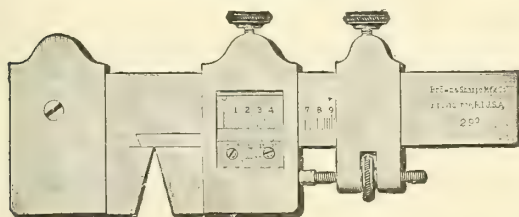
Outside of the measuring jaws this tool is exactly like the Brown & Sharpe 12-inch Vernier Caliper and can be used as such.

Depth of jaws, $1\frac{1}{8}$ inches. Width of measuring surface, $\frac{1}{32}$ inch.

An explanation of the Vernier is sent with each Caliper.

No. 573. English or Metric Measure, each.....\$20.00

Thread Tool



No. 576

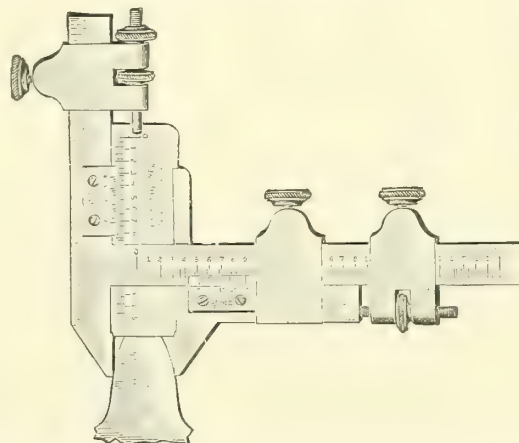
60-Degree Thread Tool Vernier with Morocco Case, each.....\$15.00
55-Degree Thread Tool Vernier with Morocco Case, each..... 15.00
29-Degree Thread Tool Vernier with Morocco Case, each..... 15.00

To the manufacturer looking for an extremely economical tool for measuring thread tools of different pitches, this tool is recommended. It does away with the large number of gauges formerly kept on hand.

When in use the sliding jaw is set for the width of point of the tool of the required pitch. The thread tool is then ground so that the point bottoms on the hardened steel strip inserted in the blade and the sides rest against the jaws of the tool.

The jaws or measuring surfaces are carefully hardened and ground, the angle being carefully tested for accuracy. The Vernier reads to thousandths of an inch on one side of the tool, and to 50ths of a millimetre on the other side, and the graduations are made with as great care on these tools as on our regular Vernier Calipers. The tool is graduated for one inch only.

Gear Tooth Pitch



This Caliper is for the purpose of accurately measuring the distance from top to pitch line, and thickness at pitch line of gear teeth. By use of this Caliper compensation may be made for variation or error in size of blank.

All pitches from 20 diametral to 1 diametral can be measured.

The sliding jaw moves upon a bar graduated to read, by means of a Vernier, to thousandths of an inch. A tongue, moving at right angles with the jaws, is graduated in the same manner.

Both the sliding jaw and tongue are provided with adjusting screws.

No. 580	English Measure, 20 to 2 diametral pitch.....	\$25.00
No. 580	English Measure, 10 to 1 diametral pitch.....	40.00
No. 581	Metric Measure, graduated to read to $\frac{1}{50}$ th millimeter,	
	$1\frac{1}{4}$ mm. to 12 mm. Module.....	25.00
	$2\frac{1}{2}$ mm. to 25 mm. Module.....	40.00

Books on Gears and Gear Cutting

Worm and Spiral Gearing

By F. A. Halsey

Second edition, revised and enlarged. 26 folding plates, $3\frac{3}{4}$ x6, boards, 95 pages. Each \$.50

Contents: *Worm Gearing*. Theory of Worm Efficiency; Examples from Practice; Limiting Speed and Pressure; Step Bearings. *Spiral Gearing*. Spiral Gears Compared with Spur Gears; Speed Ratio; Preliminary Solution; Lengths of Normal Helixes; Final Solution by Changing the Center Distance; Graphical Solution with Changed Center Distance; Final and Graphical Solutions with Unchanged Center Distance; Finding the Pitch of the Tooth Helix; Special and Graphical Solutions for a Helix Angle of 45 Degrees; Special and Graphical Solutions for Gears of Equal Diameters; Selection of the Cutter.

Toothed Gearing

By G. T. White

136 illustrations, $5\frac{1}{4}$ x7 $\frac{1}{2}$, 226 pages. Each \$1.25

Contents: Kinematics; The Spur Wheel, Cycloidal Teeth; Annular Wheels, Cycloidal Teeth; The Spur Wheel, Involute Teeth; Obliquity of Action; Pin Gearing; Non-Circular, Lobed, Helical, Bevel and Skew Bevel Wheels; Worm Gearings; Oblique Worm and Wheel; Screw Wheels or Spiral Wheels; Strength of Teeth; Durability Trains of Wheels; the Odontograph.

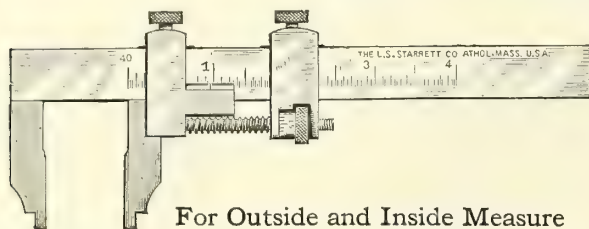
Toothed Gearing

By J. Horner

A practical handbook for offices and workshops. Second edition, 184 illustrations, $5\frac{1}{4}$ x7 $\frac{1}{2}$, cloth 224 pages. Each \$2.25

Contents: The Formation of Tooth Profiles; Proportions of Teeth; Methods of Making Tooth Forms; Involute Teeth; Special Tooth Forms; Bevel Wheels; Screw Gears; Worm Gears; Helical Wheels; Skew Bevels; Variable and Other Gears; Diametrical Pitch; Odontograph; Pattern Gears; Machine Moulded Gears; Machine Cut Gears; Proportions of Wheels.

Micrometer Caliper Squares



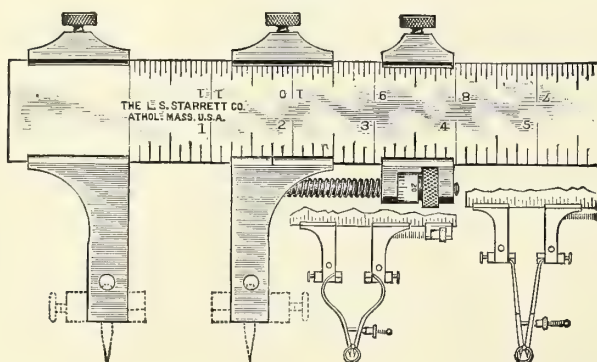
For Outside and Inside Measure

This instrument enables one to enlarge or decrease work one or more thousandths from that calipered, and fills the bill for both a first-class caliper square and micrometer of large scope and quick adjustment. The jaws are $1\frac{1}{2}$ inches long, hardened, and open four inches. One side of the beam is graduated in 64ths and the other in 40ths; and either side may be used as a common caliper square, or, through the micrometer, to show 1,000ths full length, on either inside or outside work. This is done by first setting the indicator mark on the movable jaw to agree with any division nearest the size wanted. Fasten it there, slack binding clasp, and turn the micrometer nut to agree with indicator mark on the clasp; now tighten this, slack movable jaw and turn micrometer nut, counting 1,000ths, adding to or taking from the division shown on beam at the starting point.

An excellent feature of this instrument is the spiral spring between jaw and clasp, which not only takes up all backlash, but limits the pressure against the work to strength of spring. This is instantly felt through released pressure on the nut, and prevents springing the jaws, thus calipering to a nicety.

Micrometer Gauge

Starrett



This gauge is made to fit scales $1\frac{1}{4}$ inches wide, .085 inch thick, and 12, 18, 24, and 36 inches long, affording longer scope than anything of the kind heretofore made. The head of the gauge carries auxiliary Tram Points. Attachments are also made to slip on and off the ends of the caliper, so that they may be used to set inside or outside calipers for making close or drive fits. These attachments are made of the best tool steel, hardened and ground. The inside calipers are set against the inside face of gauge and resting on the seat of the attachments, which keep them in perfect line. The outside calipers are set against an extended seat of the attachment in line with the inside faces of the gauge, so that both inside and outside calipers may be set to exactly agree with each other.

For measuring distances, the gauge may not only be set by the graduated scale but varied by the micrometer adjusting nut to read additional thousandths. The scale and all necessary working parts are hardened, making a first-class tool in every respect.

No. 24, English Measure

	Each
12-inch.....	\$11.00
18-inch.....	12.50
24-inch.....	14.00
36-inch.....	20.00
48-inch.....	26.00

No. 24 M, Metric Measure

The same as No. 24, except that the scales are graduated in millimeters and $\frac{1}{2}$ millimeter and the nut to hundredths of a millimeter.

	Each
30 cm.....	\$11.00
50 cm.....	12.50
60 cm.....	14.00
90 cm.....	20.00

Starrett

No. 28, English Measure

	Each		Each
4-inch, with case.....	\$ 8.75,	without.....	\$8.00
6-inch, with case.....	11.00,	without.....	10.00
9-inch, with case.....	15.25,	without.....	14.00
12-inch, with case.....	19.50,	without.....	18.00

Sent without case unless otherwise ordered

No. 28 M, Metric Measure

Graduated in millimeters on one side and $\frac{1}{2}$ millimeter on the other. The micrometer head is graduated to read in 100ths of a millimeter.

	Each		Each
10 cm., with case.....	\$8.75,	without.....	\$8.00
15 cm., with case.....	11.00,	without.....	10.00
20 cm., with case.....	15.25,	without.....	14.00
30 cm., with case.....	19.50,	without.....	18.00

Sent without case unless otherwise ordered

English and Metric Measure

Graduated in $\frac{1}{2}$ millimeter on one side and 100ths of an inch on the other. The micrometer head is graduated to read in 100ths of a millimeter.

No. 28 M and E

	Each		Each
10 cm., with case.....	\$8.75,	without.....	\$8.00
15 cm., with case.....	11.00,	without.....	10.00
20 cm., with case.....	15.25,	without.....	14.00
30 cm., with case.....	19.50,	without.....	18.00

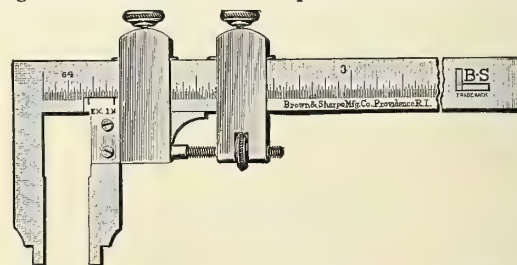
Sent without case unless otherwise ordered

Caliper Squares

Brown & Sharpe

Convenient for a large class of work where extreme accuracy is not required and also valuable for use in duplicating work when the number of pieces will not warrant the expense of fixed gauges.

The adjusting screw enables the sliding head to be more accurately set to the graduations than would be possible without its use.



The 4-inch, 6-inch and 9-inch Caliper Squares take inside as well as outside measurements. The 6-inch and 9-inch Squares have hardened jaws. Sent with adjusting screw unless otherwise ordered.

English Measure

Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Without Adjusting Screw, Each	With Adjusting Screw, Each
560	2	$\frac{3}{4}$	..	\$2.25	\$3.50
560	4	1	..	..	6.00
560	4	$1\frac{1}{2}$	$\frac{1}{4}$	3.50	4.50
560	6	2	$\frac{1}{4}$	5.50	7.50
560	9	$3\frac{1}{4}$	$\frac{3}{8}$	9.00	11.00

Graduated on one side to 64ths, on the other to 100ths of an inch

Metric Measure

Number	Size MM.	Length of Jaws MM.	Width of Jaws Closed MM.	Without Adjusting Screw, Each	With Adjusting Screw, Each
561	50	19	..	\$2.25	\$3.50
561	100	38	6	3.50	4.50
561	150	50	6	5.50	7.50
561	250	80	10	9.00	11.00

Graduated on one side to $\frac{1}{2}$ millimeter, on the other to 1 millimeter

English and Metric Measure

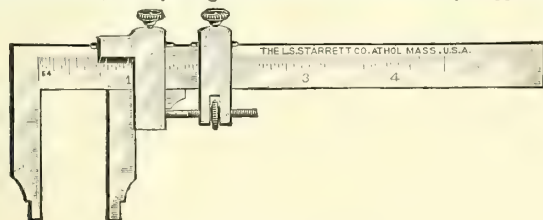
Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Without Adjusting Screw, Each	With Adjusting Screw, Each
562	2	$\frac{3}{4}$	..	\$2.25	\$3.50
562	4	$1\frac{1}{2}$	$\frac{1}{4}$	3.50	4.50
562	6	2	$\frac{1}{4}$	5.50	7.50
562	9	$3\frac{1}{4}$	$\frac{3}{8}$	9.00	11.00

Graduated on one side to $\frac{1}{2}$ millimeter, on the other to 100ths of an inch

Caliper Squares

Starrett

These Caliper Squares are convenient for a large class of work where extreme accuracy is not required and are also valuable for use in duplicating work when the number of pieces will not warrant the expense of fixed gauges. The adjusting screw enables the sliding head to be more accurately set to the graduations than would be possible without its use. English measure with adjusting screw and without case always supplied unless otherwise specified.



No. 426 English

The beam is nicely graduated on one side in 64ths and on the other in 100ths of an inch. This Caliper Square is designed both for inside and outside measurements. It is made with firm and adjustable jaw.

A 3-inch, with adjusting screw...\$3.75 D without.....\$3.00
 B 4-inch, with adjusting screw... 4.50 E without..... 3.50
 C 6-inch, with adjusting screw... 7.50 F without..... 5.50
 With hardened jaws, extra..... 1.50
 Leatherette case, extra..... .75

Sent with adjusting screw and without case unless otherwise ordered.

No. 426 M Metric

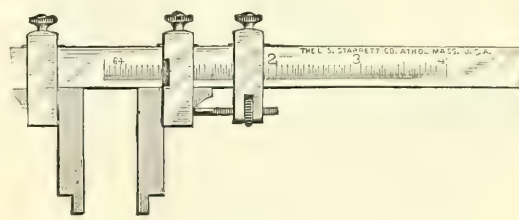
Same as No. 426 only with beam graduated on one side in 1/2 millimeters and on the other in millimeters.

A 10 cm., with adjusting screw...\$4.50 C without.....\$3.50
 B 15 cm., with adjusting screw... 7.50 D without..... 5.50
 With hardened jaws, extra..... 1.50
 In leather case, extra..... .75

No. 426 M & E Metric and English

Same as No. 426, except that the beam is graduated on one side in 1/2 millimeters and on the other in one-hundredths of an inch.

A 4-inch, with adjusting screw...\$4.50 C without.....\$3.50
 B 6-inch, with adjusting screw... 7.50 D without..... 5.50
 With hardened jaws, extra..... 1.50
 In leather case, extra..... .75



For both outside and inside measure

No. 25 English

Size Inches	With Adjusting Screw No.	Each	Without Adjusting Screw No.	Each
3	25A	\$3.50	25D	\$3.00
4	25B	4.00	25E	3.50
6	25C	5.50	25F	5.00

Graduated in 64ths on one side and 100ths on the other.
 With hardened jaws, extra . \$1.50 In leatherette case, extra.... \$.75

No. 25 M Metric

Size CM	With Adjusting Screw No.	Each	Without Adjusting Screw No.	Each
10	25MA	\$4.00	25MC	\$3.50
15	25MB	5.50	25MD	5.00

Graduated in millimeters on one side and 1/2 millimeters on the other.
 With hardened jaws, extra. \$1.50 In leatherette case, extra.... \$.75

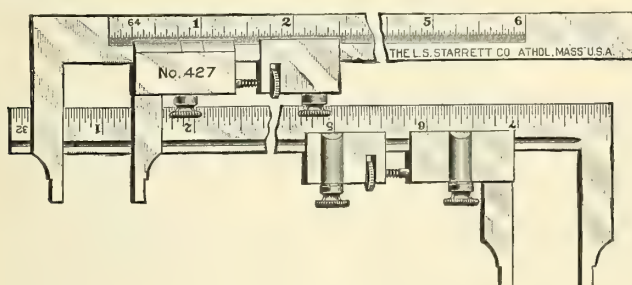
No. 25 M & E English and Metric

Size Inches	With Adjusting Screw No.	Each	Without Adjusting Screw No.	Each
4	25MEA	\$4.00	25MEC	\$3.50
6	25MEB	5.50	25MED	5.00

Graduated in 1/2 millimeters on one side and 64ths inch on the other.
 With hardened jaws, extra. \$1.50 In leatherette case, extra.... \$.75

Nos. 427 and 428

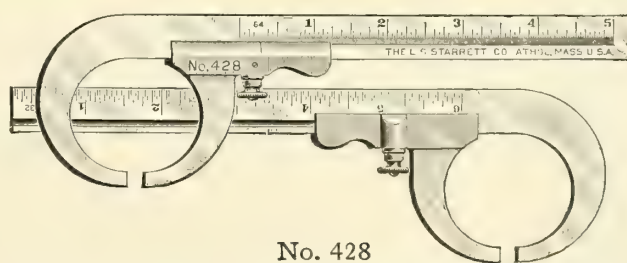
Nos. 427 and 428 are made both plain and adjustable, the front graduated to read in sixty-fourths, and the reverse side graduated whole lengths in thirty-seconds. As shown by the cuts, the graduations on one side are brought down to the edge of the tool with nothing to interfere with applying the graduated edge close to the article to be measured.



No. 427

4-inch plain, whole length 6 inches....\$6.50 In leather case..\$7.50
 6-inch plain, whole length 8 inches.... 8.50 In leather case.. 9.75
 4-inch adjustable, whole length 7 inches.. 8.00 In leather case.. 9.00
 6-inch adjustable, whole length 9 inches.. 10.00 In leather case.. 11.50

No. 427 M In Metric sizes, 100 mm. and 150 mm. graduated in half millimeters on one side and millimeters on the other. Prices same as for No. 427.



No. 428

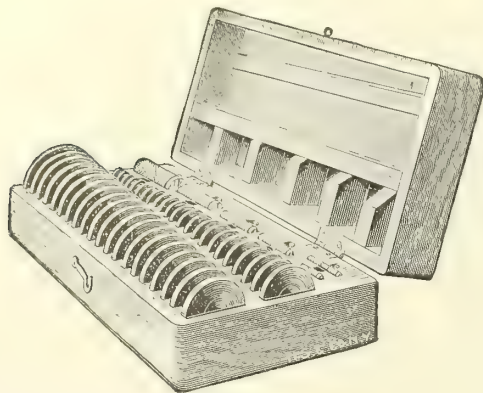
This tool is especially desirable for taking measurements around shafts, etc., that heretofore has been done with an outside transfer caliper. It is also suitable for measuring pulleys and is so shaped that it can be used in many difficult positions, such as measuring over flanges, etc.

4-inch plain, whole length 7 9/16 inches....\$6.50 In leather case \$7.50
 6-inch plain, whole length 9 9/16 inches.... 8.50 In leather case 9.75
 4-inch adjustable, whole length 8 3/16 inches 8.00 In leather case 9.00
 6-inch adjustable, whole length 10 3/16 inches 10.00 In leather case 11.50

No. 428 M In Metric sizes, 100 mm. and 150 mm. graduated in half millimeters on one side and millimeters on the other. Prices same as for No. 428.

Standard Reference Discs

Brown & Sharpe



When a Gauge or Caliper has been long in use, the question arises whether constant use has not impaired its accuracy.

The Standard Reference Discs are for reference sizes in shop practice, such as testing measuring tools, setting calipers, etc. They are used generally without handles. With handles, however, they may be used in place of Standard Cylindrical Gauges, but are not recommended for constant use as substitutes for them; being designed to serve principally as reference, not as working Gauges. These Discs are hardened, ground and accurately lapped to size; the width of the measuring surfaces is suitably proportioned to the size of the Disc. They are furnished singly of any desired size, but are usually furnished in sets, consisting of 45 Discs from $\frac{1}{4}$ inch to 3 inches, varying by 16ths, including 6 handles. Each complete set is neatly arranged in a substantial case.

Metric Discs are also supplied, in sizes from 6 mm. to 50 mm., varying by 2 mm. and 55 mm. to 100 mm., varying by 5 mm.

Special sizes made to order.

Set..... \$50.00

No. 657 English

Size Inches	Each	Size Inches	Each	Size Inches	Each
* $\frac{1}{4}$	\$1.50	$\frac{3}{16}$	\$1.10	$\frac{21}{8}$	\$1.65
* $\frac{5}{16}$	1.50	$\frac{1}{4}$	1.10	$\frac{23}{16}$	1.65
$\frac{3}{8}$	.90	$\frac{5}{16}$	1.25	$\frac{21}{4}$	1.65
$\frac{7}{8}$	.90	$\frac{3}{8}$	1.25	$\frac{25}{16}$	1.80
$\frac{15}{16}$	1.00	$\frac{1}{2}$	1.25	$\frac{23}{8}$	1.80
$\frac{1}{2}$	1.00	$\frac{1}{2}$	1.25	$\frac{27}{16}$	1.80
$\frac{5}{8}$	1.00	$\frac{3}{4}$	1.40	$\frac{21}{2}$	1.80
$\frac{11}{16}$	1.00	$\frac{5}{8}$	1.40	$\frac{29}{16}$	1.95
$\frac{3}{4}$	1.05	$\frac{11}{16}$	1.40	$\frac{25}{8}$	1.95
$\frac{13}{16}$	1.05	$\frac{3}{4}$	1.40	$\frac{27}{8}$	1.95
$\frac{15}{16}$	1.05	$\frac{7}{8}$	1.55	$\frac{29}{16}$	2.10
1	1.05	$\frac{15}{16}$	1.55	$\frac{21}{6}$	2.10
$\frac{1}{16}$	1.10	$\frac{1}{16}$	1.55	$\frac{27}{6}$	2.25
$\frac{1}{8}$	1.10	2	1.55	$\frac{21}{6}$	2.25
		$\frac{1}{16}$	1.65	3	2.25

No. 658 Metric

Size MM.	Each	Size MM.	Each	Size MM.	Each
*6	\$1.50	28	\$1.10	50	\$1.55
*8	1.50	30	1.10	55	1.65
10	.90	32	1.10	60	1.80
12	1.00	34	1.25	65	1.95
14	1.00	36	1.25	70	2.10
16	1.00	38	1.25	75	2.25
18	1.00	40	1.40	80	2.50
20	1.05	42	1.40	85	2.50
22	1.05	44	1.40	90	2.50
24	1.05	46	1.55	95	2.75
26	1.10	48	1.55	100	2.75

*These sizes are furnished with handles

Handles

For $\frac{3}{8}$ to $\frac{9}{16}$ -inch, or 10 to 14 mm. Discs.....	\$.65
For $\frac{5}{8}$ to $1\frac{1}{16}$ inches, or 16 to 26 mm. Discs.....	.75
For $1\frac{1}{8}$ to $1\frac{3}{4}$ inches, or 28 to 44 mm. Discs.....	.80
For $1\frac{1}{2}$ to 3 inches, or 46 to 75 mm. Discs.....	.90
For 80 mm. to 100 mm. Discs.....	.90

Standard End Measuring Rods

Brown & Sharpe

With Spherical Ends

The Standard End Measuring Rods are made of steel hardened on the ends and accurately ground, so that the ends are sections of true spheres having diameters equal to those of the length of the rods. These Rods can be used for measuring rings, cylinders, etc., setting calipers, comparing gauges or work of like character and are especially useful for measuring parallel surfaces.

The Rods from 3 inches to 6 inches are $\frac{3}{4}$ inch in diameter and larger than 6 inches $\frac{1}{2}$ inch in diameter.

No. 655 English

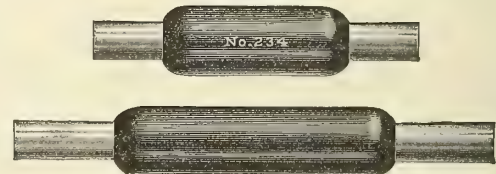
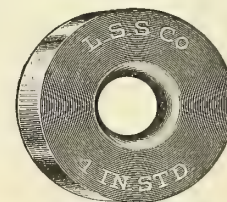
Length Inches	Each	Length Inches	Each
3	\$1.40	10	\$2.80
4	1.60	11	3.00
5	1.80	12	3.20
6	2.00	13	3.40
7	2.20	14	3.60
8	2.40	15	3.80
9	2.60	16	4.00

No. 656 Metric

Length MM.	Each	Length MM.	Each
75	\$1.40	250	\$2.80
100	1.60	275	3.00
125	1.80	300	3.20
150	2.00	325	3.40
175	2.20	350	3.60
200	2.40	375	3.80
225	2.60	400	4.00

All intermediate sizes furnished at the price of the size next larger given in the list.

Starrett



These rods are made of steel, hardened and lapped spherical on the ends with a radius of one-half the length of the rod. The handles are of rubber, two-thirds the length of the rod, and guard against any expansion due to change in temperature when held in the hands, thereby maintaining their accuracy under adverse conditions. The one-inch and 25 mm. are in the form of a round disc, as shown in cut. 2 inches to 6 inches are $\frac{1}{4}$ inch diameter with handles $\frac{1}{16}$ -inch diameter. 6 inches to 12 inches are $\frac{3}{8}$ inch diameter with handles $\frac{3}{8}$ -inch diameter.

English Measure No. 234

1 inch Disc....	\$1.00	5 inch.....	\$1.80	9 inch.....	\$2.60
2 inch Rod....	1.25	6 inch.....	2.00	10 inch.....	2.80
3 inch.....	1.40	7 inch.....	2.20	11 inch.....	3.00
4 inch.....	1.60	8 inch.....	2.40	12 inch.....	3.20

Metric Measure No. 234 M

25 mm. Disc..	\$1.00	125 mm.....	\$1.80	225 mm.....	\$2.60
50 mm. Rod..	1.25	150 mm.....	2.00	250 mm.....	2.80
75 mm.....	1.40	175 mm.....	2.20	275 mm.....	3.00
100 mm.....	1.60	200 mm.....	2.40	300 mm.....	3.20

Standard Caliper Gauges

Brown & Sharpe

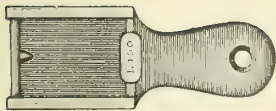
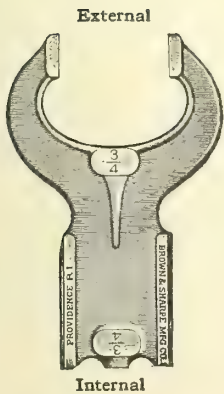
Carefully hardened and ground and accurately lapped to size. By their use mistakes in the setting of calipers and variations in measurements by different workmen will be in a great measure avoided. Their form gives lightness and strength, making them preferable to plugs and rings for frequent use. The measuring surfaces are amply large to insure accurate measurements and the maintenance of Gauge sizes. As furnishing convenient and reliable standard sizes for every day use in the workshop, they are of great advantage, and their use will contribute to uniformity in the production of the working parts of machinery.

External and Internal—Both Ends Finished

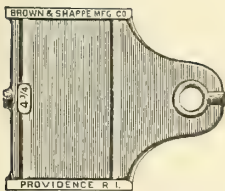
No. 665 English

No. 666 Metric

Size Inches	Each	Size Inches	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
1/4	\$2.50	1 5/8	\$3.30	5	\$2.50	23	\$2.65	41	\$3.30	59	\$4.30
5/16	2.50	1 11/16	3.40	6	2.50	24	2.65	42	3.40	60	4.40
3/8	2.50	1 3/4	3.50	7	2.50	25	2.70	43	3.40	61	4.50
7/16	2.50	1 13/16	3.60	8	2.50	26	2.75	44	3.50	62	4.50
1/2	2.50	1 7/8	3.70	9	2.50	27	2.75	45	3.50	63	4.60
9/16	2.50	1 15/16	3.80	10	2.50	28	2.80	46	3.60	64	4.60
5/8	2.50	2	3.90	11	2.50	29	2.85	47	3.70	65	5.00
11/16	2.50	2 1/16	3.95	12	2.50	30	2.85	48	3.70	66	5.25
3/4	2.50	2 1/8	4.00	13	2.50	31	2.90	49	3.80	67	5.25
13/16	2.55	2 3/16	4.10	14	2.50	32	2.90	50	3.90	68	5.50
7/8	2.60	2 1/4	4.20	15	2.50	33	2.95	51	3.90	69	5.50
15/16	2.65	2 5/16	4.30	16	2.50	34	3.00	52	3.95	70	5.50
1	2.70	2 3/8	4.40	17	2.50	35	3.00	53	3.95	71	6.00
1 1/16	2.75	2 7/16	4.50	18	2.50	36	3.05	54	4.00	72	6.00
1 1/8	2.80	2 1/2	4.60	19	2.50	37	3.05	55	4.10	73	6.00
1 3/16	2.85	2 9/16	5.00	20	2.55	38	3.10	56	4.10	74	6.00
1 1/4	2.90	2 5/8	5.25	21	2.55	39	3.20	57	4.20	75	6.00
1 5/16	2.95	2 11/16	5.50	22	2.60	40	3.20	58	4.30		
1 3/8	3.00	2 3/4	5.50								
1 7/16	3.05	2 13/16	6.00								
1 1/2	3.10	2 7/8	6.00								
1 9/16	3.20	2 15/16	6.00								



Style up to and including
3 inches or 75 mm.



Style over 3 inches
or 75 mm.

Internal

No. 667 English

No. 668 Metric

Size Inches	Each	Size Inches	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
1/4	\$1.40	1 7/8	\$2.10	5	\$1.40	29	\$1.55	53	\$2.20	77	\$3.30
5/16	1.40	1 15/16	2.10	6	1.40	30	1.55	54	2.30	78	3.30
3/8	1.40	2	2.20	7	1.40	31	1.60	55	2.30	79	3.30
7/16	1.40	2 1/16	2.20	8	1.40	32	1.60	56	2.30	80	3.30
1/2	1.40	2 1/8	2.20	9	1.40	33	1.60	57	2.30	81	3.30
9/16	1.40	2 3/16	2.30	10	1.40	34	1.65	58	2.30	82	3.30
5/8	1.40	2 1/4	2.30	11	1.40	35	1.65	59	2.40	83	3.50
11/16	1.40	2 5/16	2.30	12	1.40	36	1.65	60	2.40	84	3.50
3/4	1.45	2 3/8	2.40	13	1.40	37	1.70	61	2.40	85	3.50
13/16	1.45	2 7/16	2.40	14	1.40	38	1.70	62	2.50	86	3.50
7/8	1.45	2 1/2	2.50	15	1.40	39	1.75	63	2.50	87	3.50
15/16	1.45	2 9/16	2.80	16	1.40	40	1.80	64	2.80	88	3.50
1	1.50	2 5/8	2.90	17	1.40	41	1.80	65	2.80	89	3.75
1 1/16	1.50	2 11/16	3.00	18	1.45	42	1.90	66	2.90	90	3.75
1 1/8	1.55	2 3/4	3.00	19	1.45	43	2.00	67	3.00	91	3.75
1 3/16	1.55	2 13/16	3.30	20	1.45	44	2.00	68	3.00	92	3.75
1 1/4	1.60	2 7/8	3.30	21	1.45	45	2.00	69	3.00	93	3.75
1 5/16	1.60	2 15/16	3.30	22	1.45	46	2.00	70	3.30	94	3.75
1 3/8	1.65	3 to 3 1/4	3.30	23	1.45	47	2.10	71	3.30	95	3.75
1 7/16	1.65	3 5/16 to 3 1/2	3.50	24	1.50	48	2.10	72	3.30	96	4.00
1 1/2	1.70	3 9/16 to 3 3/4	3.75	25	1.50	49	2.10	73	3.30	97	4.00
1 9/16	1.75	3 13/16 to 4	4.00	26	1.50	50	2.20	74	3.30	98	4.00
1 5/8	1.80	4 1/16 to 5	4.25	27	1.55	51	2.20	75	3.30	99	4.00
1 11/16	1.90	5 1/16 to 6	4.50	28	1.55	52	2.20	76	3.30	100	4.00
1 3/4	2.00	6 1/16 to 7	4.75								
1 13/16	2.00	7 1/16 to 8	5.00								

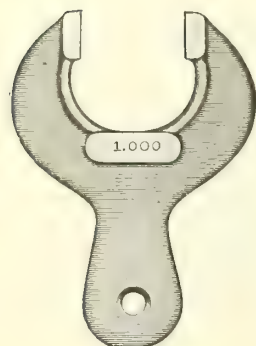
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Standard Caliper Gauges

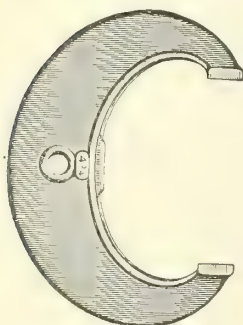
Brown & Sharpe

(See preceding page for detailed description)



External

Style up to and including
3 inches or 75 mm.



External

Style over 3 inches or 75 mm.

External

No. 669 English

Size Inches	Each	Size Inches	Each
1/4	\$1.40	2 1/16	\$2.20
5/16	1.40	2 1/8	2.20
3/8	1.40	2 3/16	2.30
7/16	1.40	2 1/4	2.30
1/2	1.40	2 5/16	2.30
9/16	1.40	2 3/8	2.40
5/8	1.40	2 7/16	2.40
11/16	1.40	2 1/2	2.50
3/4	1.45	2 9/16	2.80
13/16	1.45	2 5/8	2.90
7/8	1.45	2 11/16	3.00
15/16	1.45	2 3/4	3.00
1	1.50	2 13/16	3.30
1 1/16	1.50	2 7/8	3.30
1 1/8	1.55	2 15/16	3.30
1 1/16	1.55	3	to 3 1/4 3.50
1 1/4	1.60	3 1/16 to 3 1/2	3.30
1 5/8	1.60	3 1/8 to 3 3/4	3.50
1 3/8	1.65	3 1/16 to 4	3.75
1 7/16	1.65	4 1/16 to 5	4.00
1 1/2	1.70	5 1/16 to 6	4.25
1 9/16	1.75	6 1/16 to 7	4.50
1 5/8	1.80	7 1/16 to 8	4.75
1 11/16	1.90	8 1/16 to 9	5.00
1 3/4	2.00	9 1/16 to 10	5.65
1 13/16	2.00	10 1/16 to 11	6.25
1 7/8	2.10	11 1/16 to 12	7.00
1 15/16	2.10	.....	8.00
2	2.20		

No. 670 Metric

Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
5	\$1.40	33	\$1.60	61	\$2.40	89	\$3.75	185	\$5.00		
6	1.40	34	1.65	62	2.50	90	3.75	190	5.00		
7	1.40	35	1.65	63	2.50	91	3.75	195	5.00		
8	1.40	36	1.65	64	2.80	92	3.75	200	5.00		
9	1.40	37	1.70	65	2.80	93	3.75	205	5.65		
10	1.40	38	1.70	66	2.90	94	3.75	210	5.65		
11	1.40	39	1.75	67	3.00	95	3.75	215	5.65		
12	1.40	40	1.80	68	3.00	96	4.00	220	5.65		
13	1.40	41	1.80	69	3.00	97	4.00	225	5.65		
14	1.40	42	1.90	70	3.30	98	4.00	230	6.25		
15	1.40	43	2.00	71	3.30	99	4.00	235	6.25		
16	1.40	44	2.00	72	3.30	100	4.00	240	6.25		
17	1.40	45	2.00	73	3.30	105	4.25	245	6.25		
18	1.45	46	2.00	74	3.30	110	4.25	250	6.25		
19	1.45	47	2.10	75	3.30	115	4.25	255	7.00		
20	1.45	48	2.10	76	3.30	120	4.25	260	7.00		
21	1.45	49	2.10	77	3.30	125	4.25	265	7.00		
22	1.45	50	2.20	78	3.30	130	4.50	270	7.00		
23	1.45	51	2.20	79	3.30	135	4.50	275	7.00		
24	1.50	52	2.20	80	3.30	140	4.50	280	8.00		
25	1.50	53	2.20	81	3.30	145	4.50	285	8.00		
26	1.50	54	2.30	82	3.30	150	4.50	290	8.00		
27	1.55	55	2.30	83	3.50	155	4.75	295	8.00		
28	1.55	56	2.30	84	3.50	160	4.75	300	8.00		
29	1.55	57	2.30	85	3.50	165	4.75				
30	1.55	58	2.30	86	3.50	170	4.75				
31	1.60	59	2.40	87	3.50	175	4.75				
32	1.60	60	2.40	88	3.50	180	5.00				

Unfinished Caliper Gauges

Vulcan

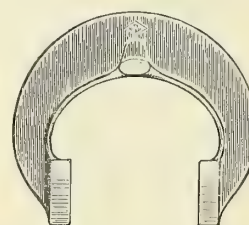
These Gauges are drop-forged from a mild steel, suitable for hardening. They furnish an inexpensive basis for all shop-made gauges. The lettering panels and sides of jaws are on the same plane, and may be finished by a single grinding or polishing operation.

External—Double End



Number	Capacity	Extreme Dimensions		Dimensions of Measuring Pad		Unfinished Each
		Length Inches	Width Inches	Length Inches	Width Inch	
2	1/4 to 3/8	2 1/8	1 5/16	1 5/16	3/16	\$.20
4	3/8 to 1/2	2 1/2	1 1/8	1 1/2	1/4	.22
6	1/2 to 3/4	3 1/8	1 9/16	1 9/16	1/4	.25
8	3/4 to 1	3 5/8	1 11/16	2 1/2	9/32	.30
10	1 to 1 1/4	4 3/8	2 3/8	3 3/4	3/2	.39
12	1 1/4 to 1 1/2	5	2 3/4	4 1/2	5/16	.53
14	1 1/2 to 1 3/4	5 9/16	3 1/16	5 1/16	5/16	.72
16	1 3/4 to 2	6 5/16	3 1/2	1	5/16	.96
18	2 to 2 1/2	7 1/4	4 5/16	1 5/32	1 5/32	1.25
20	2 1/2 to 3	8 9/16	5 1/8	1 1/2	1 1/2	1.60

External—Single End



Number	Capacity	Extreme Dimensions		Dimensions of Measuring Pad		Unfinished Each
		Length Inches	Width Inches	Length Inches	Width Inch	
22	3 to 3 1/2	5 1/8	5 3/4	1 1/2	1/2	\$1.00
24	3 1/2 to 4	5 11/16	6 1/2	1 11/16	1 7/32	1.20
26	4 to 4 1/2	6 1/4	7 3/16	1 11/16	1 3/32	1.45
28	4 1/2 to 5	6 25/32	7 3/32	2	1 9/16	1.75
30	5 to 5 1/2	7 1/16	8 3/32	2 1/8	1 9/16	2.10
32	5 1/2 to 6	7 15/16	9 1/16	2 3/32	1 9/16	2.50

Internal—Double End



Number	Capacity	Extreme Dimensions		Dimensions of Measuring Pad		Length Center Pad Inch	Unfinished Each
		Length Inches	Width Inches	Length Inches	Width Inch		
110	1 to 1 1/4	3	1 11/32	1	9/32	5/8	\$.39
112	1 1/4 to 1 1/2	3 1/2	1 5/8	1 1/4	5/16	5/8	.53
114	1 1/2 to 1 3/4	4 1/4	1 27/32	1 1/2	5/16	3/4	.72
116	1 3/4 to 2	4 7/8	2 1/8	1 3/4	5/16	1 1/8	.96
118	2 to 2 1/2	5 3/8	2 13/32	1 15/16	1 5/32	7/8	1.25
120	2 1/2 to 3	6 3/8	3 1/8	2 5/16	1 1/2	1	1.60

Standard Cylindrical Gauges

Brown & Sharpe

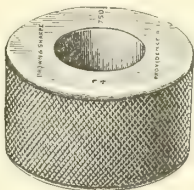
These gauges have exceptionally large measuring surfaces and are recommended for the most accurate work. Each gauge is plainly stamped with its size, both in decimals and common fractions; and a rigid inspection is exacted before gauges are prepared for shipment.

The Internal Gauges or "Plugs" are convenient for ordinary machine work, as calipers can be set and dimensions transferred more accurately than from a rule, and from measuring work internally, they can be employed directly without the use of calipers.

The large sizes are unusually light in proportion to their size. They consist of a hardened steel ring on an aluminum center, and while this construction makes the gauges very light and convenient, it does not in any way impair their accuracy.

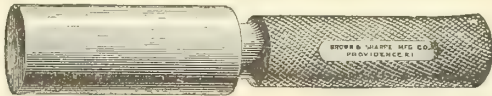
The External Gauges or "Rings" can be used direct for measuring shafts, spindles and work of a similar class.

External



No. 662 English				No. 663 Metric							
Size Inches	Each	Size Inches	Each	Size Inches	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
1/8	\$4.45	1 1/8	\$6.75	2 1/8	\$11.25	5	\$4.45	23	\$6.10	41	\$8.75
3/16	4.45	1 3/16	7.00	2 3/16	11.50	6	4.45	24	6.10	42	9.00
1/4	4.45	1 1/4	7.25	2 1/4	11.75	7	4.60	25	6.25	43	9.00
5/16	4.60	1 5/16	7.50	2 5/16	12.00	8	4.60	26	6.50	44	9.25
3/8	4.75	1 3/8	7.75	2 3/8	12.25	9	4.75	27	6.50	45	9.25
7/16	4.90	1 7/16	8.00	2 7/16	12.50	10	4.75	28	6.75	46	9.50
1/2	5.05	1 1/2	8.25	2 1/2	12.75	11	4.90	29	6.75	47	9.75
9/16	5.20	1 9/16	8.50	2 9/16	13.00	12	5.05	30	7.00	48	9.75
5/8	5.35	1 5/8	8.75	2 5/8	13.25	13	5.05	31	7.25	49	10.00
11/16	5.50	1 11/16	9.00	2 11/16	13.50	14	5.20	32	7.25	50	10.25
3/4	5.65	1 3/4	9.25	2 3/4	13.75	15	5.35	33	7.50	51	10.25
13/16	5.80	1 13/16	9.50	2 13/16	14.00	16	5.35	34	7.75	52	11.00
7/8	5.95	1 7/8	9.75	2 7/8	14.25	17	5.50	35	7.75	53	11.00
15/16	6.10	1 15/16	10.00	2 15/16	14.50	18	5.50	36	8.00	54	11.25
1	6.25	2	10.25	3	14.75	19	5.65	37	8.00	55	11.50
1 1/16	6.50	2 1/16	11.00			20	5.80	38	8.25	56	11.50
						21	5.80	39	8.50	57	11.75
						22	5.95	40	8.50	58	12.00

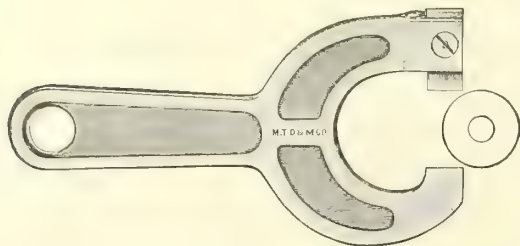
Internal



No. 660 English						No. 661 Metric							
Size Inches	Each	Size Inches	Each	Size Inches	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
1/8	\$3.00	1 1/8	\$4.30	2 1/8	\$7.15	5	\$3.00	23	\$4.00	41	\$5.40	59	\$7.60
3/16	3.00	1 3/16	4.40	2 3/16	7.30	6	3.00	24	4.00	42	5.55	60	7.85
1/4	3.00	1 1/4	4.50	2 1/4	7.45	7	3.00	25	4.10	43	5.55	61	8.10
5/16	3.00	1 5/16	4.65	2 5/16	7.60	8	3.00	26	4.20	44	5.70	62	8.10
3/8	3.10	1 3/8	4.80	2 3/8	7.85	9	3.10	27	4.20	45	5.70	63	8.25
7/16	3.20	1 7/16	4.95	2 7/16	8.10	10	3.10	28	4.30	46	5.85	64	8.25
1/2	3.30	1 1/2	5.10	2 1/2	8.25	11	3.20	29	4.30	47	6.00	65	8.40
9/16	3.40	1 9/16	5.25	2 9/16	8.40	12	3.30	30	4.40	48	6.00	66	8.55
5/8	3.50	1 5/8	5.40	2 5/8	8.55	13	3.30	31	4.50	49	6.15	67	8.55
11/16	3.60	1 11/16	5.55	2 11/16	8.70	14	3.40	32	4.50	50	6.30	68	8.70
3/4	3.70	1 3/4	5.70	2 3/4	8.85	15	3.50	33	4.65	51	6.30	69	8.85
13/16	3.80	1 13/16	5.85	2 13/16	9.00	16	3.50	34	4.80	52	7.00	70	8.85
7/8	3.90	1 7/8	6.00	2 7/8	9.15	17	3.60	35	4.80	53	7.00	71	9.00
15/16	4.00	1 15/16	6.15	2 15/16	9.30	18	3.60	36	4.95	54	7.15	72	9.00
1	4.10	2	6.30	3	9.45	19	3.70	37	4.95	55	7.30	73	9.15
1 1/16	4.20	2 1/16	7.00			20	3.80	38	5.10	56	7.30	74	9.30
						21	3.80	39	5.25	57	7.45	75	9.30
						22	3.90	40	5.25	58	7.60		

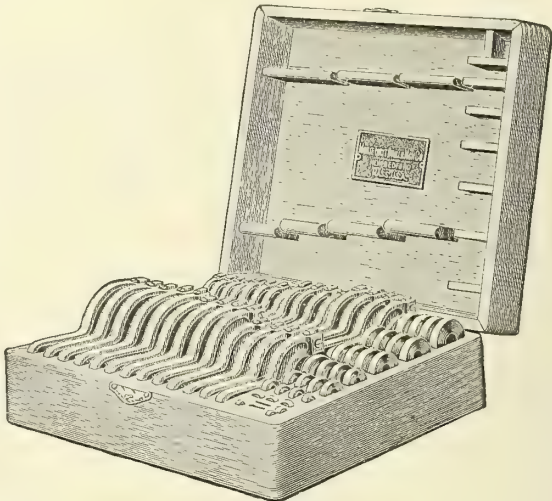
Adjustable Caliper Gauges

Morse No. 128A



These Gauges are hardened, ground and lapped to size, and are fitted with an adjustable jaw. A disk accurately ground and lapped to size is furnished with each Gauge for testing and correcting the same. Sizes 2 to 3 inches have no handles.

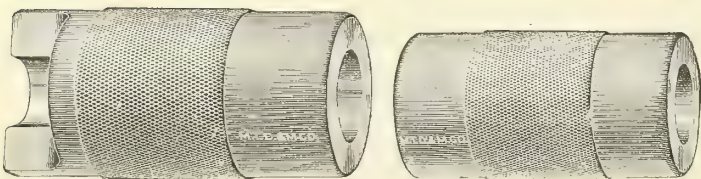
Size	Each	Size	Each	Size	Each	Size	Each	Size	Each
$\frac{1}{4}$	\$3.75	$\frac{1\frac{1}{8}}{16}$	\$3.85	$\frac{1\frac{3}{8}}{8}$	\$4.50	$\frac{1\frac{5}{16}}{16}$	\$5.70	$2\frac{1}{2}$	\$6.90
$\frac{5}{16}$	3.75	$\frac{7}{8}$	3.90	$\frac{1\frac{7}{8}}{16}$	4.60	2	5.85	$2\frac{9}{16}$	7.50
$\frac{3}{8}$	3.75	$\frac{15}{16}$	4.00	$1\frac{1}{2}$	4.65	$2\frac{1}{16}$	5.95	$2\frac{3}{8}$	7.90
$\frac{7}{16}$	3.75	1	4.05	$1\frac{9}{8}$	4.80	$2\frac{1}{8}$	6.00	$2\frac{11}{16}$	8.25
$1\frac{1}{2}$	3.75	$1\frac{1}{16}$	4.15	$1\frac{5}{8}$	4.95	$2\frac{3}{16}$	6.15	$2\frac{3}{4}$	8.25
$\frac{9}{16}$	3.75	$1\frac{1}{8}$	4.20	$\frac{11}{16}$	5.10	$2\frac{1}{4}$	6.30	$2\frac{13}{16}$	9.00
$\frac{5}{8}$	3.75	$1\frac{3}{16}$	4.30	$\frac{13}{16}$	5.25	$2\frac{5}{16}$	6.45	$2\frac{7}{8}$	9.00
$\frac{11}{16}$	3.75	$1\frac{1}{4}$	4.35	$\frac{13}{16}$	5.40	$2\frac{3}{8}$	6.60	$2\frac{15}{16}$	9.00
$\frac{3}{4}$	3.75	$1\frac{5}{16}$	4.45	$1\frac{7}{8}$	5.55	$2\frac{7}{16}$	6.75	3	9.75



A Set of Adjustable Caliper Gauges in box, sizes from $\frac{1}{4}$ inch to 2 inches, inclusive, varying by 16ths.
 Price.....\$125.00
 For Set, sizes $\frac{1}{4}$ inch to 3 inches, inclusive, by 16ths.
 Price..... 245.00

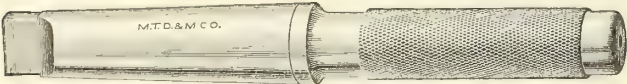
Taper Plug and Ring
Cylindrical Gauges

Morse No. 128C

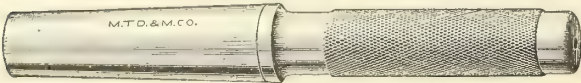


Style A Ring

Style B Ring



Style A Plug



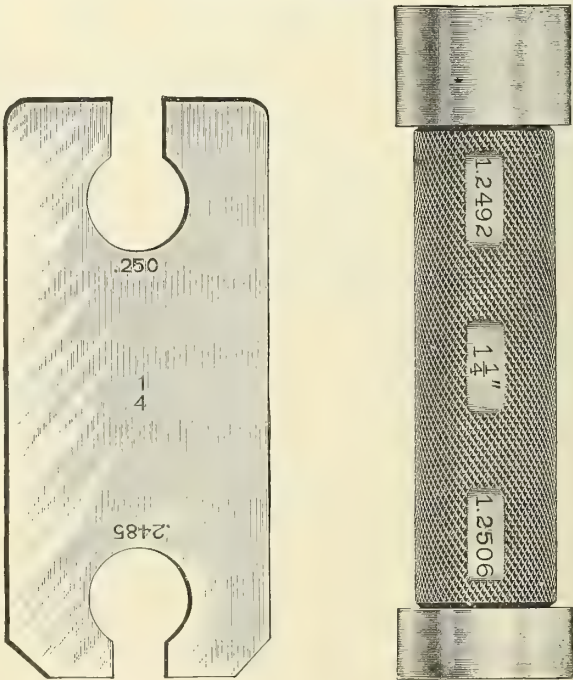
Style B Plug

Number	Plug Gauge Each	Ring Gauge Each	Plug and Ring Both
0	\$3.50	\$7.00	\$10.50
1	3.50	7.00	10.50
2	4.50	9.00	13.50
3	5.50	11.00	16.50
4	7.00	14.00	21.00
5	9.50	17.00	26.50
6	13.00	22.00	35.00
7	40.00	80.00	120.00

When ordering, give style of Plug or Ring as well as number.
 The line on each Plug Gauge denotes the depth of hole.
 Gauges for Short Shanks made to order. Prices quoted on application.

Limit Gauges

Brown & Sharpe



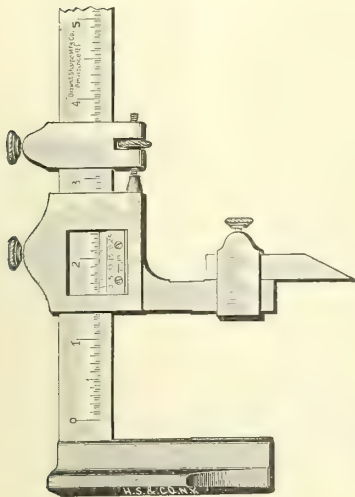
External

Internal

The advantages derived from the use of Limit Gauges are that the time consumed in testing and gauging is reduced to a minimum and the accurate duplication of parts is insured. The two ends are of different shape, thus furnishing means of identifying the larger end from the smaller without reference to the size stamped on the Gauge.
 In addition to their value for finishing sizes they are of great advantage in roughing work for finishing, the same amount of stock being left on each piece, making it much easier to finish them to size.
 Prices are quoted on Limit and Special Gauges of all descriptions, when specifications, drawings or samples of work are sent. The dimensions required at each end of the Gauge must be plainly stated in thousandths or fractions of thousandths of an inch.

Vernier Height Gauge

Brown & Sharpe



This Height Gauge is used for obtaining the height of projections from a plane surface or the location of bushing in jigs, etc. The bar is 10 inches long, admits of measurements to 8 inches in height, and is graduated to read by means of a vernier to thousandths of an inch. It reads on one side to outside measurements and on the other to inside measurements. The jaws are approximately 2 inches long and 1 inch wide when closed. The fixed jaw is 1 inch thick, allowing gauge to stand upright, and is rounded on the end for use close to a projection. An extension for the movable jaw is furnished.

Metric Measure. Graduated to read $\frac{1}{100}$ mm. on one side and to $\frac{1}{2}$ mm. on the other.

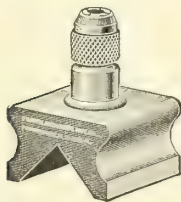
English and Metric Measure. Graduated to read to $\frac{1}{100}$ mm. on one side and to thousandths of an inch on the other. All measurements outside only.

No. 585 In English, Metric or English and Metric Measure, in Morocco Case, each \$25.00

For explanation of Vernier, see page 262. 18-inch price on application

Height Gauge Attachments

Brown & Sharpe



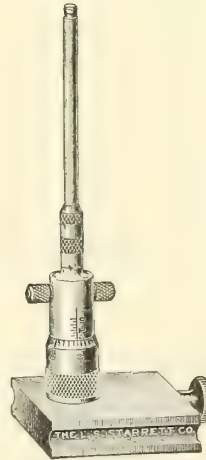
Designed for use in connection with the B. & S. Inside Micrometers Nos. 260 and 261, thus making a reliable Height Gauge.

The measuring rod is inserted upwards through the under side of the base and the clamping fingers; and by turning the knurled nut the rod is held firmly in an upright position. The micrometer is then adjusted and clamped to the upper end of the rod.

The base has a V-shaped groove in the bottom, which adapts the tool for use in cylindrical work.

No. 598, each \$.75

Starrett

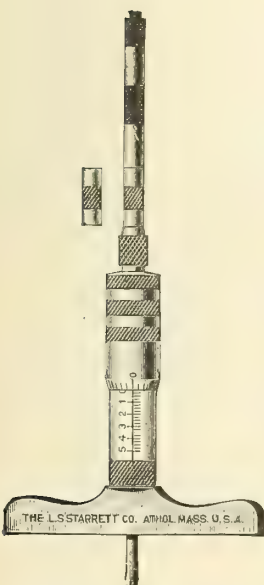


This cut shows a steel base for holding Starrett Inside Micrometer No. 124, sets A and B, for use as a height gauge. The anvil end is even with the bottom of the base and the micrometer is held perpendicularly, making a reliable gauge. A slight turn of the knurled screw instantly clamps it to or releases it from the base.

Attachment only \$1.50

Micrometer Depth Gauges

Starrett



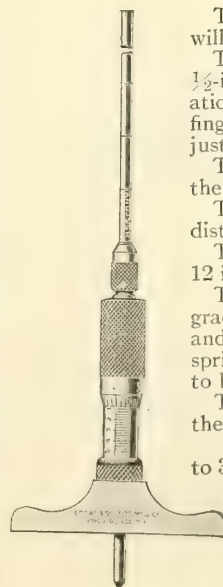
This gauge is designed for measuring the depth of grooves, holes or irregular parts. It has $\frac{1}{2}$ -inch movement of the screw, reading in thousandths; and with two $\frac{1}{2}$ -inch and one 1-inch standard collars to slip off or on the spindle, $2\frac{1}{2}$ inches, reading in thousandths, can be obtained. The split nut is covered and protected by patent graduated sleeve, which not only protects the nut from dirt, but provides a quick and accurate way of taking up wear and adjusting the micrometer to insure correct reading. The sleeve, being held by a stiff friction, may be rotated by a spanner wrench, accompanying each gauge, so that the zero lines will coincide for correct reading. The head is about $\frac{3}{16}$ -inch thick; this and the point of measuring rod are hardened.

No. 446A	2 $\frac{1}{4}$ -inch base	Each \$4.50
No. 446B	4-inch base	5.00

Metric Measure

No. 446 M-A	2 $\frac{1}{4}$ -inch base	Each \$4.50
No. 446 M-B	4-inch base	5.00
Cases for Nos. 446A and 446M-A	are, extra . . . . .	.50
Cases for Nos. 446B and 446M-B	are, extra . . . . .	.75

Brown & Sharpe



The 2-inch and 4-inch base Micrometer Depth Gauge will measure all distances to $2\frac{1}{2}$ inches by .001-inch.

The screw in each of these Gauges has a movement of $\frac{1}{2}$ -inch. The rod is graduated in $\frac{1}{2}$ -inch. The graduations are of such a form and depth that the clamping fingers, at end of gauge, spring in, allowing the $\frac{1}{2}$ -inch adjustments of the rod to be quickly and positively made.

The base is about $\frac{7}{16}$ -inch thick and, together with the point of the rod, is hardened.

These Depth Gauges are also made to measure all distances to 63 mm. by hundredths of a millimeter.

The $4\frac{1}{2}$ -inch base Gauge measures all distances to 12 inches by .001-inch.

The screw has a movement of 1-inch. The graduations are of such a form and depth that the clamping fingers at end of gauge spring in, allowing the 1-inch adjustments of the rod to be quickly and positively made.

The base is about $\frac{9}{16}$ -inch thick and, together with the point of rod, is hardened.

This Gauge is also made to measure all distances to 300 millimeters by hundredths of a millimeter.

No. 605 English or Metric Measure

	Each	Each
2-inch Base	\$4.50	In Morocco Case \$5.00
4-inch Base	5.00	In Morocco Case 5.50
4 $\frac{1}{2}$ -inch Base . . .	6.00	In Morocco Case 8.00

Vernier Depth Gauges

Starrett

This Gauge appeals to that class of mechanics whose work requires very close limits, such as gauging the depth of recesses, in jig work, etc. The blade is 6 inches long, $\frac{9}{32}$ -inch wide, and will measure to $3\frac{1}{2}$ inches depth. The blade is graduated to read by means of a Vernier to thousandths of an inch on one edge and to 64ths on the other.

No. 448, in leather case. \$10.00

No. 448 M

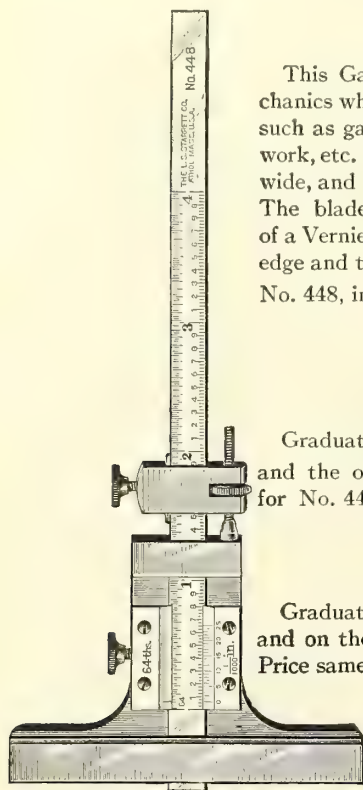
Metric

Graduated to read on one edge in $\frac{1}{50}$ mm. and the other in $\frac{1}{2}$ mm. Price same as for No. 448.

No. 448 M & E

Metric and English

Graduated to read on one edge in $\frac{1}{50}$ mm. and on the other in thousandths of an inch. Price same as for No. 448.



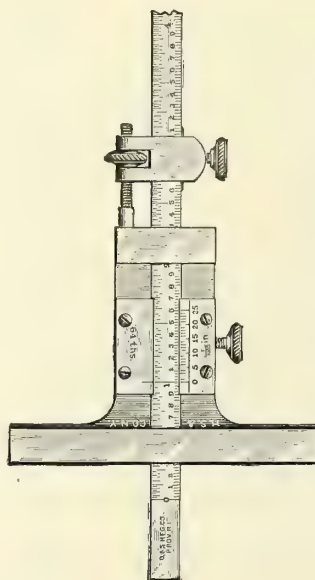
Brown & Sharpe

This Depth Gauge is used in obtaining the depth of holes, recesses in dies, distance from a plane surface to a projection, etc. The blade is 5 inches long, $\frac{1}{4}$ -inch wide, allows of measurements to $3\frac{1}{2}$ inches being made, and is graduated on the front to read, by means of a Vernier, to thousandths of an inch and 64ths of an inch.

This Depth Gauge is also furnished graduated to read to $\frac{1}{50}$ th of a mm. on one side and to $\frac{1}{2}$ mm. on the other corner of the same side; or $\frac{1}{50}$ th of a mm. on one side, and by means of a Vernier, to $\frac{1}{1000}$ th of an inch on the other side.

No. 600

English, Metric, or English and Metric Measure, in Morocco Case. \$10.00

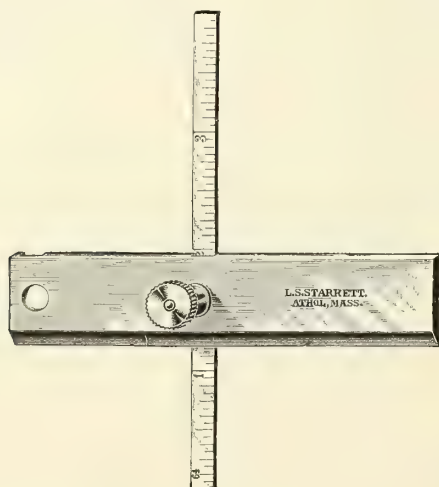


For explanation of Vernier, see page 262

Depth Gauges

Starrett

Has a 4-inch or 6-inch Scale, $\frac{3}{16}$ -inch wide, graduated in either 32ds and 64ths, 50ths and 100ths, or 64ths and 100ths, indicating exact measurements, and may be used separately from the gauge.



	Each
No. 46A with $3\frac{1}{2}$ -inch stock and 4-inch scale	\$1.25
No. 46B with $3\frac{1}{2}$ -inch stock and 6-inch scale	1.50
No. 46C with 6-inch stock and 4-inch scale	1.50
No. 46D with 6-inch stock and 6-inch scale	1.75
No. 46E with 10-inch stock and 6-inch scale	2.25

This Gauge is also made in corresponding metric sizes at above prices.

Brown & Sharpe

Universal

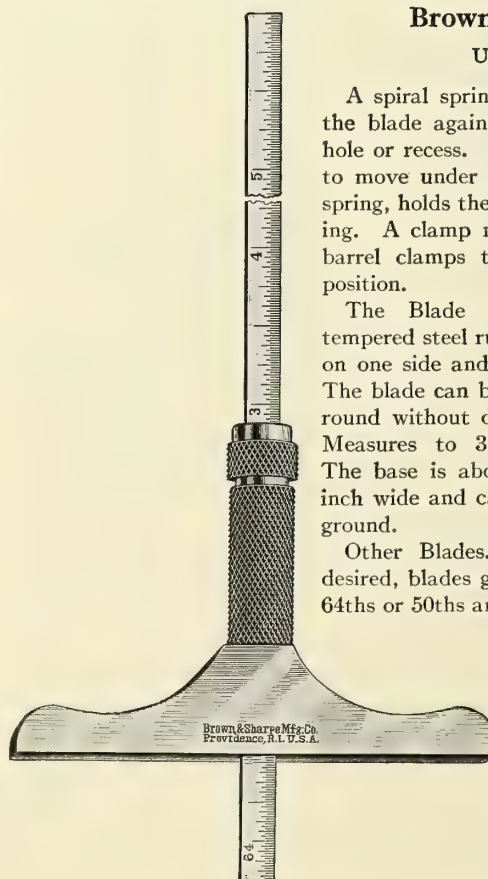
A spiral spring in the barrel forces the blade against the bottom of the hole or recess. A friction clutch, free to move under pressure of the spiral spring, holds the blade without clamping. A clamp nut at the top of the barrel clamps the blade securely in position.

The Blade is a narrow 6-inch tempered steel rule graduated to 64ths on one side and 100ths on the other. The blade can be swiveled completely round without disturbing the setting. Measures to $3\frac{1}{8}$ inches in depth. The base is about 3 inches long, $\frac{7}{16}$ inch wide and carefully hardened and ground.

Other Blades. We furnish, when desired, blades graduated to 32ds and 64ths or 50ths and 100ths.

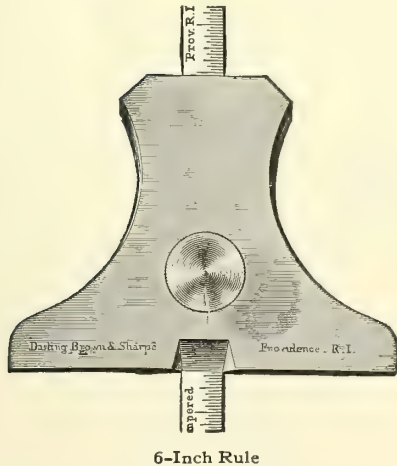
Metric Measure. This Depth Gauge is also furnished to read to 1 millimeter on one side and to $\frac{1}{2}$ millimeter on the other. Measures to 95 millimeters in depth.

No. 610 English or Metric Measure \$3.00



Depth Gauges

Brown & Sharpe



6-Inch Rule

The head can be conveniently held. It is made of steel $\frac{1}{8}$ -inch thick, hardened.

The Blade is a 6-inch narrow tempered steel rule.

The Blade sent with the Gauge is divided into 64ths and 100ths of inches.

This Depth Gauge is also furnished with a blade 15 cm. long, graduated on one corner to $\frac{1}{2}$ mm. and on the other corner to 1 mm. No. 615, English or Metric Measure, each..... \$1.25

Starrett

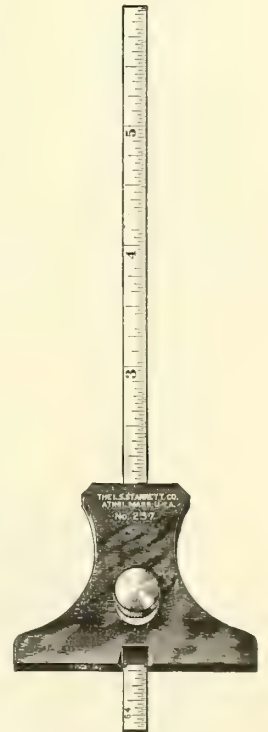
The head of this Gauge is steel, nicely finished and case-hardened; 2 inches wide across the base, $\frac{1}{8}$ -inch thick.

The Blade, which is conveniently held in the groove of the head by a knurled lock nut, is a 6-inch narrow spring-tempered rule, and can be used separately from the gauge. Blades graduated in 32nds and 64ths of an inch will be sent unless otherwise ordered, but we can also supply them graduated in 50ths and 100ths or 64ths and 100ths.

No. 237, each \$1.25

Metric Measure. Same as above except that blade is graduated in millimeters on one side and $\frac{1}{2}$ millimeters on the other, and is 13 cm. long.

No. 237 M, each..... \$1.25



Surface Gauges

Explanatory

The laying out of work often includes the scribing of lines at a given height from some face of the work or the continuation of lines around the several surfaces. A surface gauge has been devised for holding the scriber. This consists of a heavy base and pivoted upright to which is attached a scriber held by a clamp which may be turned through a complete revolution. By resting both the surface gauge and the work upon a plane surface, usually a cast-iron surface plate, it is possible to set the point of the scriber at a given height, either by use of a scale or some other standard, and draw lines at this height on all faces of the work or on any number of pieces when duplicate parts are being made. Thus the height of a standard bearing may be transferred to the faces of any number of castings from which duplicate bearings are to be made.

It is necessary in some cases to prepare the surface of the work so that the line made by the scriber will be sufficiently clean cut to enable the workman to distinguish it quickly. This is done in the case of rough castings by chalking the surface and rubbing in with the finger. In the case of a highly finished surface some other method is necessary. The usual way is to use a solution containing copper sulphide and nitric acid in the proportions of one ounce of copper sulphide, four ounces of water, and a teaspoonful of acid. This solution gives a reddish-brown color against which the lines will show. In cases where the temper of the metal is not to be considered, heating it to a blue will give a satisfactory result.

The use of the Surface Gauge is not confined to scribing on vertical surfaces only, it may be used on other surfaces or as a height gauge as well. The bent end on the scriber permits lines to be drawn on horizontal surfaces while a groove in the base of the gauge makes it possible to mark out desired distances from the radius of circular pieces.

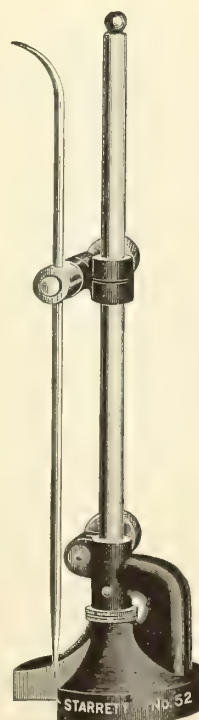
Starrett

This Gauge, with the improvements made in the few years past, gives great satisfaction to all who use it.

The sleeve and needle clasp, when loosened for adjustment, are both held by a slight spring friction, and by a single knurled nut, both are rigidly clamped. For fine adjustment, the spindle in the base is raised or lowered by a knurled nut, and all backlash is taken up by a spiral spring in the base.

For above 12-inch lengths, an extension is provided to couple on to the spindle.

	Each
No. 52A 8-inch.....	\$2.00
No. 52B 12-inch.....	2.75
No. 52C 12-inch, with 6-inch extension.....	3.25
Sleeve alone.....	.75



Universal Surface Gauges

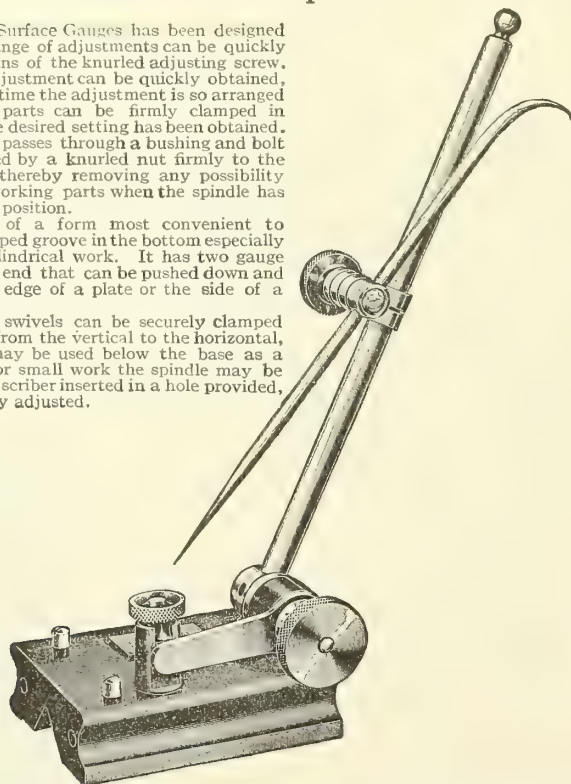
Brown and Sharpe

This line of Surface Gauges has been designed so that a wide range of adjustments can be quickly obtained by means of the knurled adjusting screw. The maximum adjustment can be quickly obtained, and at the same time the adjustment is so arranged that all moving parts can be firmly clamped in position when the desired setting has been obtained.

The spindle passes through a bushing and bolt which are clamped by a knurled nut firmly to the boss on the base, thereby removing any possibility of play in the working parts when the spindle has been clamped in position.

The base is of a form most convenient to handle. A V-shaped groove in the bottom especially adapts it for cylindrical work. It has two gauge pins in the rear end that can be pushed down and used against the edge of a plate or the side of a T-slot.

The spindle swivels can be securely clamped in any position from the vertical to the horizontal, and the scriber may be used below the base as a depth gauge. For small work the spindle may be removed and the scriber inserted in a hole provided, where it is readily adjusted.



Starrett

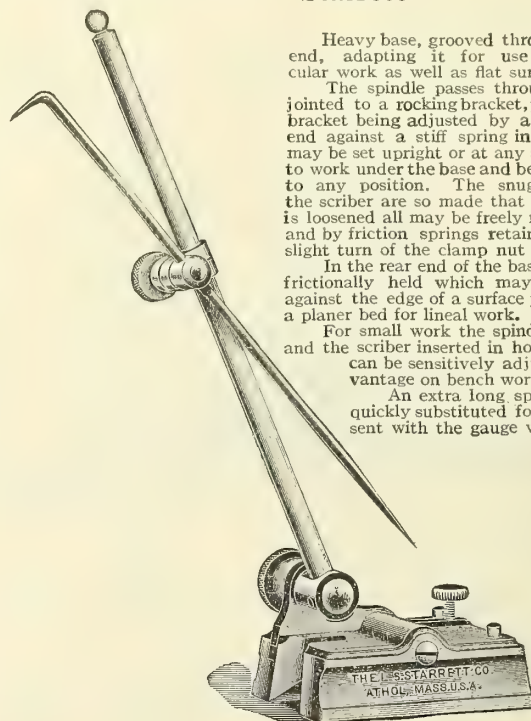
Heavy base, grooved through the bottom and end, adapting it for use on or against circular work as well as flat surfaces.

The spindle passes through a rotating head, jointed to a rocking bracket, pivoted in base. The bracket being adjusted by a knurled screw in one end against a stiff spring in the other, the spindle may be set upright or at any angle, or turned so as to work under the base and be sensitively adjusted to any position. The snug and head carrying the scriber are so made that when the clamp nut is loosened all may be freely moved to any position and by friction springs retained in place until a slight turn of the clamp nut holds them firm.

In the rear end of the base are two gauge pins frictionally held which may be pushed to bear against the edge of a surface plate or in the slot of a planer bed for lineal work.

For small work the spindle may be removed and the scriber inserted in hole provided where it can be sensitively adjusted and used to advantage on bench work.

An extra long spindle which may be quickly substituted for the regular will be sent with the gauge when ordered.



No. 622 Hardened Base	No. 623 Heavy Hardened Base	
No. 622 With 6-inch spindle, each.....		\$3.00
No. 622 With 9-inch spindle, each.....		3.00
No. 622 With 12-inch spindle, each.....		3.50
No. 623 With 12-inch spindle, each.....		3.50
No. 623 With 12-inch and 18-inch spindles, each.....		4.00

	Each
No. 57A 3-inch base, with 9-inch spindle.....	\$2.50
No. 57B 3-inch base, with 9 and 12-inch spindles.....	2.85
No. 57C 3 1/4-inch base, with 12-inch spindle.....	3.00
No. 57D 3 1/4-inch base, with 12 and 18-inch spindles.....	3.50

Starrett

With Case-hardened Steel Base

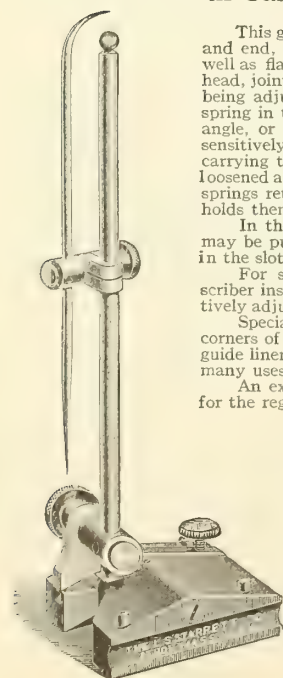
This gauge has a heavy base, grooved through the bottom and end, adapting it for use on or against circular work as well as flat surfaces. The spindle passes through a rotating head, jointed to a rocking bracket, pivoted in base, the bracket being adjusted by a knurled screw in one end against a stiff spring in the other. The spindle may be set upright or at any angle, or turned so as to work under the base, and can be sensitively adjusted to any position. The snug and head carrying the scriber are so made that when the clamp nut is loosened all may be freely moved to any position, and by friction springs retained in place until a slight turn of the clamp nut holds them firmly.

In the base are four gauge pins, frictionally held, which may be pushed to bear against the edge of a surface plate, or in the slot of a planer bed for lineal work.

For small work the spindle may be removed and the scriber inserted in a hole provided for it, where it can be sensitively adjusted and used to advantage on bench work.

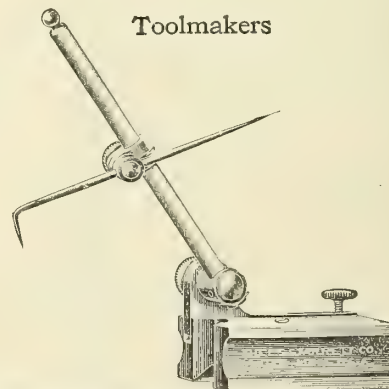
Special attention is called to the four gauge pins in the corners of the base, which adapt it to be used as a locomotive guide liner and make it more convenient than other gauges for many uses.

An extra long spindle, which may be quickly substituted for the regular, will be sent with the gauge when ordered.



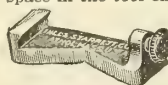
	Each
No. 257A 3-inch base, with 9-inch spindle.....	\$3.00
No. 257B 3-inch base, with 9 and 12-inch spindles.....	3.35
No. 257C 3 1/2-inch base, with 12-inch spindle.....	3.50
No. 257D 3 1/2-inch base, with 12 and 18-inch spindles.....	4.00

Toolmakers



This Gauge is admirably adapted for light work. The base is steel, nicely finished and case-hardened, with depressions milled in the sides for the thumb and finger to grasp. The top side of it is slotted, and the rocking bracket is pivoted in the same. There is a stiff spring under one end of the bracket and a knurled adjusting screw in other; the spindle jointed to this may be set and rigidly held in any position from vertical to horizontal, and the scriber placed in position to be used below its base for depth gauge or (with bent end down) a scribing gauge. A V-shaped groove in the end and bottom adapts it for use on cylindrical work. There is a small hole in the clamp next to the base in which the scriber may be used for light work, the spindle being removed.

An auxiliary guide piece (as above) is furnished to clamp to the base. It weighs but ten ounces, and is five inches high, and folding the spindle (which is four inches long) horizontally over the base, it may be packed in 1 3/8 x 1 1/2 x 4 inches space in the tool chest.



No. 56A With 4-inch spindle and auxiliary guide.....	\$3.00
No. 56B Without auxiliary guide.....	2.50

Sent with guide unless otherwise ordered.

A 7-inch spindle is furnished when ordered at an extra cost of 25 cents.

For explanatory notes see preceding page

Standard Gauges

Dimensions of Sizes in Decimal Parts of an Inch

Number of Gauge	American or Brown & Sharpe *Wire	Washburn & Moen Iron Wire	English Birmingham or Iron Wire	New British or Imperial Wire	Old English or London Wire	H. S. & Co. F. & G. Steel Music Wire	W. & M. Steel Music Wire	American Steel and Wire Co. Music Wire	Webster and Horsfall Music Wire	Common Steel Music Wire	U. S. Legal Standard Sheet and Plate Iron and Steel	Number of Gauge
00000000	.....	.....	.....	.....	.....	.....	.0083	.....	.....	.....	.....	00000000
0000000	.....	.....	.....	.....	.....	.....	.0087	.....	.....	.....	.....	0000000
000000	.....	.....	.....	.464	.....	.....	.0095	.004	.....	.....	.46875	000000
00000	.5165	.4305	.5	.432	.....	.....	.010	.005	.....	.....	.4375	00000
0000	.46	.3938	.454	.400	.454	.0068	.011	.006	.006	.....	.40625	0000
000	.40964	.3625	.425	.372	.425	.0075	.012	.007	.007	.....	.375	000
00	.3648	.331	.38	.348	.380	.0087	.0133	.008	.008	.008	.34375	00
0	.32486	.3065	.34	.324	.340	.0093	.0144	.009	.009	.009	.3125	0
1	.2893	.283	.3	.300	.300	.0098	.0156	.010	.010	.010	.28125	1
2	.25763	.2625	.284	.276	.284	.0106	.0166	.011	.011	.011	.265625	2
3	.22942	.2437	.259	.252	.259	.0114	.0178	.012	.012	.012	.25	3
4	.20431	.2253	.238	.232	.238	.0122	.0188	.013	.013	.013	.234375	4
5	.18194	.207	.22	.212	.220	.0138	.0202	.014	.014	.014	.21875	5
6	.16202	.192	.203	.192	.203	.0157	.0215	.016	.016	.016	.203125	6
7	.14428	.177	.18	.176	.180	.0177	.023	.018	.018	.018	.1875	7
8	.12849	.162	.165	.160	.165	.0197	.0243	.020	.020	.020	.171875	8
9	.11443	.1483	.148	.144	.148	.0216	.0256	.022	.022	.022	.15625	9
10	.10189	.135	.134	.128	.134	.0236	.027	.024	.024	.024	.140625	10
11	.090742	.1205	.12	.116	.120	.0260	.0284	.026	.026	.026	.125	11
12	.080808	.1055	.109	.104	.109	.0283	.0296	.029	.029	.028	.109375	12
13	.071961	.0915	.095	.092	.095	.0303	.0314	.031	.031	.030	.09375	13
14	.064084	.08	.083	.080	.083	.0323	.0326	.033	.033	.032	.078125	14
15	.057068	.072	.072	.072	.072	.0342	.0345	.035	.035	.034	.0703125	15
16	.05082	.0625	.065	.064	.065	.0362	.036	.037	.037	.036	.0625	16
17	.045257	.054	.058	.056	.058	.0382	.0377	.039	.039	.038	.05625	17
18	.040303	.0475	.049	.048	.049	.04	.0395	.041	.041	.040	.05	18
19	.03589	.041	.042	.040	.040	.042	.0414	.043	.043	.042	.04375	19
20	.031961	.0348	.035	.036	.035	.044	.0434	.045	.045	.044	.0375	20
21	.028462	.03175	.032	.032	.0315	.046	.046	.047	.047	.046	.034375	21
22	.025347	.0286	.028	.028	.0295	.048	.0483	.049	.052	.048	.03125	22
23	.022571	.0258	.025	.024	.027	.051	.051	.051	.055	.051	.028125	23
24	.0201	.023	.022	.022	.025	.055	.055	.055	.059	.055	.025	24
25	.0179	.0204	.02	.020	.023	.059	.0586	.059	.061	.059	.021875	25
26	.01594	.0181	.018	.018	.0205	.063	.0626	.063	.065	.063	.01875	26
27	.014195	.0173	.016	.0164	.01875	.067	.0658	.067	.070	.067	.0171875	27
28	.012641	.0162	.014	.0149	.0165	.071	.072	.071	.072	.071	.015625	28
29	.011257	.015	.013	.0136	.155	.074	.076	.075	.077	.074	.0140625	29
30	.010025	.014	.012	.0124	.01375	.078	.080	.080	.083	.078	.0125	30
31	.008928	.0132	.01	.0116	.01225	.082	.....	.085	.....	.082	.0109375	31
32	.00795	.0128	.009	.0108	.01125	.086	.....	.090	.....	.086	.01015625	32
33	.00708	.0118	.008	.0100	.01025	.....	.....	.095	.....	.090	.009375	33
34	.006304	.0104	.007	.0092	.0095	.....	.....	.100	.....	.094	.00859375	34
35	.005614	.0095	.005	.0084	.009	.....	.....	.106	.....	.098	.0078125	35
36	.005	.009	.004	.0076	.0075	.....	.....	.112	.....	.102	.00703125	36
37	.004453	.0085	.....	.0068	.0065	.....	.....	.118	.....	.....	.006640625	37
38	.003965	.008	.....	.0060	.00575	.....	.....	.124	.....	.....	.00625	38
39	.003531	.0075	.....	.0052	.005	.....	.....	.130	.....	.....	.....	39
40	.003144	.007	.....	.0048	.0045	.....	.....	.138	.....	.....	.....	40

*Also used for sheet brass, copper and aluminum

See next page for balance of gauges

Standard Gauges and Decimal Equivalents

(Continued from preceding page)

Dimensions of Sizes in Decimal Parts of an Inch

Stubs Steel Wire and Twist Drills LETTER SIZES										
Number of Gauge	Stubs Steel Wire	Twist Drills	Number of Gauge	Stubs Steel Wire	Twist Drills	Number of Gauge	Stubs Steel Wire	Twist Drills	Size by Gauge	Decimal Equivalent
1	.227	.2280	28	.139	.1405	55	.050	.0520	A	.234
2	.219	.2210	29	.134	.1360	56	.045	.0465	B	.238
3	.212	.2130	30	.127	.1285	57	.042	.0430	C	.242
4	.207	.2090	31	.120	.1200	58	.041	.0420	D	.246
5	.204	.2055	32	.115	.1160	59	.040	.0410	E	.250
6	.201	.2040	33	.112	.1130	60	.039	.0400	F	.257
7	.199	.2010	34	.110	.1110	61	.038	.0390	G	.261
8	.197	.1990	35	.108	.1100	62	.037	.0380	H	.266
9	.194	.1960	36	.106	.1065	63	.036	.0370	I	.272
10	.191	.1935	37	.103	.1040	64	.035	.0360	J	.277
11	.188	.1910	38	.101	.1015	65	.033	.0350	K	.281
12	.185	.1890	39	.099	.0995	66	.032	.0330	L	.290
13	.182	.1850	40	.097	.0980	67	.031	.0320	M	.295
14	.180	.1820	41	.095	.0960	68	.030	.0310	N	.302
15	.178	.1800	42	.092	.0935	69	.029	.0292	O	.316
16	.175	.1770	43	.088	.0890	70	.027	.0280	P	.323
17	.172	.1730	44	.085	.0860	71	.026	.0260	Q	.332
18	.168	.1695	45	.081	.0820	72	.024	.0250	R	.339
19	.164	.1660	46	.079	.0810	73	.023	.0240	S	.348
20	.161	.1610	47	.077	.0785	74	.022	.0225	T	.358
21	.157	.1590	48	.075	.0760	75	.020	.0210	U	.368
22	.155	.1570	49	.072	.0730	76	.018	.0200	V	.377
23	.153	.1540	50	.069	.0700	77	.016	.0180	W	.386
24	.151	.1520	51	.066	.0670	78	.015	.0160	X	.397
25	.148	.1495	52	.063	.0635	79	.014	.0145	Y	.404
26	.146	.1470	53	.058	.0595	80	.013	.0135	Z	.413
27	.143	.1440	54	.055	.0550					

For Machine and Wood Screws

The difference between consecutive sizes is .01316 inch for American Screw Co. Standard; .013 inch for A. S. M. E. Standard

Number of Gauge	American Screw Co.	A. S. M. E. Basic and Maximum Outside Diameter	Number of Gauge	American Screw Co.	A. S. M. E. Basic and Maximum Outside Diameter
000	.03152		26	.40000	.398
00	.04468		27	.41316	
0	.05784	.060	28	.42632	.424
1	.07100	.073	29	.43948	
2	.08416	.086	30	.45264	.450
3	.09732	.099	31	.46580	
4	.11048	.112	32	.47896	
5	.12364	.125	33	.49212	
6	.13680	.138	34	.50528	
7	.14996	.151	35	.51844	
8	.16312	.164	36	.53160	
9	.17628	.177	37	.54476	
10	.18944	.190	38	.55792	
11	.20260		39	.57108	
12	.21576	.216	40	.58424	
13	.22892		41	.59740	
14	.24208	.242	42	.61056	
15	.25524		43	.62372	
16	.26840	.268	44	.63688	
17	.28156		45	.65004	
18	.29472	.294	46	.66320	
19	.30788		47	.67636	
20	.32104	.320	48	.68952	
21	.33420		49	.70268	
22	.34736	.346	50	.71584	
23	.36052				
24	.37368	.372			
25	.38684				

Decimal Equivalents of Fractional Sizes

Fractional	Equivalents	Decimal	Fractional	Equivalents	Decimal
$\frac{1}{64}$		.01563	$\frac{17}{32}$		.53125
$\frac{1}{32}$		.03125	$\frac{33}{64}$		.51563
$\frac{3}{64}$		.04688	$\frac{9}{16}$		.5625
$\frac{1}{16}$		.0625	$\frac{27}{64}$		.57813
$\frac{5}{64}$		.07813	$\frac{19}{32}$		.59375
$\frac{3}{32}$		.09375	$\frac{29}{64}$		.60938
$\frac{7}{64}$		.10938	$\frac{5}{8}$		.625
$\frac{1}{8}$		.125	$\frac{41}{64}$		.64063
$\frac{9}{64}$		.14063	$\frac{21}{32}$		.65625
$\frac{5}{32}$		.15625	$\frac{43}{64}$		.67188
$\frac{11}{64}$		.17188	$\frac{11}{16}$		.6875
$\frac{3}{16}$		.1875	$\frac{45}{64}$		.70313
$\frac{13}{64}$		.20313	$\frac{23}{32}$		.71875
$\frac{7}{32}$		.21875	$\frac{47}{64}$		.73438
$\frac{15}{64}$		.23438	$\frac{3}{4}$		.75
$\frac{1}{4}$		.25	$\frac{49}{64}$		.76563
$\frac{17}{64}$		.26563	$\frac{25}{32}$		.78125
$\frac{9}{32}$		.28125	$\frac{51}{64}$		.79688
$\frac{19}{64}$		.29688	$\frac{13}{16}$		.8125
$\frac{5}{16}$		.3125	$\frac{53}{64}$		.82813
$\frac{21}{64}$		.32813	$\frac{27}{32}$		.84375
$\frac{11}{32}$		.34375			
$\frac{23}{64}$		.35938	$\frac{55}{64}$		.85938
$\frac{3}{8}$		.375	$\frac{7}{8}$		.875
$\frac{25}{64}$		.39063	$\frac{57}{64}$		.89063
$\frac{13}{32}$		.40625	$\frac{59}{64}$		.90625
$\frac{27}{64}$		.42188	$\frac{3}{2}$		.92188
$\frac{7}{16}$		.4375	$\frac{15}{16}$		.9375
$\frac{29}{64}$		.45313	$\frac{61}{64}$		.95313
$\frac{15}{32}$		.46875	$\frac{31}{32}$		.96875
$\frac{31}{64}$		.48438			
$\frac{1}{2}$		.5	$\frac{63}{64}$		.98438
$\frac{33}{64}$		.51563	1		1.00000

Gauges and Calipers

Hardened and Tempered, all sizes are carefully tested after hardening

Wire Gauges



American Standard

Adopted by the Brass Manufacturers, January, 1858. Decimal equivalents stamped on reverse side.

Brown & Sharpe No. 688 Nos. 0 to 36, each..... \$2.50
Brown & Sharpe No. 688 Nos. 5 to 36, each..... 2.00

English Standard

The same as Stubbs Iron Wire or Birmingham Gauge

Decimal equivalents stamped on reverse side.

Brown & Sharpe No. 690 Nos. 1 to 36, each..... \$2.00
Brown & Sharpe No. 690 Nos. 6 to 36, each..... 1.50

Washburn & Moen Standard Iron

Brown & Sharpe No. 692 Sizes 0 to 36, each..... 2.50

U. S. Standard

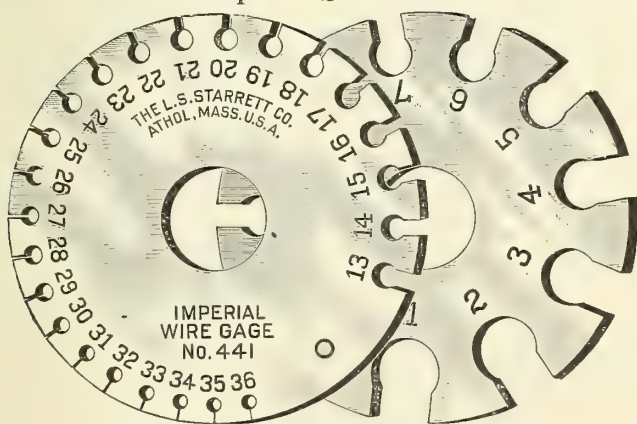
For Sheet and Plate Iron and Steel, adopted by Congress, March 3, 1893

Brown & Sharpe No. 694 Sizes 0 to 36, each..... \$2.50

Imperial Standard

*Starrett No. 442 Takes in Nos. 1 to 36, each..... 2.00

Imperial Standard



*Starrett No. 441 Takes in Nos. 1 to 36..... \$2.50



Washburn & Moen (Steel)

Brown & Sharpe No. 695 (Music) round, sizes 12 to 28, each.... \$1.50

H. S. & Co. Standard (For measuring Felton & Guillaume Wire)

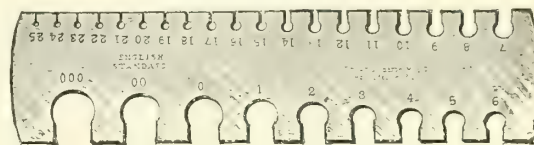
No. 127 (Music), round, sizes 6 to 28, each..... 3.00

No. 128 (Music), oblong sizes 0 to 30, each..... 3.00

Starrett No. 295 New Am. S. & W. Co. Standard, takes in Nos. 6-0 to 33, each..... 2.50

*Decimal equivalents stamped on reverse side.

Rolling Mill Gauges



English or Birmingham Standard

About one-half size cut, made of steel, hardened and tempered. About $\frac{3}{16}$ of an inch thick and well adapted to the rough usage they are likely to have in rolling mills or in other places where many measurements are to be taken quickly.

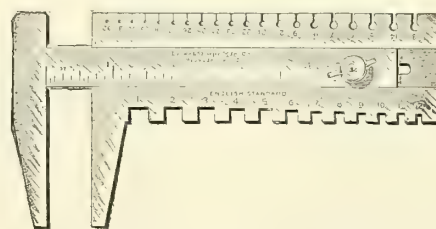
Brown & Sharpe No. 684 Nos. 000 to 25, each..... \$2.50

Brown & Sharpe No. 684 Nos. 1 to 32, each..... 3.00

U. S. Standard Gauge for Sheet and Plate Iron and Steel, adopted by Congress, March 3, 1893.

Brown & Sharpe No. 685 Nos. 000 to 25, each..... \$2.50

Caliper and Wire Gauges



English or Birmingham Standard

Tongue graduated to 32nds on both sides.

This Caliper and Gauge is of steel, $5\frac{3}{4}$ inches long and about $\frac{1}{16}$ inch thick. The jaws are 2 inches deep. The tongue is graduated on both sides to 32nds of an inch and can be drawn out to measure 4 inches. The Gauge numbers are those of the English or Birmingham Standard and run from 1 to 32.

The tool is found especially useful for stock and store room purposes in selecting iron, steel and sheet stock, also for iron and steel rollers use. The Caliper is used for odd sizes of stock.

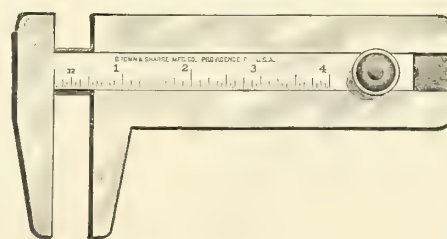
Brown & Sharpe No. 677, each..... \$7.00

U. S. Standard for Sheet and Plate Iron and Steel.

This Caliper and Gauge is similar in general design to that shown and described above, with the exception that the gauge numbers which run from 1 to 32 are those of the U. S. Standard for Sheet and Plate Iron and Steel, adopted by Congress March 3, 1893.

Brown & Sharpe No. 680, each..... \$7.00

Rolling Mill Caliper Gauge



This Rolling Mill Caliper Gauge is intended for use on the heavy class of work found in rolling mills in measuring sheet iron and steel but can be used equally well in stock and store rooms.

It is $5\frac{1}{16}$ inches long and $\frac{7}{32}$ inch thick. The jaws are $3\frac{1}{4}$ inches deep and can be drawn apart to measure 4 inches. The tongue is graduated on one side to 32nds of an inch.

The Caliper is made of tool steel, drop-forged and is strong enough to withstand any strain to which it may be subjected. When the jaws are set they can be securely clamped so that measurements of different sheets of stock of the same thickness can be made without the necessity of resetting the Caliper.

Brown & Sharpe No. 674, each..... \$6.00

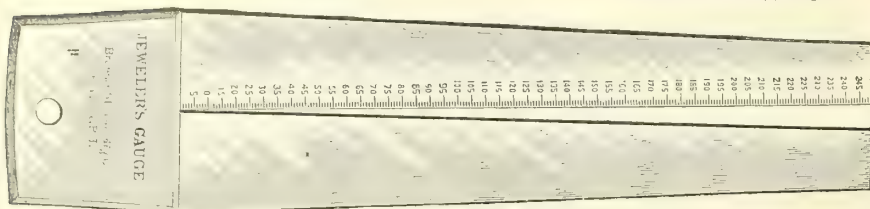
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Gauges

Hardened and Tempered, all sizes are carefully tested after hardening

Slotted Wire



Brown & Sharpe Jewelers No. 698

Made especially for use by Manufacturing Jewelers. Hardened angular slot. One edge of the slot is graduated into 250 parts and figured to give the size in thousandths of an inch. For example, a size of wire which passes down half way into the slot, and stops opposite 125, is $\frac{125}{1000}$ of an inch in diameter. The angular slot has no sharp edge to injure the stock gauged.

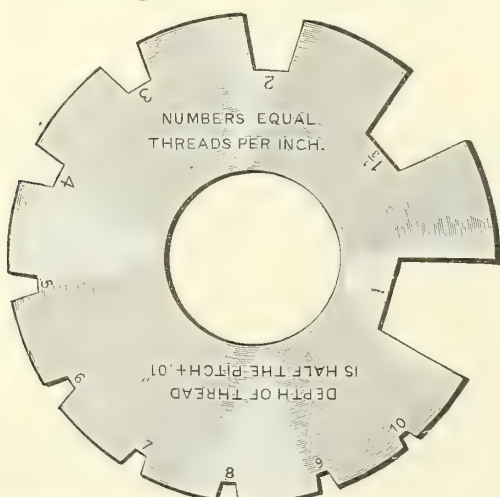
W & M Standard (Iron)

No. 129 Sizes 15 to 36, including half sizes, each. \$7.25

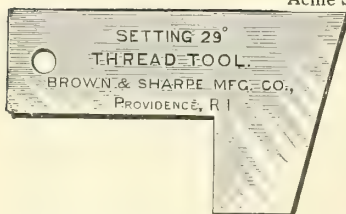
F & G Standard Music Wire

No. 128A. Sizes 12 to 26, each. 7.25

29-Degree Screw Thread Tool



Acme Standard



For the purpose of furnishing a correct standard to which tools can be ground to cut threads, of a uniform angle, to take the place of square threads, and to standardize the threads of various angles and depths now in use. This thread has the same depth as the square threads, but is stronger.

The sides are at an inclination of $14\frac{1}{2}$ degrees, or 29 degrees included angle, which angle is the same as is now generally adopted in cutting worms.

A tool setting gauge is furnished and included in the price of each gauge.

Brown & Sharpe No. 715, each. \$2.75

Screw Thread

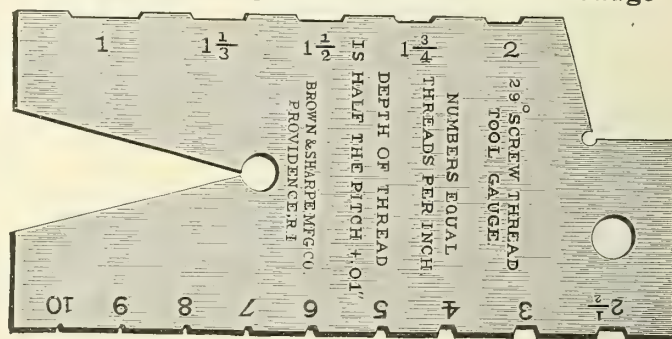


This Gauge is to be used as a standard for grinding tools to cut threads according to the United States Standard.

The angles are 60 degrees and the flat surfaces at top and bottom of threads are equal to $\frac{1}{8}$ of the pitch.

Brown & Sharpe No. 724, each. \$2.00

Improved 29-Degree Screw Thread Tool Gauge



Acme Standard

This Gauge furnishes a correct standard to which tools can be ground to cut threads of a uniform angle to take the place of square threads.

The thread has the same depth as the square threads, but as the sides are at an inclination of $14\frac{1}{2}$ degrees (29 degrees included angle), this form of thread is stronger and is now generally adopted in cutting worms.

This Gauge is made of the best steel, tempered, adjusted and all angles carefully tested after hardening.

Brown & Sharpe No. 716, each. \$2.50

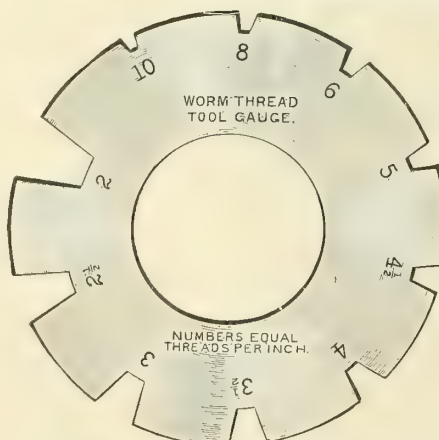
Depth of Gear Tooth



No. 725, each 25 cents
Sizes to 3 Pitch, made to order, each 75 cents
Larger sizes \$1.25

One Gauge answers for each pitch and indicates the extreme depth to be cut.

Worm Thread Tool Gauge



This Gauge furnishes the correct form for tools used in turning the threads of worms, when the worm wheels are cut with involute cutters.

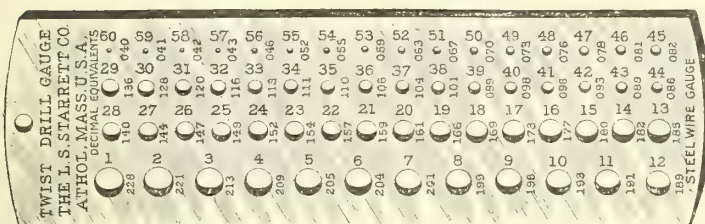
Brown & Sharpe No. 720, each. \$2.50

With Tool Setting Gauge, each. . . 2.75

Gauges

Hardened and Tempered, all sizes are carefully tempered after hardening

Tap and Wire Drill



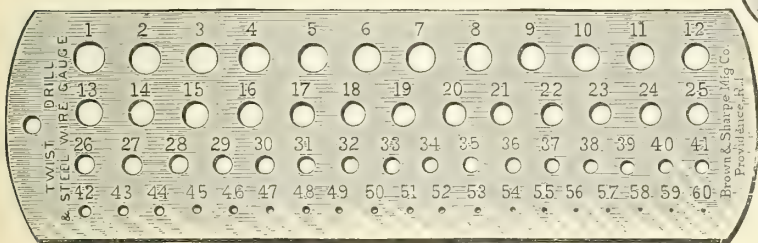
By the use of this Gauge one is enabled to select at once the right size drill to suit machine screw tap most commonly used, leaving just stock enough for the tap to cut as near a full thread as is practicable for one tap without breaking it, thus saving much time and uncertainty of result attending the former crude ways of making a selection.

Explaining the chart, the first row of figures, for an example, read thus, 14x20 10 $\frac{1}{4}$. The number 14 (in the first row of figures) means the number or size of tap; 20 the pitch or size of thread; 10 the size of drill to use which will leave the right stock for proper thread; and $\frac{1}{4}$, size of drill to use to let this tap or screw through outside of the thread.

The figures—1, etc., up to 60—designate the number of drill (size agreeing with the holes). Other figures, 228, 221, etc., designate the size of hole in thousandths of an inch.

Starrett Time Saver No. 185..... \$1.75

Twist Drill and Steel Wire



Number Sizes

Brown & Sharpe No. *705, sizes 1 to 60, polished..... \$1.50
Brown & Sharpe No. 705, sizes 61 to 80, polished..... 2.00

The following Gauges are light in weight, but absolutely accurate. The No. 5 has stamped on the back the proper drill size for ten sizes of machine screw taps from 2-56 to 18-18.

Blodgett No. 5, sizes 1 to 60..... Each \$.75
Blodgett No. 6, sizes 61 to 80..... 1.50

Fractional Sizes

Brown & Sharpe No. 710, polished..... Each \$2.25

Letter Sizes A to Z

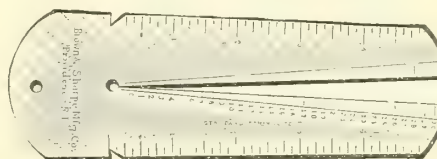
Morse, *No. 127C..... 3.00

Millimeter Sizes

Morse* No. 127D, 1 to 13 mm..... 3.00
Morse* No. 127E, 1 to 6 mm..... 2.50

*Decimal Equivalents stamped on the reverse side.

Screw and Wire



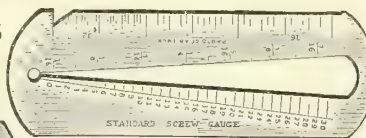
Graduated on both sides of slot to show American Standard Screw Gauge from 0 to 30 and will measure wire as well as machine and wood screws.

Can also be used to show the sizes of A. S. M. E. Standard screws. Although there is a slight difference in size for the same gauge number it is not enough to affect the reading of the gauge.

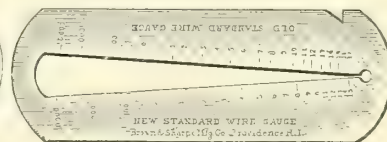
The front is also graduated on both edges to 8ths of an inch. An angle cut in the side allows the head of the screw to be placed against a positive stop when measuring the length.

The back is graduated as the old or English wire gauge from 17 to 0000 on the right, and to 32nds of an inch on the left of slot. The outer left hand edge is graduated to 32nds of an inch.

Each
Brown & Sharpe, large, No. 702..... \$3.50
Extra thick..... 4.50



Front View



Back View

Graduated on front, on left of slot, to show American standard Screw Gauge from 0 to 30, and will measure wire as well as machine and wood screws.

A screw or wire is measured by passing it into the angular opening till it touches on both sides; the division at the point of contact indicates the number of the gauge stamped on the side of the slot.

In addition to the gauge numbers, the front is also graduated on the left of slot to 32nds of an inch.

The back is graduated as the old or English wire gauge, from 17 to 0000 on the right, and the new or American wire gauge from 15 to 0000 on the left of slot.

Brown & Sharpe No. 700..... \$2.50

Key Ring and Vest Pocket

Blodgett No. 20 is 3 inches long and measures wood or machine screws in diameter, Nos. 1 to 24, and in length to 2 inches, having a scale graduated by $\frac{1}{16}$ inch; also a B. & S. Standard Wire Gauge, covering 15 sizes, Nos. 00 to 13.

Each..... \$.25

Blodgett No. 25 is 3 $\frac{1}{4}$ inches long, and has a scale of 3 inches, graduated the same as No. 20.

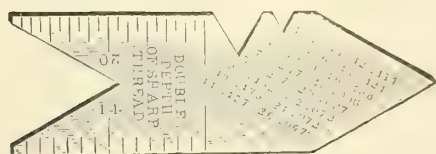
Each..... \$.25

Blodgett No. 10, 2 $\frac{3}{8}$ inches long, similar to Nos. 20 and 25, measures screws Nos. 1 to 20 only.

Each..... \$.15

Center

And Gauges for grinding and setting Screw Cutting Tools



Brown & Sharpe

With table for determining the size of tap drills for 60 degree V threads.

U. S. Standard, 60 degrees

No. 650..... \$.25
Tempered..... .35

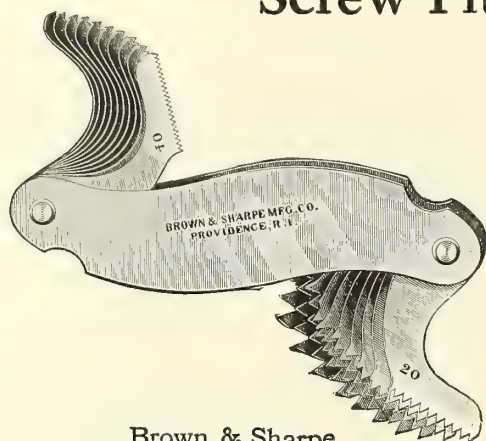
Whitworth or English Standard, 55 Degrees

No. 651..... .25
Tempered..... .35

Metric, 60 degrees

No. 652..... .25
Tempered..... .35

Screw Pitch Gauges



Brown & Sharpe

No. 630 22 pitches, including pipe thread pitches, viz: 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38 and 40.

Each..... \$1.00

No. 631 24 pitches, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28 and 30.

Each..... \$1.25

No. 632 Same in design as No. 630, 30 pitches, V-thread, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40 and 42.

Each..... \$1.50

No. 634 Similar to No. 630 and designed especially for use of automobile manufacturers, electricians and others using screws with fine V threads. Has 22 pitches, viz: 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72 and 74.

Each..... \$1.00

No. 635 Same in design as No. 634. 25 pitches, viz: 2¼, 2¾, 2½, 2¾, 2¾, 3, 3¼, 3½, 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18 and 20. It also contains a blade with a gauge for grinding thread tools.

Each..... \$1.50

No. 636 Metric or International, 17 pitches, viz: ½, ¾, 1, 1¼, 1½, 1¾, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6, 6½ and 7 millimeters. Also contains a blade with a gauge for grinding thread tools.

Each..... \$1.00

No. 637 Whitworth Standard, 22 pitches, viz: 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40 and 48.

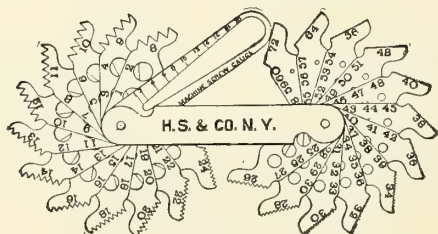
Each..... \$1.25

Blodgett Key Ring

Blades are strung on key ring instead of being mounted in steel handle, as above. Contains 26 pitches, viz: 8, 9, 10, 11, 11½, 12, 13, 14, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 48, 56, 64 and 74. Also contains a screw gauge, measuring wood and machine screws from 1 to 20. Blades can be taken off the ring and used separately.

No. 9..... \$.75

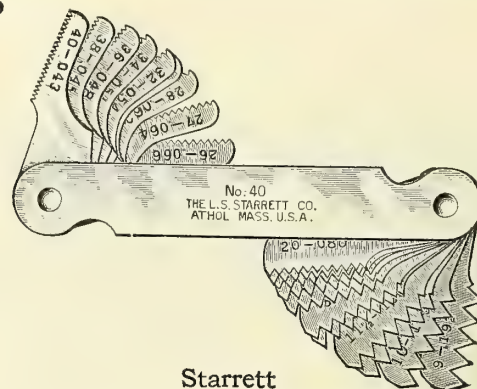
Thread, Screw and Twist Drill Gauge



Blodgett

No. 7. The blades of this gauge are case-hardened, and are sufficiently narrow to enter an opening ⅛ inch in diameter. Gauges 24 thread pitches, viz: 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 48, 56, 64 and 72; gauges the sixty sizes of twist drills from 1 to 60, and against the proper size drill hole is stamped the corresponding sizes of machine screw taps as follows: 2-56, 3-48, 4-40, 6-32, 8-32, 10-24, 12-24, 14-20, 16-20 and 18-18. The Screw Gauge measures from Nos. 1 to 20, the even numbers being stamped in.

Each..... \$2.00



Starrett

No. 40 22 pitches, including pipe thread. Pitches, viz: 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38 and 40.

Each..... \$1.00

No. 4 24 pitches, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28 and 30. Has also a blade with gauge for grinding threading tools.

Each..... \$1.25

For Electricians and Automobile Manufacturers

No. 5 26 pitches, viz: 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82.

Each..... \$1.25

No. 6 30 pitches, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40 and 42.

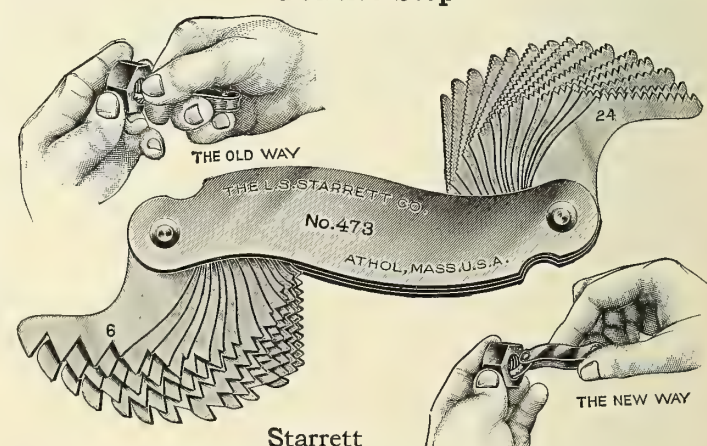
Each..... \$1.50

No. 7 26 pitches, viz: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40, 48, 60. For Whitworth Standard Thread only.

Each..... \$1.25

A feature of the above Gauges is that each blade has stamped upon it the double depth of thread, so that by subtracting this from the full diameter of the screw, the proper drill size for a full V-thread is obtained.

Positive Stop



Starrett

No. 473 Holds the blade in a fixed and convenient position for use, enabling operator to hold handle while determining gauge. 30 pitches, V-thread, viz: 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 48, 50, 56 and 60.

Each..... \$1.50

No. 474 Similar in design to No. 473, but has finer pitches and will therefore meet the requirements of automobile and bicycle manufacturers, electricians and others. 30 pitches, V-thread, viz: 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52 in one end of the case, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82 in the other.

Each..... \$1.50

No. 475 Similar in design to the No. 473, but larger and has coarse pitches. 26 pitches, V-thread, viz: 3½, 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12 in one end of the case; 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32 in the other.

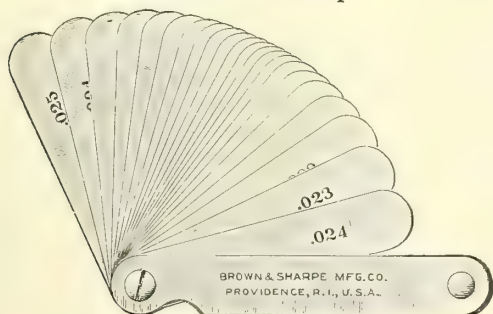
Each..... \$1.25

No. 476 Put up in the same size case as the No. 473, and contains 30 pitches, Whitworth Standard, viz: 3½, 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 40, 44, 48, 50 and 60.

Each..... \$1.50

Thickness Gauges

Brown & Sharpe



With Straight Blades

Blades may be used either singly or in combination. Plain figures, easily read, indicate the thickness of each blade.

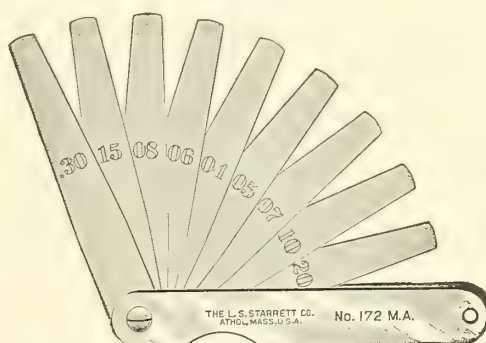
- | | |
|---|--------|
| No. 640 22 blades, varying from .004 to .025 of an inch, by 1000ths..... | \$1.50 |
| No. 641 Metric, same design as No. 640, and consists of 14 blades of following thicknesses: .05, .06, .07, .08, .09, .10, .15, .20, .25, .30, .40, .50, .75 and 1 mm..... | 1.50 |
| No. 642 9 blades, .0015, .002, .003, .004, .006, .008, .010, .012 and .015 of an inch in thickness..... | 1.00 |
| No. 643 Metric, same design as No. 642, and consists of nine blades of following thicknesses: .04, .05, .08, .10, .15, .20, .25, .30 and 35 mm..... | 1.00 |

Starrett

The blades of these Gauges may be used either singly or in combination. The thickness of each blade is designated by the number on it.

- | | |
|--|--------|
| No. 72 22 blades, varying from .004 to .025 of an inch, by 1000ths..... | \$1.50 |
| No. 72 M 12 blades, varying from $\frac{3}{64}$ ths of a millimeter to 3 millimeters by 50ths of a millimeter..... | 1.50 |

Starrett

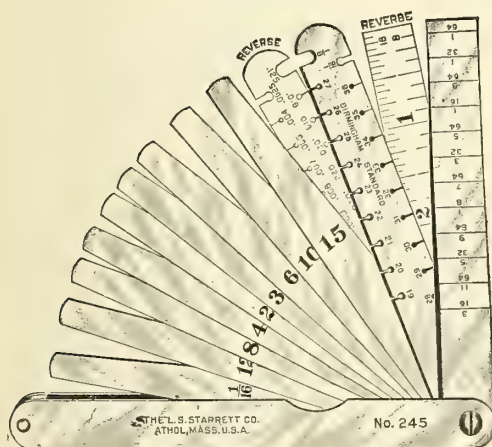


With Taper Blades

As shown in cut. Will be supplied with straight blades, same style as No. 72 when specially ordered.

- | | |
|--|--------|
| B and C have 8 blades, viz: .002, .003, .004, .006, .008, .010, .012, .015. A has a .0015 blade in addition. | |
| No. 172 A Case $3\frac{3}{8}$ inches long x $\frac{1}{2}$ -inch wide; leaves $3\frac{1}{16}$ inches long x $\frac{1}{2}$ -inch wide..... | \$1.00 |
| No. 172 B Case $4\frac{3}{4}$ inches long x $\frac{1}{2}$ -inch wide; leaves $4\frac{1}{2}$ inches long x $\frac{1}{2}$ -inch wide..... | 1.50 |
| No. 172 C Case $6\frac{1}{4}$ inches long x $\frac{1}{2}$ -inch wide; leaves 6 inches long x $\frac{1}{2}$ -inch wide..... | 2.00 |
| Metric, with 9 blades, marked in 100ths of a millimeter, as follows, 4, 5, 6, 7, 8, 10, 13, 15, 20 and 30 100ths of a millimeter. | |
| No. 172 MA Case 8 cm. long x 8 mm. wide; leaves 7 cm. long x 8 mm. wide..... | \$1.00 |
| No. 172 MB Case 12 cm. long x 8 mm. wide; leaves 11 cm. long x 8 mm. wide..... | 1.50 |
| No. 172 MC Case 16 cm. long x 8 mm. wide; leaves 15 cm. long x 8 mm. wide..... | 2.00 |

Engineer Taper, Wire and Thickness Gauge



Especially designed for use of engineers, machinists and others desiring a set of gauges in compact form.

The Taper Gauge shows the thickness in 64ths to $\frac{1}{16}$ of an inch on one side, and on the reverse side is graduated as a rule three inches of its length, reading in 8ths and 16ths.

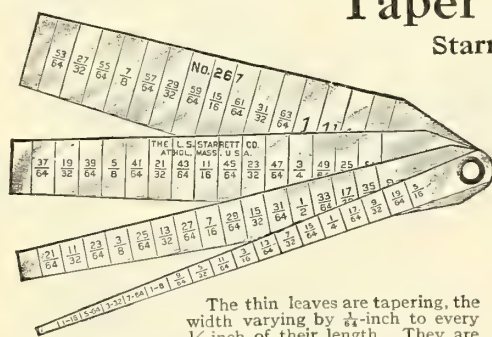
The Wire Gauge, English Standard, shows on one side sizes numbered from 19 to 36, with two extra slots, one $\frac{1}{16}$, the other $\frac{1}{8}$ of an inch, and on the reverse side shows the decimal equivalents expressed in thousandths. This Gauge has also 9 thicknesses or feeler gauge leaves, approximately 4 inches long, of the following thicknesses: .002, .003, .004, .006, .008, .010, .012, .015 and $\frac{1}{16}$ of an inch, all folded within the case, which is $4\frac{3}{4}$ inches long.

Starrett No. 245 \$4.00

SEE DISCOUNT SHEET

Taper Gauges

Starrett



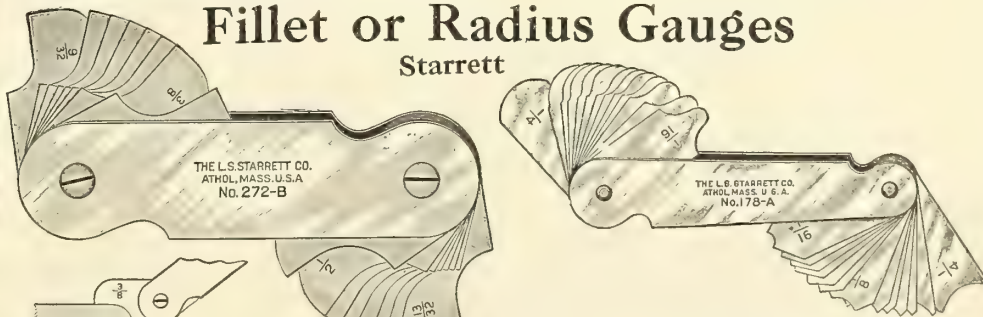
The thin leaves are tapering, the width varying by $\frac{1}{16}$ -inch to every $\frac{1}{4}$ -inch of their length. They are graduated in $\frac{1}{16}$ -inch and figured to read in fractions of an inch from $\frac{1}{16}$ inch up to $1\frac{1}{16}$ -inches. Designed for brass and steel tube manufacturers for inside measurements, and it is also very convenient for mechanics

use to measure the width of slots and size of holes in nuts drilled for tapping. It is also useful for setting calipers to sizes within its capacity.

- | | |
|--|-------------|
| No. 267 About $5\frac{1}{4}$ inches long, plain, with 4 leaves..... | Each \$4.00 |
| Nickel-plated..... | 5.00 |
| No. 269 A is $2\frac{1}{2}$ inches long, and is graduated to read from $\frac{1}{16}$ to $\frac{1}{2}$ -inch in thousandths of an inch, with 8 leaves..... | 5.00 |
| No. 269 B is $2\frac{3}{4}$ inches long, and is graduated to read from $\frac{1}{2}$ to 1-inch in thousandths of an inch, with 10 leaves..... | 6.00 |

Fillet or Radius Gauges

Starrett



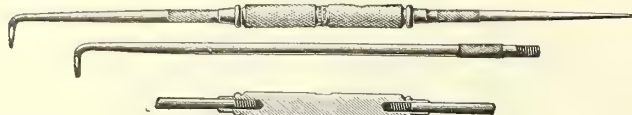
Similar in design to No. 178 and affords means of obtaining the radii of fillets, corners, etc., as shown by the illustrations. Each blade is stamped with the radius in 64ths, the external being on one side and the internal on the other. It can be used in any position or at any angle, the formation allowing it to be used up to a shoulder, and for duplicating sample pieces. The studs holding blades in place are eccentric with the round end of case. This is of advantage when the gauge is opened the edge of case stands w away from the edge of blades.

- | | |
|---|--------|
| No. 172 A 16 leaves, with radii from $\frac{1}{32}$ to $\frac{1}{16}$ inch, inclusive, by 64ths.. | \$1.00 |
| No. 172 B 16 leaves, with radii from $\frac{9}{32}$ to $\frac{33}{64}$ inch, inclusive, by 64ths... | 1.50 |

- | | |
|--|--------|
| No. 178 A 30 leaves, stamped to indicate radii by 64ths from $\frac{1}{32}$ to $\frac{1}{4}$ inch (one half diameter size)..... | \$1.00 |
| No. 178 B 32 leaves stamped to indicate radii by 64ths from $\frac{1}{16}$ to $\frac{1}{2}$ inch..... | 1.50 |
| No. 178 MA Metric, 17 leaves, indicating the following radii: 1, 1.25, 1.5, 1.75, 2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7 millimeters..... | 1.00 |
| No. 178 MB Metric, 16 leaves, indicating following radii: 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 12, 12.5, 13, 13.5, 14, 14.5, 15 millimeters..... | 1.50 |

Marking Awls or Scribes

Starrett



Made of a fine grade of steel, nicely tempered. The knurled stock is of sufficient size to be easily held without cramping or turning in the fingers. The long, bent point will be found a valuable auxiliary for reaching through holes, etc. Length, with short, bent point, 9 inches; with long point, 12 inches. All parts are interchangeable. The knurled sleeve is nickeled.

No. 67

Complete \$.50
Without long point35
Straight point, long or short bent point, each10
The tool will be sent complete unless otherwise ordered.



The knurled sleeve has hole clear through and a clamping device at one end, adapting it for slipping on or off different tools, securely holding them near to or away from the working point. The knurled sleeve is nickeled.

This scriber is made in two lengths, 8 inches and 12 inches. For pattern makers a knife scriber, made of a fine grade of steel, is supplied as an auxiliary.

No. 68

Either size, without knife point \$.50
Knife point, extra15
Extra scriber points, each20

The 8-inch will be sent (without knife point) unless otherwise ordered.

H. S. & Co.



No. 1 Twisted steel, polished points, $6\frac{3}{4}$ inches long, each, . . . \$.40



No. 5 Polished and nickel-plated, 6 inches long. Chuck holds firmly ordinary sewing needles. Hollow handle for extra needles, each, . . . \$.60

Brown & Sharpe



Style 1



Style 2



Style 3

The Scribes are of high grade manufacture, the points are of tool steel, finely tempered. They are threaded to screw into the holder and knurled for a finger grip.

	Each
No. 778 Style 1 $3\frac{1}{2}$ inches long, closed	\$.40
No. 778 Style 2 5 inches long . . . . .	.30
No. 778 Style 3 8 inches long . . . . .	.35

In Style 1 the point may be reversed and the scriber closed for carrying in the pocket.

Starrett



This tool is made from steel tubing, knurled and nickel-plated. The scriber is made from the best quality of steel, nicely tempered, and is held by a knurled chuck. The scriber is reversible, telescoping into the stock, and is held by a slight turn of the chuck so that it is always as safe to carry in the pocket as a penknife.

No. 70A Handle $\frac{1}{4}$ -inch diameter; blade, $2\frac{3}{8}$ inches long; weight, 1 ounce	\$.25
No. 70B Handle, $\frac{3}{8}$ -inch diameter; blade, $2\frac{7}{8}$ inches long; weight, $1\frac{1}{2}$ ounces . . . . .	.35

Scratch Gauge

Starrett No. 29



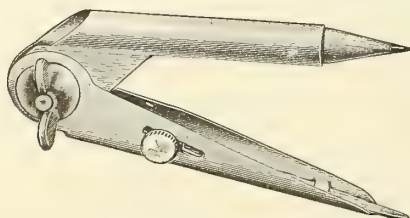
This Gauge is made of steel with hardened cast steel head. Through it is a split bushing against which the set screw acts to hold it firm. The beam is graduated in either 50ths or 64ths of an inch. The marker is a thin square piece of steel, nicely tempered, which is firmly held against the end of beam, presenting four marking points.

5-inch (beam $\frac{15}{64}$ -inch), graduated	\$1.00	Not graduated.	\$.65
6-inch (beam $\frac{5}{16}$ -inch), graduated	1.25	Not graduated. . . . .	.75

Unless otherwise ordered, we shall send those graduated in 64ths. Two extra cutters will be sent with each gauge, fastened to the case. They should last for years.

No. 29M Graduated in millimeters. 10 cm.	\$1.00
15 cm.	1.25

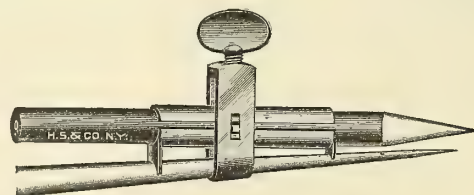
Improved Gem Scriber



The sharp point may be pushed back, leaving broad, dull point for use in scribing from a small hole and for protection when carrying in pocket. Also prevents scratching plaster walls, fine woodwork, etc.

Dozen \$4.35

Excelsior Pencil Holders



Can be attached to any divider or compass for marking circles.

Brass, tinned, dozen \$2.75

Calipers and Dividers

Starrett

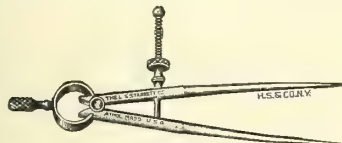
While nearly everyone is acquainted with the uses of calipers and dividers, it may be stated briefly that in general calipers are used for measuring distances between or over surfaces or for comparing distances or sizes with standards, such as those on graduated rules. Dividers are for measuring distances between points, for transferring distances taken direct from a scale, and for scribing circles or arcs.

To those who are not familiar with the use of calipers, a word of caution may not be out of place. Calipers should never be used on work while it is revolving in a lathe or in any other machine, because if one contact of the caliper is placed against the work the other is likely to be drawn over the work by the friction of the moving surfaces. Only slight force is necessary to spring the legs of a caliper so that measurements taken from moving pieces are never accurate—frequently they are very misleading.

Toolmakers

With Solid Nut

A new line of Calipers and Dividers made from round stock with legs drawn down, making them hard and stiff. The fulcrum stud is hardened, bows extra strong, screw and nut nicely fitted, all finely finished and are the best tools in their line.



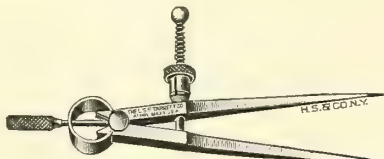
No. 277 Divider

Size Inches	Each
2.....	\$1.00
3.....	1.25
4.....	1.50
5.....	1.50
6.....	1.75

Fay Patent Spring

With Spring Nut

A new quick adjusting automatic closing spring nut, which will save much valuable time in opening and closing spring-bow calipers and dividers.



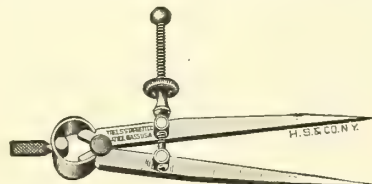
No. 77 Divider

Size Inches	Each
2½.....	\$1.15
3.....	1.15
4.....	1.40
5.....	1.40
6.....	1.75
8.....	2.00

Yankee Spring

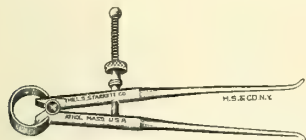
With Solid Nut

Not quite so heavy as the Fay, and preferred by many to the higher cost tools.

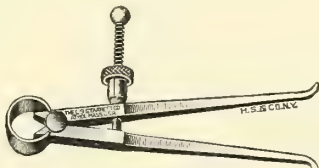


No. 83 Divider

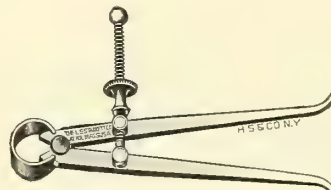
Size Inches	Each
2½.....	\$.65
3.....	.70
4.....	.75
5.....	.80
6.....	.85
8.....	1.10
10.....	1.35
12.....	1.50



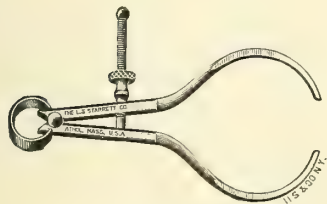
No. 274 Inside



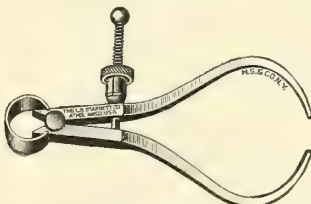
No. 74 Inside



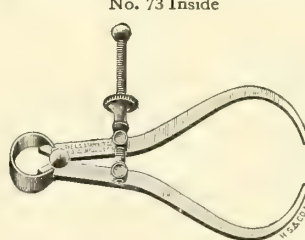
No. 73 Inside



No. 275 Outside



No. 75 Outside



No. 79 Outside

Size Inches	Inside No. 274	Each
2.....		\$1.00
3.....		1.25
4.....		1.50
5.....		1.50
6.....		1.75

Outside No. 275

2.....	1.00
3.....	1.25
4.....	1.50
5.....	1.50
6.....	1.75

Duplicate Parts Toolmaker Calipers and Dividers

Screw and Ball.....	\$.15
Thumb Attachment.....	.15
Nut.....	.10
Leg.....	.35
Spring.....	.25
Jam Washer.....	.10
Fulcrum Stud.....	.10

Size Inches	Inside No. 74	Each
2½.....		\$1.15
3.....		1.15
4.....		1.25
5.....		1.25
6.....		1.50
8.....		1.75

Outside No. 75

2½.....	1.15
3.....	1.15
4.....	1.25
5.....	1.25
6.....	1.50
8.....	1.75

Duplicate Parts of Fay Calipers or Dividers

Screw and Ball.....	\$.15
Thumb Attachment.....	.15
Solid Nut.....	.10
Spring Nut.....	.25
Leg.....	.35
Spring.....	.25
Jam Washer.....	.10
Fulcrum Stud.....	.10

Calipers

Size Inches	Inside No. 73 and Outside No. 79	Each
2½.....		\$.65
3.....		.70
4.....		.75
5.....		.80
6.....		.85
8.....		1.00
10.....		1.35
12.....		1.50

Duplicate Parts of Yankee Calipers or Dividers

Screw and Ball.....	\$.15
Thumb Attachment.....	.15
Solid Nut.....	.10
Spring Nut.....	.25
Leg.....	.25
Spring.....	.25
Jam Washer.....	.10
Fulcrum Stud.....	.10
Stud.....	.10

Calipers and Dividers

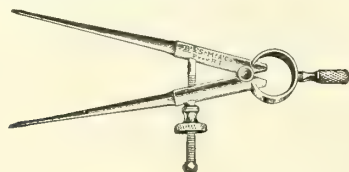
Brown & Sharpe

Toolmakers

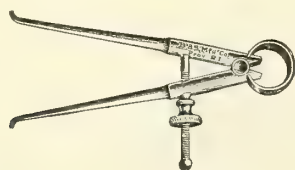
With Solid Nut

Possessing features not previously embodied in tools of this class. The fulcrum stud is hardened. The spring is unusually stiff and of a construction that insures rigidity, prevents side deflection of the legs and gives uniform pressure. The legs are of steel, round and highly polished; the measuring points come together evenly.

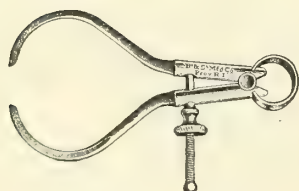
Especial attention is called to the 2-inch sizes, as they are convenient for small, light work and for the pocket.



Size Inches	No. 800 Dividers	Each
2	\$1.00
3	1.25
4	1.50
5	1.50
6	1.75



No. 802 Inside



No. 801 Outside

Size Inches	No. 801 Outside	Each
2	\$1.00
3	1.25
4	1.50
5	1.50
6	1.75

Size Inches	No. 802 Inside	Each
2	1.00
3	1.25
4	1.50
5	1.50
6	1.75

Duplicate Parts

For Toolmaker Calipers and Dividers

	Each
Leg	\$.35
Screw and Ball	.15
Nut	.10
Spring	.25
Thumb Attachment	.15
Nut Washer	.05
Fulcrum Stud	.10

Spring

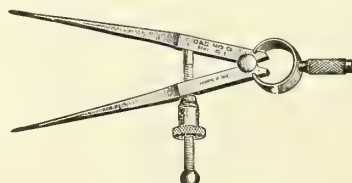
With Spring Nut

The legs are steel drop-forgings, finished in the best manner possible.

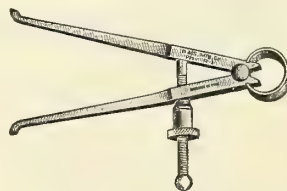
The spring is unusually stiff and of improved form, with convex ends that fit into concave grooves, milled in the ends of the legs, insuring great rigidity.

The Spring Nut is constructed on the principle of the spring chuck with the jaws hardened. It is positive in action when closing, the thread engaging the screw on the slightest pressure. When the pressure is withdrawn the nut is released at once and slides freely on the screw. It is dust proof and combines all the advantages of the solid nut with that of quick adjustment. There are no loose pieces.

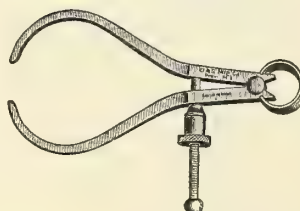
The screw is of steel hardened to prevent wear and a thumb attachment is provided for Spring Dividers.



Size Inches	No. 805 Dividers	Each
2 1/2	\$1.15
3	1.15
4	1.40
5	1.40
6	1.75



No. 807 Inside



No. 806 Outside

Size Inches	No. 806 Outside	Each
2 1/2	\$1.15
3	1.15
4	1.25
5	1.25
6	1.50

Size Inches	No. 807 Inside	Each
3	1.15
4	1.25
5	1.25
6	1.50

Duplicate Parts

For Spring Calipers and Dividers

	Each
Leg	\$.35
Screw and Ball	.15
Solid Nut	.10
Spring	.25
Spring Nut	.25
Nut Washer	.10
Thumb Attachment	.15

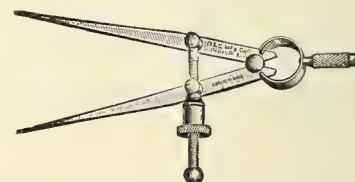
Rex Spring

With Solid Nut

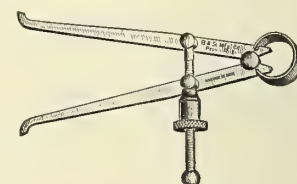
Somewhat lighter than Nos. 805, 806 and 807, but the same care is taken in their construction as in the more expensive line; the same spring is used fitted to the legs in a somewhat different manner.

Neat and attractive in appearance and durable.

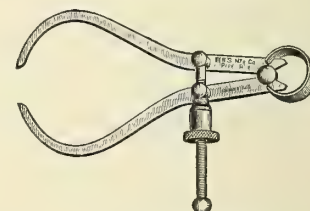
The adjusting screw is hardened to prevent wear, and a thumb attachment is provided for the Spring Dividers.



Size Inches	No. 810 Dividers	Each
2 1/2	\$.65
370
475
580
685
8	1.00



No. 812 Inside



No. 811 Outside

Size Inches	No. 811 Outside	Each
2 1/2	\$.65
370
475
580
685
8	1.00

Size Inches	No. 812 Inside	Each
2 1/265
370
475
580
685
8	1.00

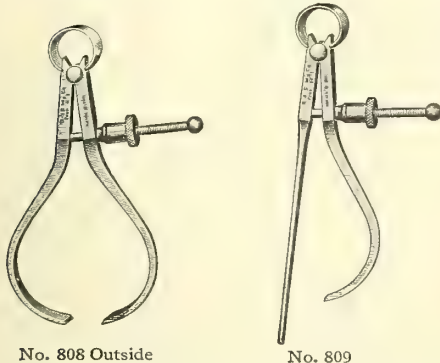
Duplicate Parts

For Rex Calipers and Dividers

	Each
Leg	\$.25
Screw and Ball	.15
Solid Nut	.10
Spring	.25
Spring Nut	.25
Nut Washer	.10
Thumb Attachment	.15

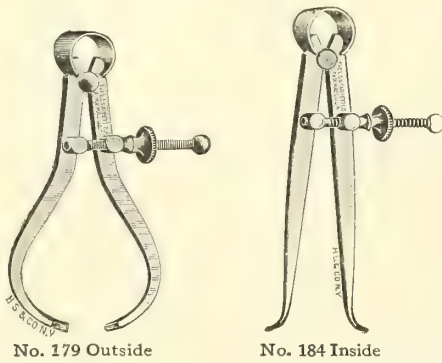
Spring Calipers

Brown & Sharpe
Thread Keyhole



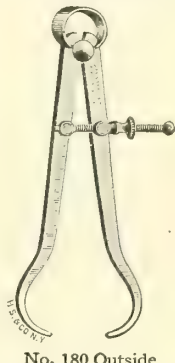
Size Inches	No. 808 Outside Thread	With Spring Nut Each
3.....		\$1.15
4.....		1.25
5.....		1.25
	No. 809 Keyhole	
3.....		\$1.15
4.....		1.25

Starrett
Thread



Size Inches	No. 179 Outside	With Solid Nut Each	With Spring Nut Each
4.....		\$.75	\$.90
5.....		.80	.95
6.....		.85	1.00
	No. 184 Inside Thread		
4.....		\$.75	\$.90
5.....		.80	.95
6.....		.85	1.00

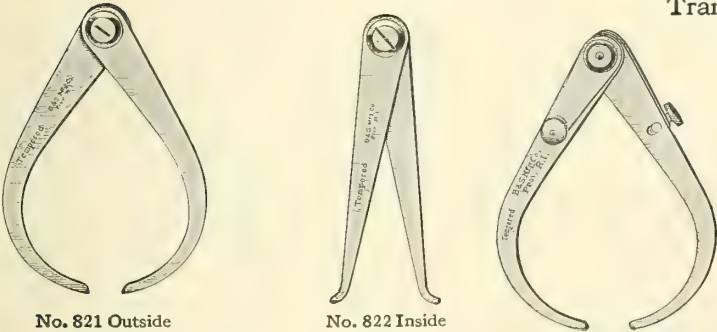
Starrett
Crank Shaft



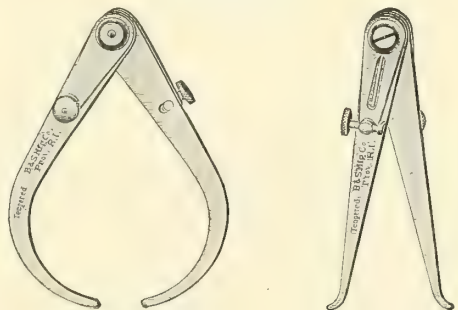
These Calipers were designed for use in turning automobile crank shafts and for reaching into difficult places. They are very stiff and nicely finished and can be depended upon for accurate results.			Each
No. 180	6-inch, with Solid Nut.....		\$1.00
No. 180	6-inch, with Spring Nut.....		1.15

Firm Joint Calipers

Brown & Sharpe Tempered
Transfer

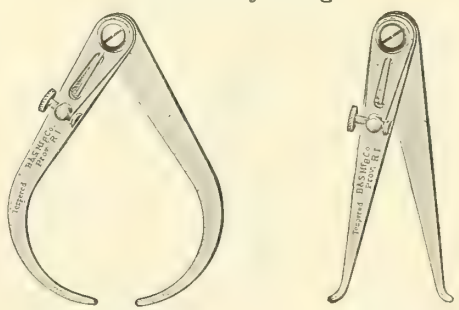


Size Inches	No. 821 Outside Each	No. 822 Inside Each
3.....	\$.40	\$.40
4.....	.50	.50
5.....	.55	.55
6.....	.65	.65
8.....	.80	.80
10.....	.90	.90
12.....	1.00	1.00
14.....	1.50	1.50
16.....	1.75	1.75
18.....	2.10	2.10
20.....	2.50	2.50
24.....	3.00	3.00



Size Inches	No. 826 Outside Each	No. 827 Inside Each
4.....	\$1.10	\$1.10
5.....	1.25	1.25
6.....	1.35	1.35
8.....	1.60	1.60
10.....	1.85	1.85
12.....	2.10	2.10
14.....	2.35	2.35
16.....	2.60	2.60
18.....	2.85	2.85
20.....	3.35	3.35
24.....	4.10	4.10

Screw Adjusting



Size Inches	No. 831 Outside Each	No. 832 Inside Each
4.....	\$.90	\$.90
5.....	.95	.95
6.....	1.00	1.00
8.....	1.25	1.25
10.....	1.50	1.50
12.....	1.75	1.75
14.....	2.00	2.00
16.....	2.25	2.25
18.....	2.50	2.50
20.....	2.75	2.75
24.....	3.50	3.50

Hermaphrodite
Brown & Sharpe
No. 835 Tempered



Size Inches	With Adjust- able Point Each	With Solid Point Each
4.....	\$.65	\$.50
6.....	.80	.65
8.....	1.00	.80

Narrow

This Caliper is the same in design as the regular 4-inch Firm Joint Caliper, excepting that the legs are much narrower and allow it to be used to measure the diameter of deep holes at the bottom.

It can be inserted 2½ inches in a hole ¼-inch in diameter.

No. 837 Inside.....	\$.60
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SINCE
1848

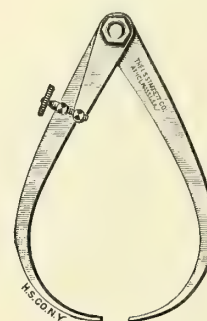
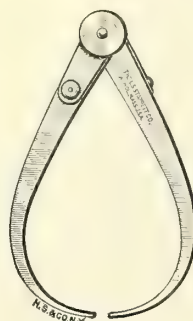
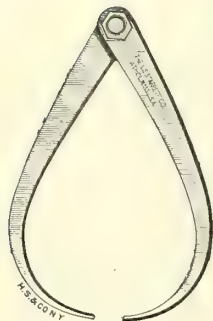
HAMMACHER SCHLEMMER & CO. NEW YORK

Firm Joint Calipers

Starrett Tempered
Transfer

Improved

Screw Adjusting



No. 26 Outside		No. 27 Inside	
Size Inches	Each	Size Inches	Each
3.....	\$.40	3.....	\$.40
4.....	.50	4.....	.50
5.....	.55	5.....	.55
6.....	.65	6.....	.65
8.....	.80	8.....	.80
10.....	.90	10.....	.90
12.....	1.00	12.....	1.00
14.....	1.50	14.....	1.50
16.....	1.75	16.....	1.75
18.....	2.10	18.....	2.10
20.....	2.50	20.....	2.50
24.....	3.00	24.....	3.00
30.....	5.00		
36.....	6.00		

No. 36 Outside		No. 37 Inside	
Size Inches	Each	Size Inches	Each
4.....	\$1.25	4.....	\$1.25
5.....	1.40	5.....	1.40
6.....	1.50	6.....	1.50
8.....	1.75	8.....	1.75
10.....	2.00	10.....	2.00
12.....	2.25	12.....	2.25
14.....	2.50	14.....	2.50
16.....	2.75	16.....	2.75
18.....	3.00	18.....	3.00
20.....	3.50	20.....	3.50
24.....	4.25	24.....	4.25

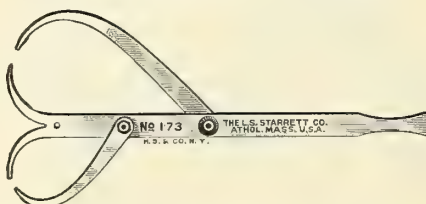
No. 34 Outside		No. 35 Inside	
Size Inches	Each	Size Inches	Each
4.....	\$.90	4.....	\$.90
6.....	1.00	6.....	1.00
8.....	1.25	8.....	1.25
10.....	1.50	10.....	1.50
12.....	1.75	12.....	1.75
14.....	2.00	14.....	2.00
16.....	2.25	16.....	2.25
18.....	2.50	18.....	2.50
20.....	2.75	20.....	2.75
24.....	3.50	24.....	3.50
30.....	6.00		
36.....	7.00		

No. 41 Hermaphrodite
With Adjustable Point



Size Inches	Each
4-inch.....	\$.65
6-inch.....	.80
8-inch.....	1.00
10-inch.....	1.20

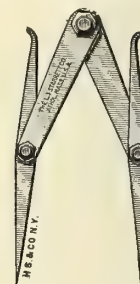
No. 173 Blacksmith Double



With long handle to caliper hot forgings with comfort—the long arm to be used for the greater and the short one for the smaller or finished size. The difference in the length of arms prevents using the wrong caliper when there is but slight variation in the work measured. The caliper is 22 inches in length over all and has a 6-inch caliper on one side and a 12-inch caliper on the other side.

No. 173, each \$2.00

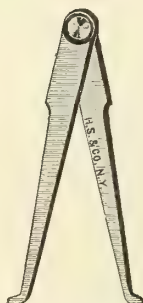
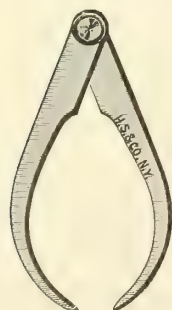
No. 44 Double



Combining Outside and Inside Calipers and Dividers. Firm joint.

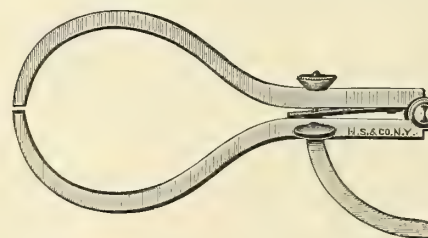
Size Inches	Each
6-inch.....	\$1.25
8-inch.....	1.50

Plain Calipers



No. 67 Outside		No. 68 Inside	
Inches.....	Each	Inches.....	Each
3.....	\$2.65	9.....	\$5.90
4.....	2.85	10.....	6.50
5.....	3.30	12.....	8.00
6.....	3.75	18.....	25.00
7.....	4.40		
8.....	5.35		

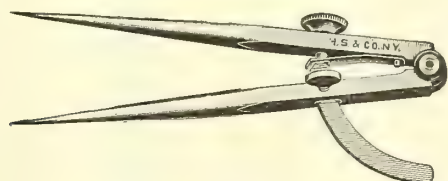
Winged Calipers



No. 101, dozen	
Inches.....	Each
6.....	\$7.00
8.....	9.00
10.....	11.00
12.....	13.00

Dividers and Ball Points

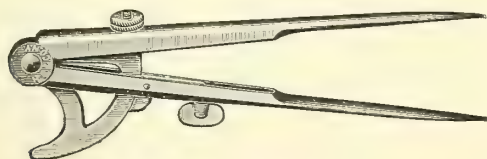
Winged Dividers



No. 35

Forged steel, polished, with brass joints.

Inches.....	5	6	7	8	9	10	12	15	18	24
Dozen.....	\$5.50	5.50	6.50	7.50	9.00	10.00	12.00	18.00	35.00	50.00

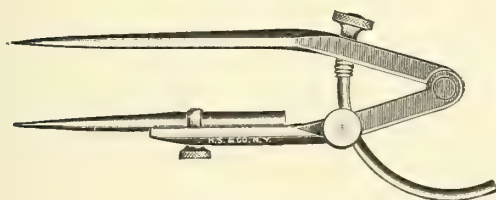


Excelsior

The method of adjustment makes this tool practically a spring divider, adaptable for fine adjustments. The points are made of Stubbs' Steel Wire. Fully nickel-plated.

Inches.....	6	8	10
Dozen.....	\$7.50	10.50	13.50

Extension Dividers



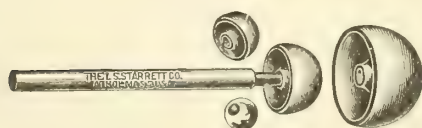
Starrett No. 92

Both points are crucible forged steel, tempered. The quadrant passes through the leg and the clamp screw frictionally locks it firm. After fine adjustments are made, lock nut between the arms locks the spring, curing the defect in the old style dividers of the points dodging out and in with the grain of the wood. The adjustable point may be removed and pencil inserted in its place.

Inches.....	6	7	8	9
Plain, each.....	\$.85	\$.90	\$1.00	\$1.15
Nickeled, each.....	1.10	1.15	1.25	1.40

Sent plain unless otherwise ordered

Ball Points



Starrett No. 88

For Use with No. 85 or No. 90 Dividers and No. 59 Trammels

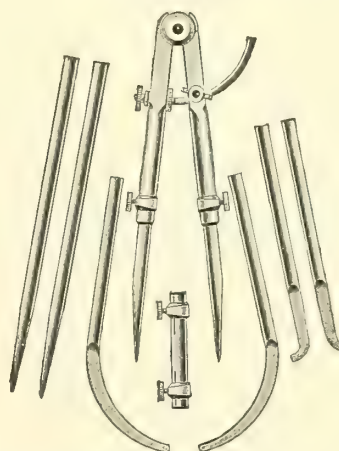
This attachment consists of four balls, of $1\frac{1}{8}$ -inch, 1-inch, $\frac{3}{4}$ -inch, and $\frac{1}{2}$ -inch diameter, respectively, and a holder which fits either divider leg or trammel head. It is used to form a seat for the divider leg in describing circles around a hole.

In ordering this set for use with Trammels, please give tool number of the Trammel, so that the proper holder may be sent.

Complete, 4 Balls and Holder, set.....	\$1.25
Either Ball or Holder, each.....	.25

Improved Dividers

Bronze



The head and socket legs of this tool are made from drawn (not cast) bronze metal, are finely finished and nickel-plated.

The joint is large and firm. The patent locking nut between the arms, against which a spiral spring acts, is a valuable feature. After the fine adjustment is made, the nut may be turned back, locking spring and arms firmly, thus remedying the weak point in the common wing divider, which is only as stiff as the adjusting spring. The quadrant is fastened by our improved method.

A pencil fits either socketed leg, while an auxiliary holder fits reversed end of either short point for an extension. The head, with short point, is eight inches long; may be extended two inches more; will caliper 10 inches outside and $12\frac{1}{2}$ inches inside. With short points it will scribe a 24-inch and with long points a 34-inch circle.

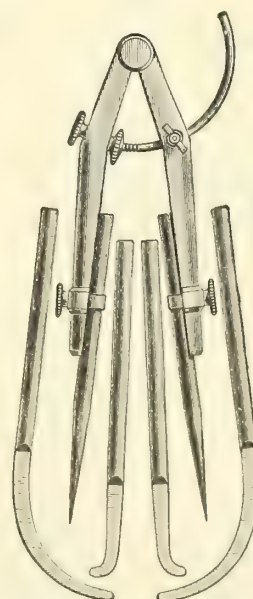
Starrett

No. 90A With short points only.....	Set \$2.25
No. 90B Set complete.....	4.00

Sent complete (No. 90B) unless otherwise ordered.

Improved Steel Extension Divider

Steel



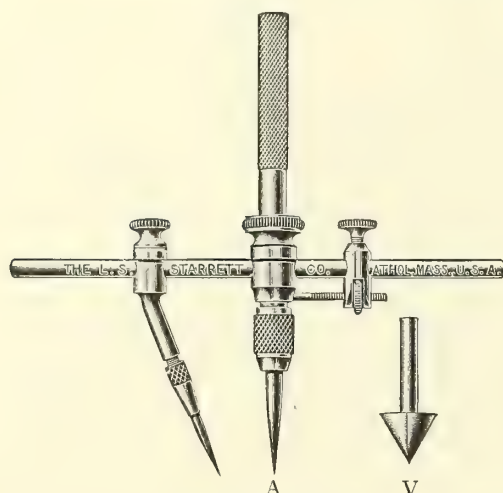
Well-made, nicely finished, with auxiliary caliper legs, which, together with a common pencil, form convenient combinations. It has the patent locking nut described above, same as on No. 90 line. A full-threaded nut on the stud, through which the quadrant passes, is a more durable fastener than two or three threads tapped in the arm to hold the wing of the old style. The head and arms of this tool are made from best malleable iron, the rest of steel. The points are hardened and warranted first class. The smallest size is 7 inches long; by adjustment of points it becomes 9 inches, and will scribe a 22-inch circle; will caliper 11 inches outside and 13 inches inside. The second size is 9 inches; by adjustment of points it becomes 12 inches, and will scribe a 30-inch circle and caliper 14 inches outside and 16 inches inside.

Starrett

No. 85A 7-inch, with divider legs only.....	Set \$1.25
No. 85B 9-inch, with divider legs only.....	1.50
No. 85C 7-inch, complete.....	2.25
No. 85D 9-inch, complete.....	2.50
No. 85E 12-inch, with divider legs only.....	2.25
No. 85F 12-inch, complete.....	3.25

No. 85C sent unless otherwise ordered.

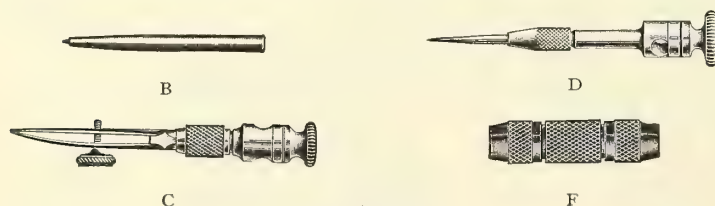
Universal Dividers



Starrett No. 89

The adjustable scriber holder is reversible and carries either a fine tempered steel point "A" or a pencil lead, held in a split socket by a knurled nut. With the holder turned outward it is possible to work close to shoulders, something that cannot be done by a similar tool of any other make; turned inward, points may be brought close together to scribe the smallest circle. With 4-inch beam $7\frac{1}{2}$ inches and under may be scribed. An auxiliary beam 13 inches long is furnished, with which a 25-inch circle may be drawn. The V-center point may be substituted for the regular point, adapting the tool for scribing around a drilled hole. We also furnish a pen attachment.

Tool, with 4-inch beam and V-center point \$1.75

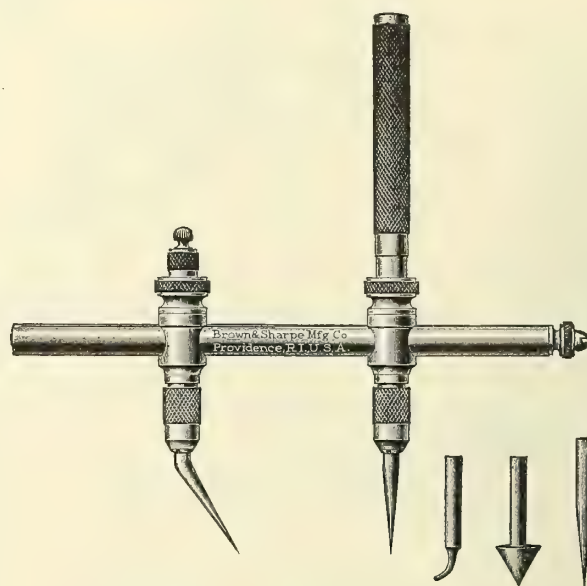


List of Extras

A	Extra Steel Points, each	\$.10
B	Needle Points, each . . . . .	.15
C	Pen Attachment	1.00
D	Extra Straight Point and Socket . . . . .	.50
E	Extra 13-inch Beam to scribe 25-inch circle . . . . .	.25
F	Coupling . . . . .	.35

Total for tool and all attachments \$4.00

Tool and V-Center Point, listing at \$1.75, sent unless otherwise ordered.



Brown & Sharpe No. 843

This Tool shows many points of excellence in design and construction.

The Scriber Point Holder has both fine and quick adjustment; the fine adjustment is obtained by a screw, enclosed in a beam, which engages the nut on the scriber point holder. By pulling up the small knurled knob, at top of post, the screw is released and the post can be quickly adjusted; this knob springs into place as soon as released.

The scriber point is adjustable either side of the center, and can be set for scribing small circles or for working close to a shoulder. The adjustable center point is held by a spring chuck and can be removed easily and replaced by a pencil or other special points. The posts are clamped by knurled nuts and held in place by spring friction when the nuts are unclamped for setting the points.

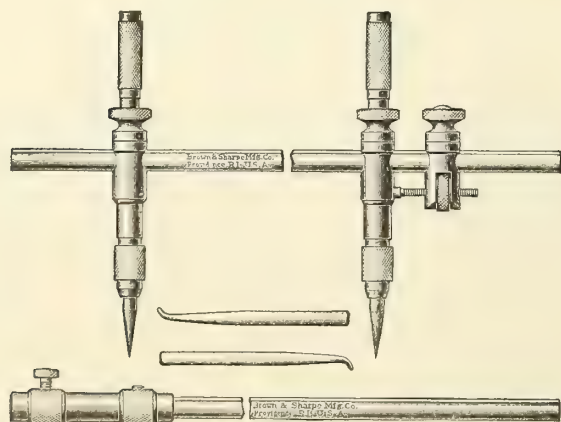
A V-point is furnished for use in describing a circle about a hole already drilled. A caliper point is also included.

The beam is 4 inches long and the points can be set to describe a circle 8 inches in diameter.

Complete \$3.00

Improved Steel Beam Trammels

Brown & Sharpe No. 845



The Trams are clamped by knurled nuts to the beam, which is flattened on top, and the thrust taken by washers to prevent marring the bearing surfaces. A spring friction holds the trams in place when the nuts are loosened for setting. One tram has an adjusting screw and slide, which is convenient for fine adjustment of the points.

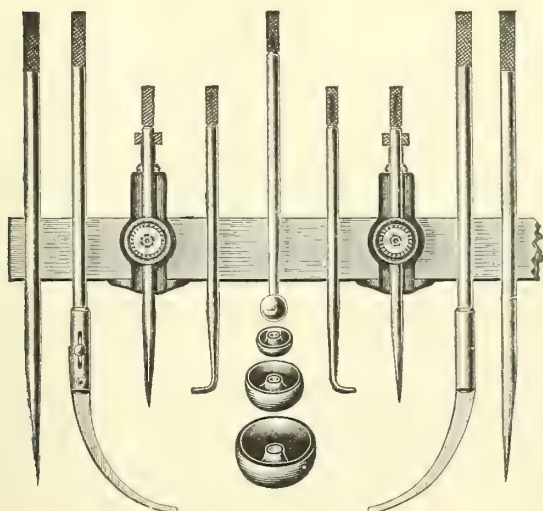
A swivel handle at the top of each tram is a noticeable advantage, as it enables the trammels to be much more conveniently and accurately used than is possible with fixed handles. The adjustable points are held by spring chucks and can be removed easily and replaced by pencil or other special points.

Each	
With 9-inch beam, will describe a circle 18 inches in diameter . .	\$3.00
With 13-inch beam, will describe a circle 26 inches in diameter . .	3.00
With 27-inch beam, will describe a circle 54 inches in diameter . .	3.50

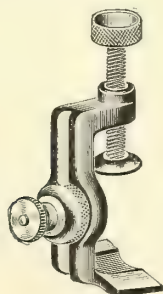
A pair of calipering points is furnished with these trammels.

A pair of "V" points, one large and one small, can be furnished when desired for \$1.00 extra.

Trammels



Starrett No. 59



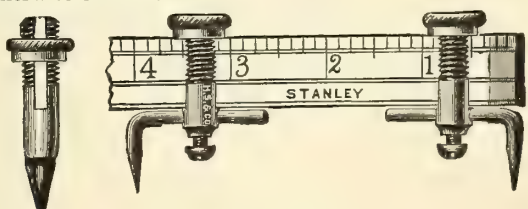
This cut shows the trammels fastened to a wooden beam, which may be any size from $\frac{3}{4}$ -inch to $1\frac{5}{8}$ inches wide, and of any thickness desired (requiring no fitting), giving stiffness according to the length and adapting it for small or large work.

The auxiliaries designed to go with the trammel heads are as shown above, viz., inside and outside caliper legs, an extra pair of long points, a set of four ball points with holder, which enables one to scribe a circle from the center of any hole up to $1\frac{1}{2}$ inches and under. A lead pencil may be used in place of either of the steel points. The clamping device is adapted to take in either a small or common sized pencil. The trammels are furnished with or without auxiliaries.

The small engraving gives a more detailed representation of one of the heads.

No. 59A	Trammel Heads (with one pair of points).....	Each \$2.00
No. 59B	Balls and Holder, per set (see page 287).....	1.25
No. 59C	Small Caliper Legs, per pair.....	.50
No. 59D	Large Caliper Legs, per pair.....	.75
No. 59E	Large Divider Points, per pair.....	.50
No. 59F	Set complete.....	4.75

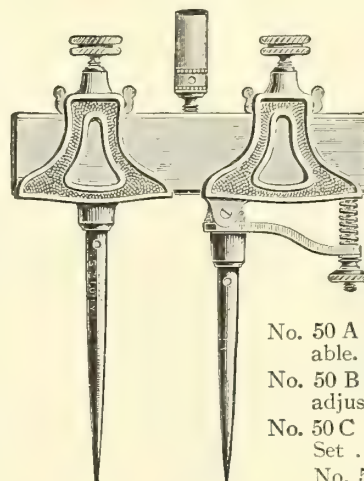
Trammel heads with one pair of points (No. 59A) will be sent unless otherwise ordered.



Stanley No. 99

Can be attached to folding rules of any ordinary width. A set consists of two brass trammel heads with movable steel points, and one head with a pencil socket.

Set..... \$.50



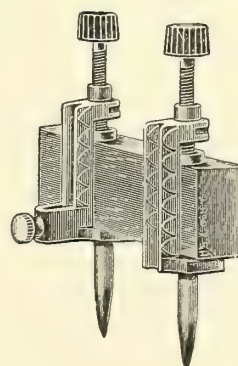
Starrett

Nickel-plated, made of bronze metal, with forged-steel points, hardened.

Either point can be removed, and the pencil socket accompanying each pair put in its place.

Adjustable like spring dividers. Light and durable.

No. 50 A	With 3-inch points, adjustable. Set.....	\$2.50
No. 50 B	With 3-inch points, not adjustable. Set.....	1.50
No. 50 C	Extra long points, 5-inch. Set.....	.35
No. 50A sent unless otherwise ordered.		

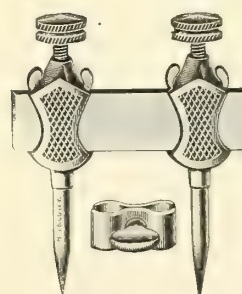


Stanley

These Trammel Points are so constructed that they can be attached to one side of any straight stick, without exact regard to its size, and are thus quickly adjusted for use.

The peculiar form of the socket makes it possible to use an ordinary-sized pencil, or a full-sized oval-shaped carpenters pencil.

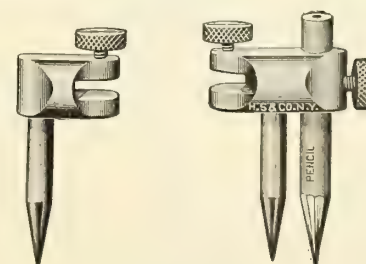
No. 4	Nickel-plated, with steel points. Pair.....	\$.75
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Stanley

Bronze Metal, with Steel Points and Pencil Holder

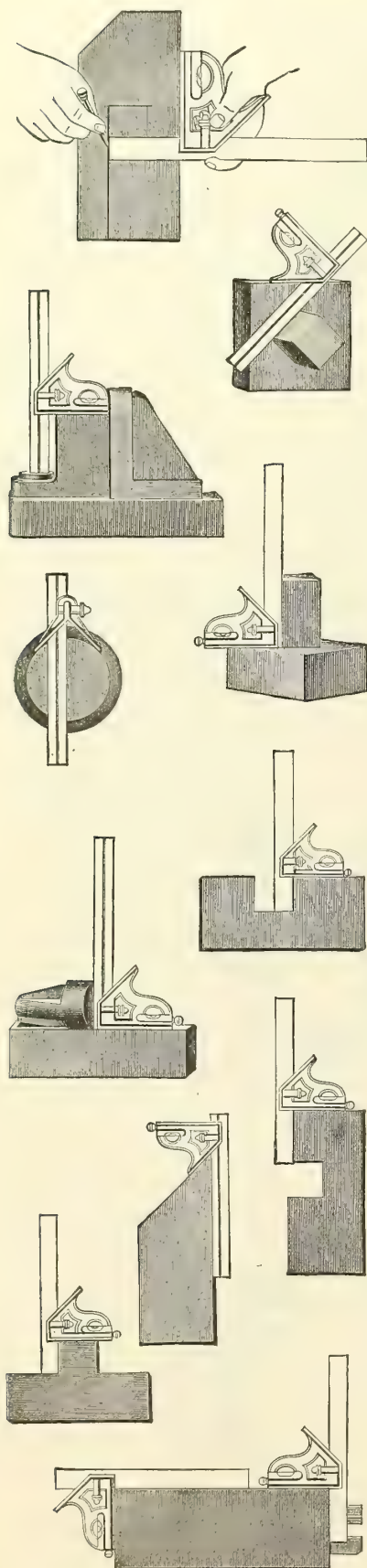
No. 1	For $\frac{1}{4} \times \frac{5}{8}$ -inch bars, pair.....	\$1.00
No. 2	For $\frac{3}{8} \times \frac{1}{8}$ -inch bars, pair.....	1.25



"Kwik-Fix"

Easily attached to a foot rule, square, saw, or anything $\frac{1}{16}$ of an inch or less in thickness. Affixed to the inside of a steel square an excellent stair gauge is obtained. Secure pencil clamp.

Pair.....	\$.50
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A few of the Uses of Combination Square

Instructions for the Use of the Combination Square

The Combination Square

as its name indicates, is a tool that can be used for the same purposes as an ordinary try-square but it differs from the try-square in that the head can be made to slide along the blade and clamp at any desired place, and combined with the square is a level and a miter. The sliding of the head is accomplished by means of a central groove in which travels a guide in the head of the square. This permits the scale to be pulled out and used simply as a rule. It is frequently desired to vary the length of the blade of a try-square and this is readily accomplished with the combination square. It is also convenient to square a piece with a surface and at the same time tell whether one or the other is level or plumb. The spirit level in the head of the square permits this to be done without the use of a separate level. The head of the square may also be used as a simple level.

Because the scale may be moved in the head, the combination square makes a good marking gauge, by setting the scale at the proper position and clamping it there. The whole combination square may then be slid along as with an ordinary gauge. As a further convenience, a scriber is held frictionally in the head by a small brass bushing. The scriber head projects from the bottom of the square stock in a convenient place to take out quickly.

In laying out preliminary to machining, the combination square may be used to scribe lines at miter angles as well as at right angles, for one edge of the square head is at 45-degree. Where micrometer accuracy is not essential the blade of the combination square may be set at any desired position and the square used as a depth gauge to measure in mortises, or the end of the scale may be set flush with the edge of the square and used as a height gauge.

The head may be unclamped and entirely removed from the scale and a center head substituted so that the same tool can quickly be used to find the centers of shafting and other cylindrical pieces. An attachment described on a succeeding page and a second blade or rule can be clamped at any point so that lines may be drawn parallel to the head. When combined with the center head this attachment is convenient for scribing parallel chords on the ends of cylindrical work.

The hardened blade of this combination square prevents the corners from wearing round and destroying the graduations, thus keeping the scale at all times accurate.

This combination square combining as it does a rule, square, miter, depth gauge, height gauge, level and center head permits of more rapid work on the part of the mechanic, saves littering the bench with a number of tools each of which is necessary, but which may be used only rarely, and tends toward the goal for which all mechanics are striving—greater efficiency.

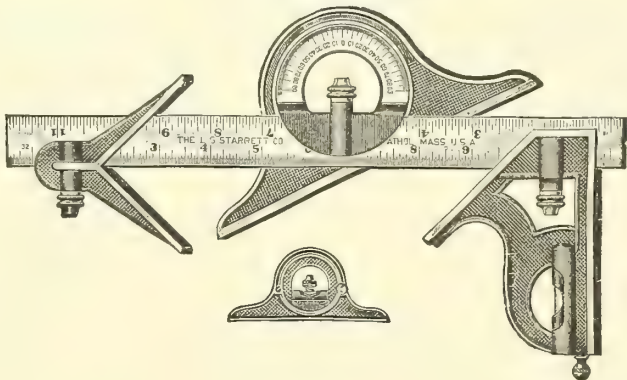
Combination Sets

Starrett

The combination square met with such universal approval from machinists that it was but a step to add to it the protractor head and have a combination set, made up of the rule on which slide the square-, center-, and protractor-heads. This makes possible more varieties of uses in laying out and testing work than are possible with any other instrument used by mechanics.

Nos. 9 and 9 M

With Hardened Blade

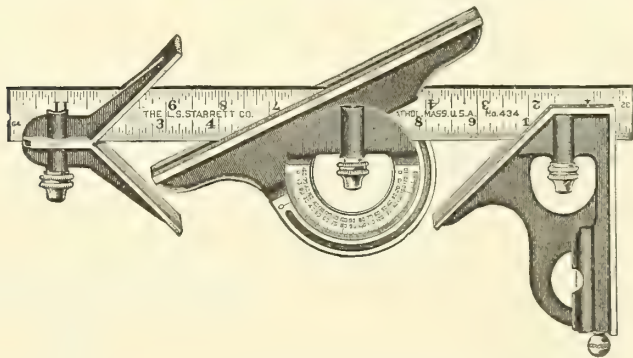
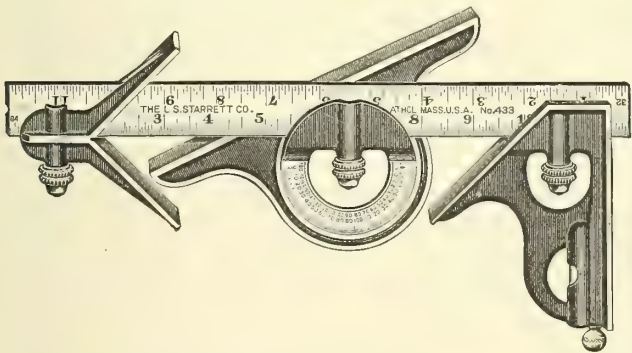


Nos. 434, 434 M and 434 ME

With Hardened Blade, Drop-Forged Stock and Center Head and Reversible Protractor Head

Nos. 433, 433 M and 433 ME

With Hardened Blade, Drop-Forged Stock and Center Head



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

Size Inches	Number 9	Number 433	Number 434
9	\$3.75	\$4.75	\$5.25
12	4.00	5.00	5.50
18	4.75	5.75	6.25
24	5.25	6.25	6.75

Metric Measure

Graduated in millimeters and 1/2 millimeters.

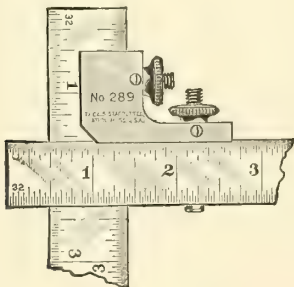
Size CM	Number 9 M	Number 433 M	Number 434 M
20	\$3.75	\$4.75	\$5.25
30	4.00	5.00	5.50
50	4.75	5.75	6.25
60	5.25	6.25	6.75

Metric and English Measure

Graduated in 1/2 millimeters and 32nds of an inch; millimeters and 64ths of an inch.

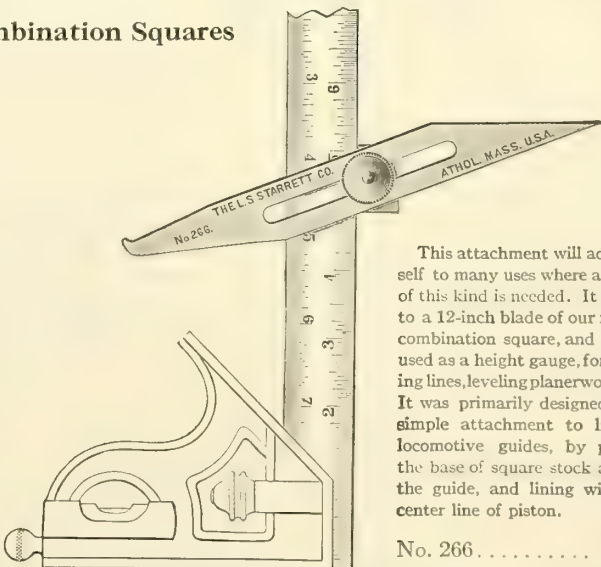
Size CM	Number 433 ME	Number 434 ME
20	\$4.75	\$5.25
30	5.00	5.50
50	5.75	6.25
60	6.25	6.75

Attachments for Starrett Combination Squares



The use of this small and inexpensive attachment greatly adds to the effectiveness of the Combination Square. It is made to fit the blades of the 12, 18 and 24-inch Starrett Combination Squares, and can be used in connection with any regular rule or square not wider than one inch. It should be included in every mechanic's outfit.

No. 289.....\$.85

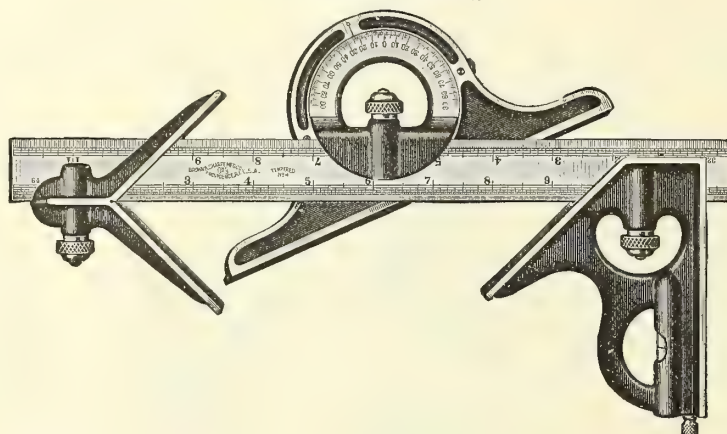


This attachment will adapt itself to many uses where a device of this kind is needed. It clamps to a 12-inch blade of our regular combination square, and can be used as a height gauge, for scribing lines, leveling planerwork, etc. It was primarily designed as a simple attachment to line up locomotive guides, by placing the base of square stock against the guide, and lining with the center line of piston.

No. 266.....\$1.00

Combination Sets

Brown & Sharpe



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

With Plain Protractor Heads

425 With Square Heads Hardened and Tempered Blades.
426 With Soft Heads and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
425	9	\$4.75	426	9	\$4.25
425	12	5.00	426	12	4.50
425	18	5.75	426	18	5.25
425	24	6.25	426	24	5.75

With Extra Heavy Blades

427 With Square Heads Hardened and Tempered Blades.
428 With Soft Heads and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
427	18	\$8.25	428	18	\$7.75
427	24	9.00	428	24	8.25

With Reversible Protractor Heads

438 With Square Heads Hardened and Tempered Blades.
439 With Soft Heads and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
438	9	\$5.25	439	9	\$4.75
438	12	5.50	439	12	5.00
438	18	6.25	439	18	5.75
438	24	6.75	439	24	6.25

With Extra Heavy Blades

440 With Square Heads Hardened and Tempered Blades.
441 With Soft Heads and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
440	18	\$8.75	441	18	\$8.25
440	24	9.75	441	24	9.00

Metric Measure

Graduated in millimeters and ½ millimeters.

With Plain Protractor Heads

429 With Square Heads Hardened and Tempered Blades.
430 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
429	20	\$4.75	430	20	\$4.25
429	30	5.00	430	30	4.50
429	50	5.75	430	50	5.25
429	60	6.25	430	60	5.75

With Extra Heavy Blades

431 With Square Heads Hardened and Tempered Blades.
432 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
431	50	\$8.25	432	50	\$7.75
431	60	9.00	432	60	8.25

With Reversible Protractor Heads

442 With Square Heads Hardened and Tempered Blades.
443 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
442	20	\$5.25	443	20	\$4.75
442	30	5.50	443	30	5.00
442	50	6.25	443	50	5.75
442	60	6.75	443	60	6.25

With Extra Heavy Blades

444 With Square Heads Hardened and Tempered Blades.
445 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
444	50	\$8.75	445	50	\$8.25
444	60	9.75	445	60	9.00

Metric and English Measure

Graduated in millimeters and 32nds of an inch;
½ millimeters and 64ths of an inch.

With Plain Protractor Heads

433 With Square Heads Hardened and Tempered Blades.
434 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
433	20	\$4.75	434	20	\$4.25
433	30	5.00	434	30	4.50
433	50	5.75	434	50	5.25
433	60	6.25	434	60	5.75

With Extra Heavy Blades

435 With Square Heads Hardened and Tempered Blades.
436 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
435	50	\$8.25	436	50	\$7.75
435	60	9.00	436	60	8.25

With Reversible Protractor Heads

446 With Square Heads Hardened and Tempered Blades.
447 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
446	20	\$5.25	447	20	\$4.75
446	30	5.50	447	30	5.00
446	50	6.25	447	50	5.75
446	60	6.75	447	60	6.25

With Extra Heavy Blades

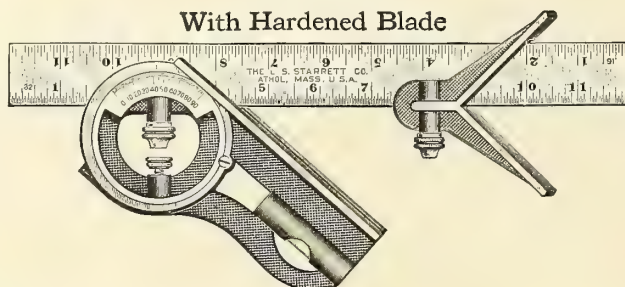
448 With Square Heads Hardened and Tempered Blades.
449 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
448	50	\$8.75	449	50	\$8.25
448	60	9.75	449	60	9.00

Patent Inclinator

Starrett

With Hardened Blade



English Measure

Graduated in 8ths, 16ths, 32nds, and 64ths of an inch.

No. 10

Without Center Head

12-inch.....	\$4.00
18-inch.....	5.00
24-inch.....	6.00
Center Head to fit all sizes....	.75

Sent without Center Head unless otherwise ordered.

Metric Measure

Graduated in millimeters and ½ millimeters.

No. 10 M

Without Center Head

30 cm.....	\$4.00
50 cm.....	5.00
60 cm.....	6.00
Center Head to fit all sizes....	.75

Sent without Center Head unless otherwise ordered.

The cut represents an inclinometer, try-square, and bevel protractor combined.

It is compact, convenient, and a complete and perfect substitute for several costly tools.

It consists of a stock and disc, both slotted to receive the blade, which folds in the stock. The blade attached to the graduated rotary disc may be secured at any angle from 0 to 90 degrees, and by loosening the clamp screw it may be shortened or extended full length, or removed for a straight edge.

The working face of the stock, extending both sides of the blade, admits of its being reversed, so that the same angle may be laid off in opposite directions without changing the angle in the tool, thus requiring but ¼ of a graduated circle to obtain all angles both ways.

At 90 degrees, the blade brings up against a case-hardened screw, accurately adjusted, thus forming a try square; by holding the blade perpendicular (the level in the stock being at right angles), a plumb, by folding the tool a level length of blade.

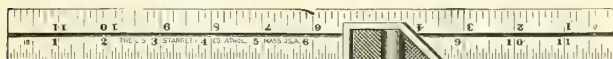
The parts of these Tools are all made interchangeable and repairs can be made by ordering the part needed. It is not necessary to return the tool.

Combination Squares

Starrett

Nos. 11, 11 M and 11 ME Hardened Blades.

Nos. 33 and 33 M Drop-Forged Heads and Hardened Blades



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

Size Inches	Number 11		Number 33	
	With Center Head	Without Center Head	With Center Head	Without Center Head
4		*\$.75		
6	\$1.50	1.00	\$2.50	\$2.00
9	1.75	1.25	2.75	2.25
12	2.00	1.50	3.00	2.50
18	2.75	2.25	3.75	3.25
24	3.25	2.75	4.25	3.75

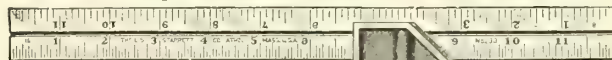
*Without center head or level.
Sent with center head unless otherwise ordered.

Metric Measure

Graduated in millimeters and 1/2 millimeters.

Size CM.	Number 11 M		Number 33 M	
	With Center Head	Without Center Head	With Center Head	Without Center Head
10		*\$.75		
15	\$1.50	1.00	\$2.50	\$2.00
20	1.75	1.25	2.75	2.25
30	2.00	1.50	3.00	2.50
50	2.75	2.25	3.75	3.25
60	3.25	2.75	4.25	3.75

*Without center head or level.
Sent with center head unless otherwise ordered.



Metric and English Measure

Graduated 1/2 millimeters and 32nds of an inch; millimeters and 64ths of an inch.

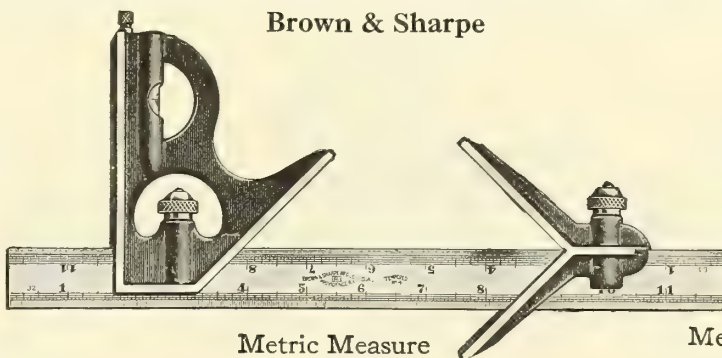
Size CM.	Number 11ME	
	With Center Head	Without Center Head
10		*\$.75
15	\$1.50	1.00
20	1.75	1.25
30	2.00	1.50
50	2.75	2.25
60	3.25	2.75

*Without center head or level.
Sent with center head unless otherwise ordered.

12-Inch size only furnished with Shrink Graduations for Pattern Makers if so desired at \$.50 each extra.

Brown & Sharpe

Heads are drop-forged, contributing much to the lightness, durability and convenience of the tool.



Parallel lines running lengthwise of the blade are provided to aid in reading the various parts of an inch.

English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

With hardened heads and tempered blades.

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
				4	\$1.50
400	6	\$2.50	401	6	2.00
400	9	2.75	401	9	2.25
400	12	3.00	401	12	2.50
400	18	3.75	401	18	3.25
400	24	4.25	401	24	3.75

With soft heads and tempered blades.

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
402			403	4	\$1.25
402	6	\$2.00	403	6	1.50
402	9	2.25	403	9	1.75
402	12	2.50	403	12	2.00
402	18	3.25	403	18	2.75
402	24	3.75	403	24	3.25

With Extra Heavy Blades and Heads

With hardened heads and tempered blades.

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
412	18	\$5.75	413	18	\$4.25
412	24	6.75	413	24	5.25

With soft heads and tempered blades:

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
414	18	\$5.25	415	18	\$3.75
414	24	6.25	415	24	4.75

Metric Measure

Graduated in millimeters and 1/2 millimeters.

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
				10	\$1.50
404	15	\$2.50	405	15	2.00
404	20	2.75	405	20	2.25
404	30	3.00	405	30	2.50
404	50	3.75	405	50	3.25
404	60	4.25	405	60	3.75

With soft heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
				10	\$1.25
406	15	\$2.00	407	15	1.50
406	20	2.25	407	20	1.75
406	30	2.50	407	30	2.00
406	50	3.25	407	50	2.75
406	60	3.75	407	60	3.25

With Extra Heavy Blades and Heads

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
416	50	\$5.75	417	50	\$4.25
416	60	6.75	417	60	5.25

With soft heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
418	50	\$5.25	419	50	\$3.75
418	60	6.25	419	60	4.75

Metric and English Measure

Graduated in millimeters and 32nds of an inch; 1/2 millimeters and 64ths of an inch.

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
				10	\$1.50
408	15	\$2.50	409	15	2.00
408	20	2.75	409	20	2.25
408	30	3.00	409	30	2.50
408	50	3.75	409	50	3.25
408	60	4.25	409	60	3.75

With soft heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
				10	\$1.25
410	15	\$2.00	411	15	1.50
410	20	2.25	411	20	1.75
410	30	2.50	411	30	2.00
410	50	3.25	411	50	2.75
410	60	3.75	411	60	3.25

With Extra Heavy Blades and Heads

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
420	50	\$5.75	421	50	\$4.25
420	60	6.75	421	60	5.25

With soft heads and tempered blades.

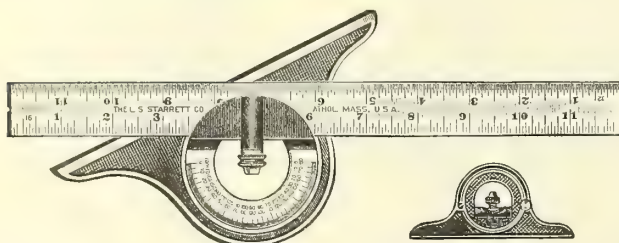
Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
422	50	\$5.25	423	50	\$3.75
422	60	6.25	423	60	4.75

The parts of these Squares are all made interchangeable and repairs can be made by ordering the part needed. It is not necessary to return the square.

Protractors

Starrett

Nos. 12 and 12 M
With Hardened Blade



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

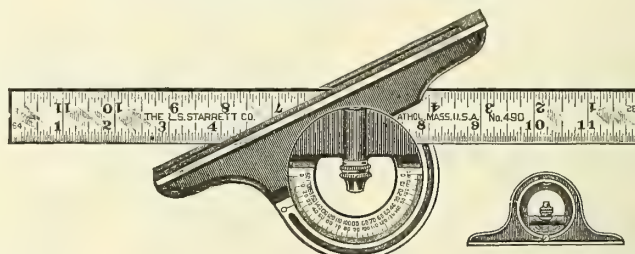
Size Inches	Number 12	Number 490
9	\$2.75	\$3.50
12	3.00	3.75
18	3.50	4.50
24	4.00	5.00

Metric Measure

Graduated in millimeters and 1/2 millimeters.

Size CM.	Number 12 M	Number 490 M
20	\$2.75	\$3.50
30	3.00	3.75
50	3.50	4.50
60	4.00	5.00

Nos. 490, 490 M and 490 ME
With Hardened Blade and Reversible Head



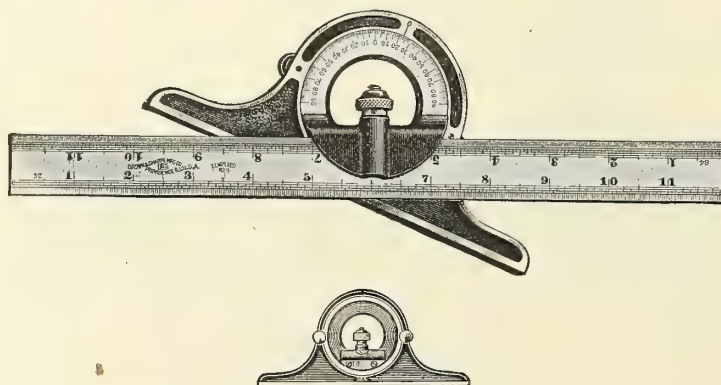
Metric and English Measure

Graduated in 1/2 millimeters and 32nds of an inch, millimeters and 64ths of an inch.

Size CM.	Number 490 ME
20	\$3.50
30	3.75
50	4.50
60	5.00

Protractor Heads with Level, Plain \$2.00; Reversible \$2.50

Brown & Sharpe



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

Size Inches	Number 450 Plain Head	Number 456 Reversible Head
9	\$3.00	\$3.50
12	3.25	3.75
18	4.00	4.50
24	4.50	5.00

Metric Measure

Graduated in millimeters and 1/2 millimeters.

Size CM.	Number 452 Plain Head	Number 458 Reversible Head
20	\$3.00	\$3.50
30	3.25	3.75
50	4.00	4.50
60	4.50	5.00

Metric and English Measure

Graduated in millimeters and 32nds of an inch, 1/2 millimeters and 64ths of an inch.

Size CM.	Number 454 Plain Head	Number 460 Reversible Head
20	\$3.00	\$3.50
30	3.25	3.75
50	4.00	4.50
60	4.50	5.00

Protractor Head with Level

Plain, all sizes.....	\$2.00
Reversible, all sizes.....	2.50

With Extra Heavy Blades and Heads

Size Inches	Number 451 Plain Head	Number 457 Reversible Head
18	\$5.00	\$5.50
24	5.75	6.25

Protractor Head with Level

Plain, all sizes.....	\$2.50
Reversible, all sizes.....	3.00

Protractor Head with Level

Plain, all sizes.....	\$2.00
Reversible, all sizes.....	2.50

With Extra Heavy Blades and Heads

Size CM.	Number 453 Plain Head	Number 459 Reversible Head
50	\$5.00	\$5.50
60	5.75	6.25

Protractor Head with Level

Plain, all sizes.....	\$2.50
Reversible, all sizes.....	3.00

Protractor Head with Level

Plain, all sizes.....	\$2.50
Reversible, all sizes.....	3.00

With Extra Heavy Blades and Heads

Size CM.	Number 455 Plain Head	Number 461 Reversible Head
50	\$5.00	\$5.50
60	5.75	6.25

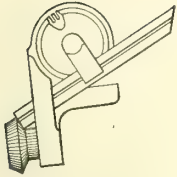
Protractor Head with Level

Plain, all sizes.....	\$2.50
Reversible, all sizes.....	3.00

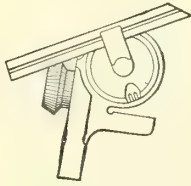
The parts of these Protractors are all made interchangeable and repairs can be made by ordering the part needed. It is not necessary to return the tool

Bevel Protractors

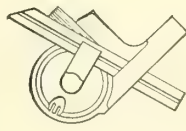
Suggestions for Use



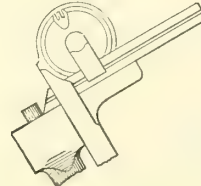
Measuring Angle of Edge on Small Bevel Gear Blanks



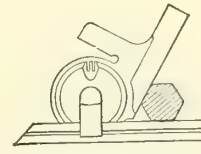
Measuring Angle of Face on Bevel Gear Blanks



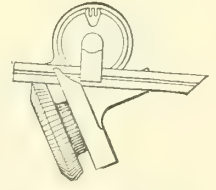
Testing Angle Blocks



Testing for Squareness of End of Turned Work



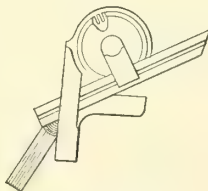
Testing Hexagonal Stock



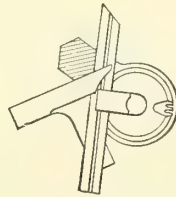
Measuring Angle of Edge on Large Bevel Gears



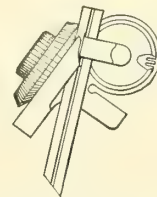
Testing Angle of Cutting Edges on Twist Drill



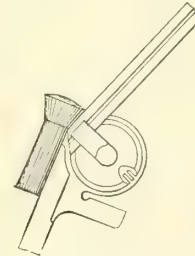
Measuring Angle on Thread Tool



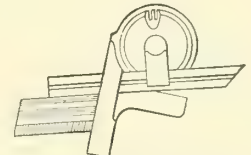
Another Method of Testing Hexagonal Stock



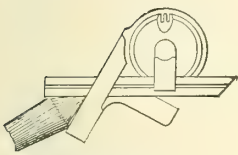
Measuring Angle of Face of Large Bevel Gear Blank



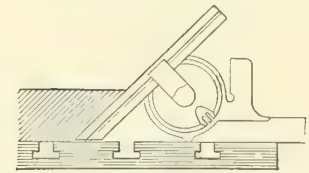
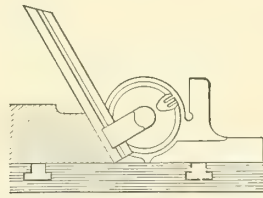
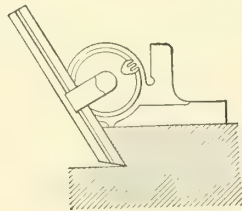
Measuring Angle on Spring Collet Blank



Testing an Angular Block

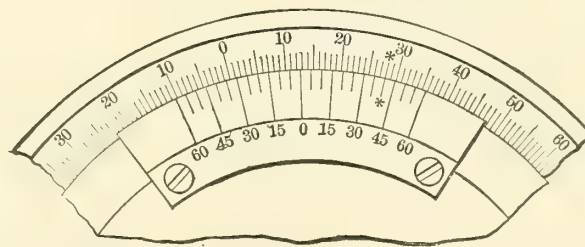


Testing Angle of Lathe or Grinder Center



Taking the angle of dovetail machine ways

Method of Reading Vernier



The Vernier indicates every five minutes (5') or one-twelfth of a degree.

The disc of the protractor is graduated in degrees from 0 to 90 degrees each way. The Vernier plate is graduated so that 12 divisions on the Vernier occupy the same space as 23 divisions on the disc.

Each space upon the Vernier is 5' shorter than two spaces on the true scale or disc.

When the line marked O on the Vernier coincides with the line marked O on the true scale, the edges of the base and blade are parallel. When the swivel head is moved so the line on the Vernier next to O coincides with the line next but one to O on the true scale, the included angle of the base and blade has been changed $\frac{1}{2}$ of a degree or 5'.

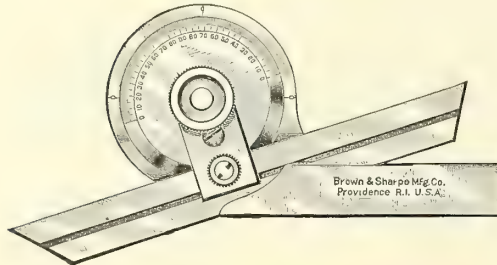
To read the Protractor setting: Read off directly from the true scale the number of whole degrees between O and the O of the Vernier scale. Then count, in the same direction, the number of spaces from the zero of the Vernier scale to a line that coincides with a line on the true scale; multiplying this number by 5 the product will be the number of minutes to be added to the number of whole degrees.

For example: As the Vernier is shown in the cut it has moved 12 whole degrees to the right of the O upon the true scale and the 8th line on the Vernier coincides with a line upon the true scale as indicated by *. Multiplying 8 by 5 the product, 40, is the number of minutes to be added to the whole number of degrees, thus indicating a setting of 12 degrees and 40 minutes (12° 40').

Bevel Protractors

Brown & Sharpe

Improved No. 493



Well adapted for all classes of work where angles are to be laid out or established, which do not require such a fine degree of accuracy as is possible with a Protractor having a Vernier.

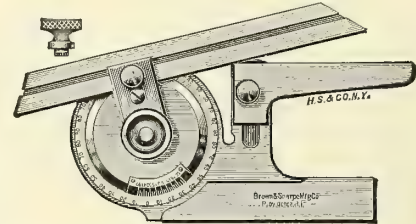
One side of the stock is flat, thus permitting its being laid flat upon the paper or work.

The dial is accurately graduated to degrees over an arc of 180 degrees, reading 0 to 90 degrees from each extremity of the arc. It turns on a large central stud, which is hardened and ground and can be rigidly clamped in any position after setting.

With 6-inch blade.....	\$6.00
In leatherette case.....	6.75
With 12-inch blade.....	7.00
In leatherette case.....	8.00
Extra blades, 6-inch.....	.75
Extra blades, 12-inch.....	1.75

See page 295 for suggestions for use and method of reading the Vernier

Improved Universal No. 496
With Vernier Acute Angle Attachment



Designed for all classes of work where angles are to be laid out, and with the attachment, which is a new feature, extremely small angles can be easily and quickly established. All measurements are accurate, for the dial is accurately graduated, alignments correct, and workmanship throughout of the best.

The Protractor can be laid flat on the work or paper, one side of the tool being flat. The dial is accurately graduated to degrees the entire circle, the graduated surface being depressed, thus protecting the graduations from wear.

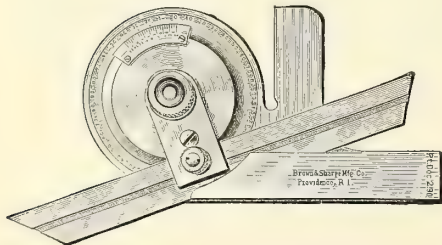
A Vernier, which reads to 5 minutes or $\frac{1}{12}$ of a degree, adds materially to the fineness to which angles can be laid out. A fine adjustment is provided by means of a small thumb screw furnished as an attachment.

A thumb pinion attachment is furnished for fine adjustment.

With 6-inch blade.....	\$10.50
In morocco case.....	11.50
With 12-inch blade.....	11.50
In morocco case.....	13.00
Extra blades, 6-inch.....	.75
Extra blades, 12-inch.....	1.75

Improved Universal No. 495

With Vernier



This Protractor is well adapted for all classes of work where angles are to be laid out or established.

One side of the stock is flat, thus permitting its being laid flat upon the paper or work.

The dial is accurately graduated to degrees the entire circle. The swivel turns on a large central stud, which is hardened and ground and can be rigidly clamped by a thumb nut.

The line of graduations is below the surface, protecting them from wear.

The Vernier adds materially to the use of the Protractor in obtaining fine measurements. It reads to 5 minutes or $\frac{1}{12}$ of a degree.

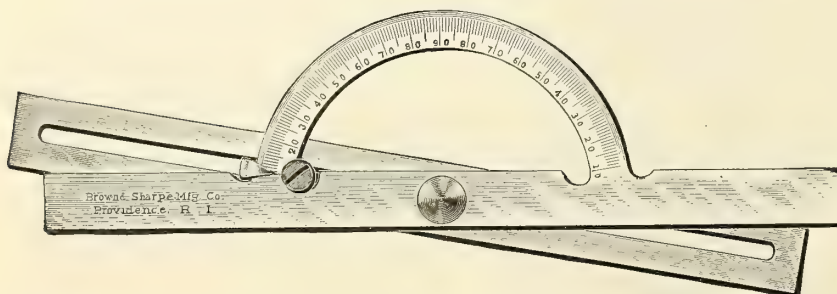
By means of a small thumb pinion furnished as an attachment, extremely fine adjustments can be secured.

With 6-inch blade.....	\$8.00
In morocco case.....	9.00
With 12-inch blade.....	9.00
In morocco case.....	10.50
Extra blades, 6-inch.....	.75
Extra blades, 12-inch.....	1.75

The blades of above Protractors are about $\frac{1}{16}$ inch thick, can be moved back and forth their entire length and clamped independently of the dial, thus adapting them for work where others cannot be used.

See page 295 for suggestions for use and method of reading the Vernier

No. 492



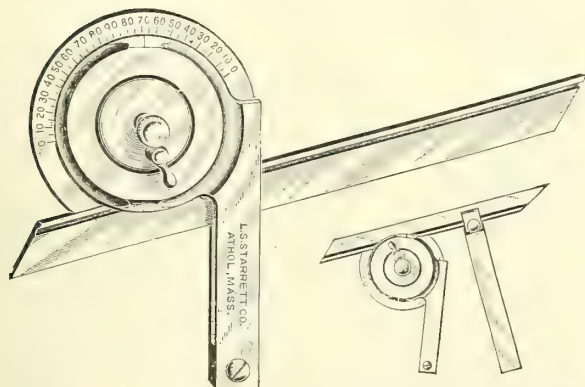
The half circle is divided into degrees.

Length of Sliding Arm, 6 inches.....	Each \$4.50
Length of Sliding Arm, 10 inches.....	5.75

Universal Bevel Protractors

Starrett

No. 360 Line

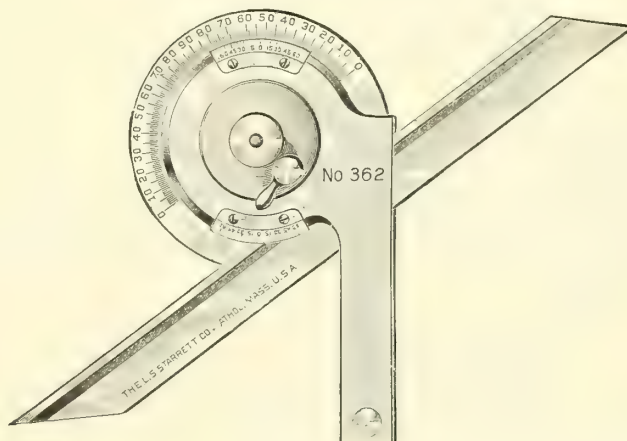


Weights, 6 ounces. The blade is either 7 or 12 inches by $\frac{1}{2}$ inch, the stock is 4 inches long, and both are made from sheet steel, nicely finished. The disk is graduated in degrees from 0 to 90 each way, and rotates the entire circle on a central stud inside the case. The blade (clamped by an eccentric stud against the edge of the disk) may be slipped back and forth its full length, or turned at any angle around the circle and firmly clamped at any point, adapting it for work in positions where others cannot be used, and rendering the common universal bevel (for transferring angles) unnecessary. One side of the stock being flat, makes it a convenient tool for laying on paper in drafting, etc. The attachment shown in the smaller engraving will be found very convenient for grinding tools, tapers on lathe centers, and all long tapers.

No. 360A	7-inch.....	\$6.00
No. 360B	7-inch, in leatherette case.....	6.75
No. 360C	12-inch.....	7.00
No. 360D	12-inch, in leatherette case.....	8.00
No. 360E	With both 7 and 12-inch blades.....	7.50
No. 360F	Same in leatherette case.....	8.50
No. 360G	Attachment, extra.....	1.00

No. 360B (7-inch in case) sent unless otherwise ordered

No. 362 Line with Vernier



Same as No. 360, except that it is made with Verniers reading 5 minutes or $\frac{1}{12}$ of a degree.

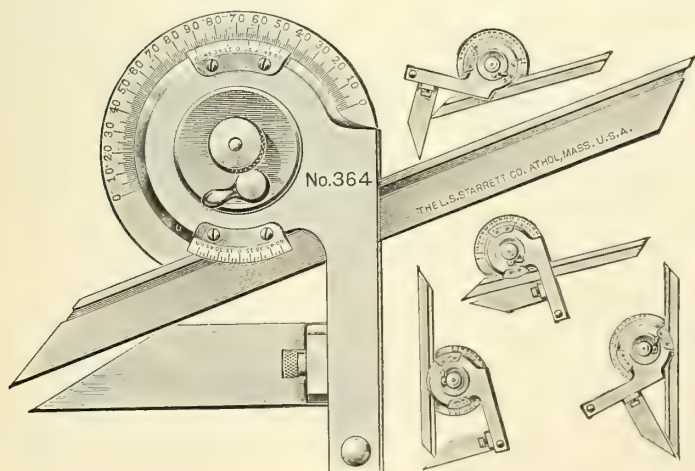
The Verniers are so placed with relation to the graduated half circle as to make the Protractor readable by Vernier in any position. The Protractor stock is 4 inches long and has either a 7 or 12-inch blade, $\frac{1}{2}$ inch wide. With the 7-inch blade the tool weighs but six ounces. The disk is graduated in degrees from 0 to 90 each way and rotates the entire circle on a central stud inside the case. The blade, clamped by an eccentric stud against the edge of the disk, may be slipped back and forth its full length, or turned at any angle around the circle and firmly clamped at any point. Attention is called to the fact that the figures on the Vernier are placed close to the lines, thus making it easy to read the tool when taking measurements. Attention is also called to the central locking nut on this Protractor. By a slight turn of this nut the protractor is firmly held in position.

The attachment shown in the smaller engraving of No. 360 will be found very convenient for grinding short or long tapers to any degree or pitch.

No. 362A	7-inch.....	\$8.00
No. 362B	7-inch, in leather case.....	9.00
No. 362C	12-inch.....	9.00
No. 362D	12-inch, in leather case.....	10.50
No. 362E	With both 7 and 12-inch blades.....	9.75
No. 362F	Same in leather case.....	11.75
No. 362G	Attachment, extra.....	1.00

No. 362B (7-inch, in leather case) sent unless otherwise ordered

With Vernier and Acute Angle Attachment



Same as No. 362 with the addition of the acute angle attachment which enables the user to obtain very small angles.

No. 364A	With 7-inch blade.....	\$10.50
No. 364B	With 7-inch blade, in leather case.....	11.50
No. 364C	With 12-inch blade.....	11.50
No. 364D	With 12-inch blade, in leather case.....	13.00
No. 364E	With both 7 and 12-inch blades.....	12.25
No. 364F	Same as E, in leather case.....	14.25

No. 364B sent unless otherwise ordered

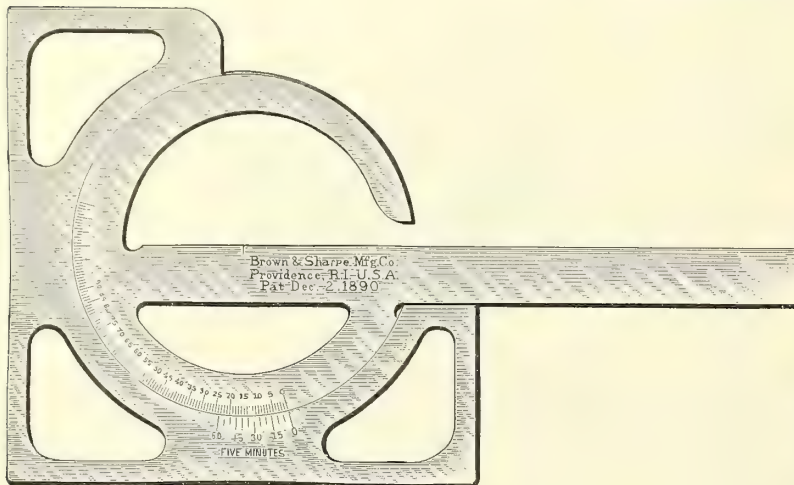
Note.—The acute angle attachment as used on the No. 364 can also be used on our No. 362 and No. 360 Protractors.

Acute angle attachment, only.....	\$2.50
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See page 262 for suggestions for use and method of reading the Vernier

Protractors

Drafting



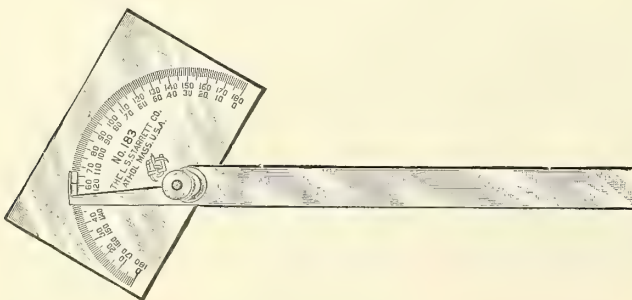
Brown & Sharpe No. 510

Can be quickly set to any angle. It can be used either side up and on either of the two outside edges of the frame. It can be used to advantage in dividing a circle, transferring angles or laying off a given angle, without resetting, on either side of a line.

The Vernier reads to 5 minutes.

It forms a convenient extension of a T-square and frequently takes the place of 45-degree and 60-degree angles. 8 inches long.

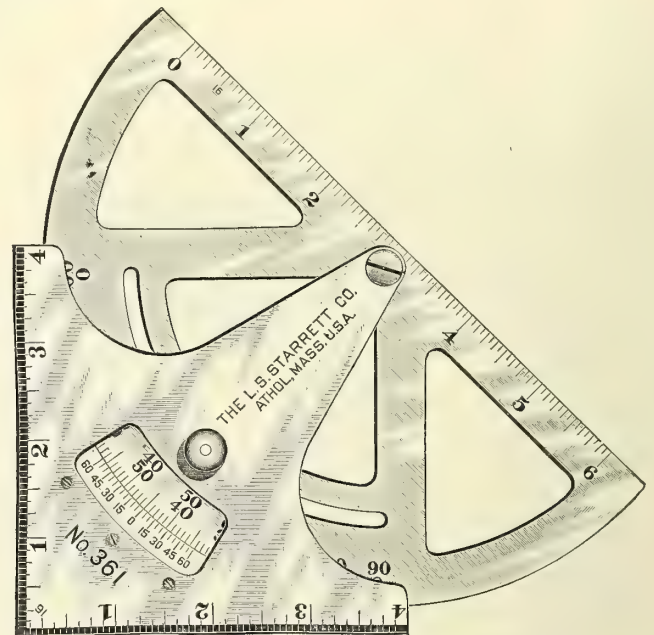
Each..... \$6.50
In morocco case.....Each 7.75



Starrett No. 183

With rectangular head, giving four working faces, also two rows of figures reading both ways to show the complementary degrees. The blade is 6 inches long and by means of patent lock joint is set firmly by a slight turn of the nut. The back of the tool is flat, the Protractor accurate, nicely finished, and convenient for a draftsman or machinist for setting bevels, transferring angles, or for use for a T-square, etc.

Each..... \$2.00

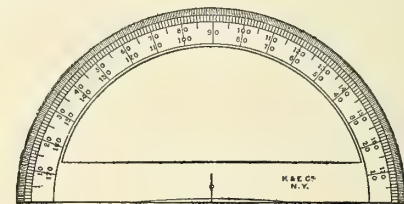


Starrett No. 361

Made of sheet steel, nickel-plated, graduated in degrees and figured to read from either right or left, with Vernier to read in 5 minutes. The three straight edges of the Protractor are graduated in inches and 16ths, the longer part 6 inches. The tool will lie flat on the paper. The knurled locking nut is convenient for picking up the instrument. To obtain the complement of an angle without resetting, place the opposite straight part of the stock against the T-square or straight edge of a drawing board, and the reverse angle can be obtained by placing the straight part of the arc against the T-square or straight edge. By loosening the binding nut, friction is taken off, making it easy to adjust to degrees, when the tool may be again firmly locked.

This is a high grade Protractor and one greatly appreciated by draftsmen.

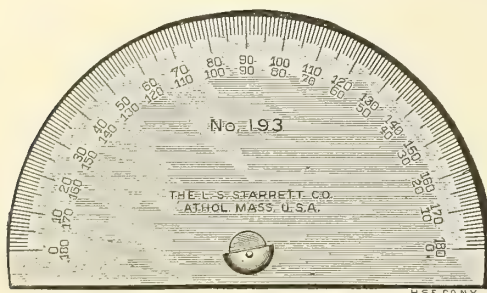
Each..... \$6.50
B, in leather case..... 7.75



No. 1262

		Each
No. 1266	Brass, 4 1/4 inches, graduated 1 degree.....	\$.25
No. 1262	German silver, 6 3/8 inches, graduated 1/2 degree.....	.70
No. 1868	Transparent amber, 5 inches, graduated 1/2 degree...	.45
No. 1868	Transparent amber, 6 inches, graduated 1/2 degree...	.60
No. 1868	Transparent amber, 7 inches, graduated 1/2 degree...	.75
No. 1869	Transparent amber, 6 inches, graduated 1/2 degree bevelled	2.75

For Use with Bevels



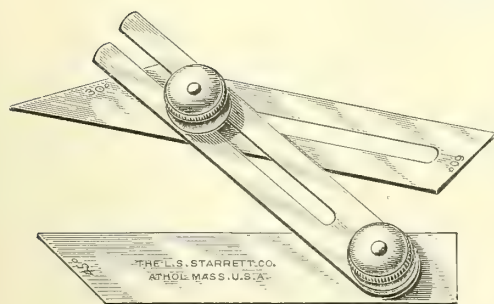
Starrett No. 193

Used for setting bevels at any desired angle, thus converting them into Bevel Protractors at slight cost.

Each..... \$1.00

Bevels

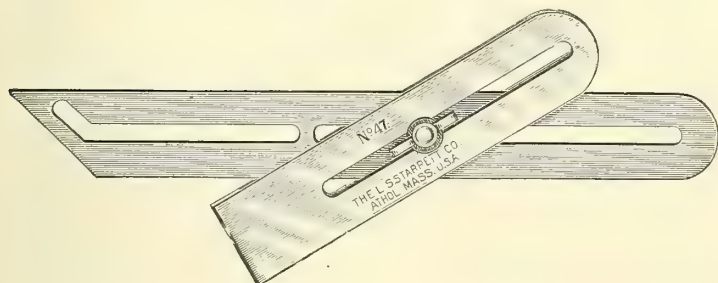
Starrett Combination



Has a stud riveted in the straight edge stock or head, on which its split blade is hinged, so as to swing over the stock and be clamped at any angle. The slotted auxiliary blade with clamp bolt may be slipped on to the split blade and be clamped at any desired angle and used, in combination with the stock of the other, for laying out work, measuring, or showing any angle desired, and when so combined will lie flat upon its work. The stock is about 4 inches long.

No. 49 \$2.00

Improved



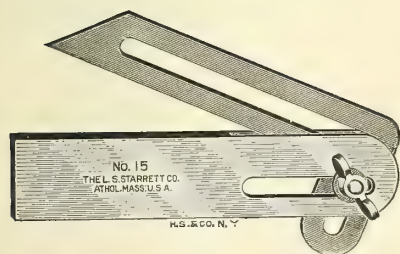
The advantages of this bevel consist in its having not only the blade slotted but the stock as well, through and through, thus admitting adjustments that cannot be obtained with a common bevel. The clamping screw head, which the cut does not show, is let into a rabbet, flush with the surface of the stock, which will lie flat on the work.

No. 47, 6-inch (length of stock 3½ inches) \$1.25

No. 47, 9-inch (length of stock 4¾ inches) \$1.50

No. 47, 12-inch (length of stock 6 inches) \$1.75

Universal

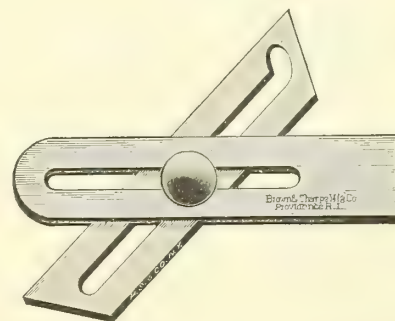


Improved features. The set-off in the blade increases its capacity and usefulness for bevel gear work, etc., so that any angle, however slight, may be obtained.

Another valuable feature is—one edge of the case being solid, a rest is formed directly under the blade, where thin templets may be placed and accurately fitted.

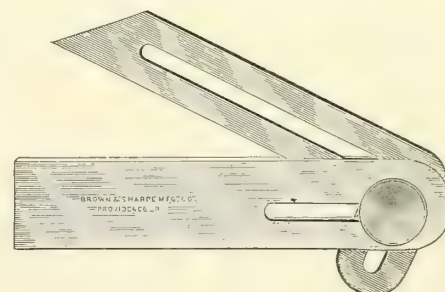
No. 15 3-inch \$1.50

Brown & Sharpe Universal



Number	Length of Head and Tongue Inches	Width of Head and Tongue Inch	Each
498	3	5/8	\$1.25
498	1 1/4	1/4	1.25

Improved Universal

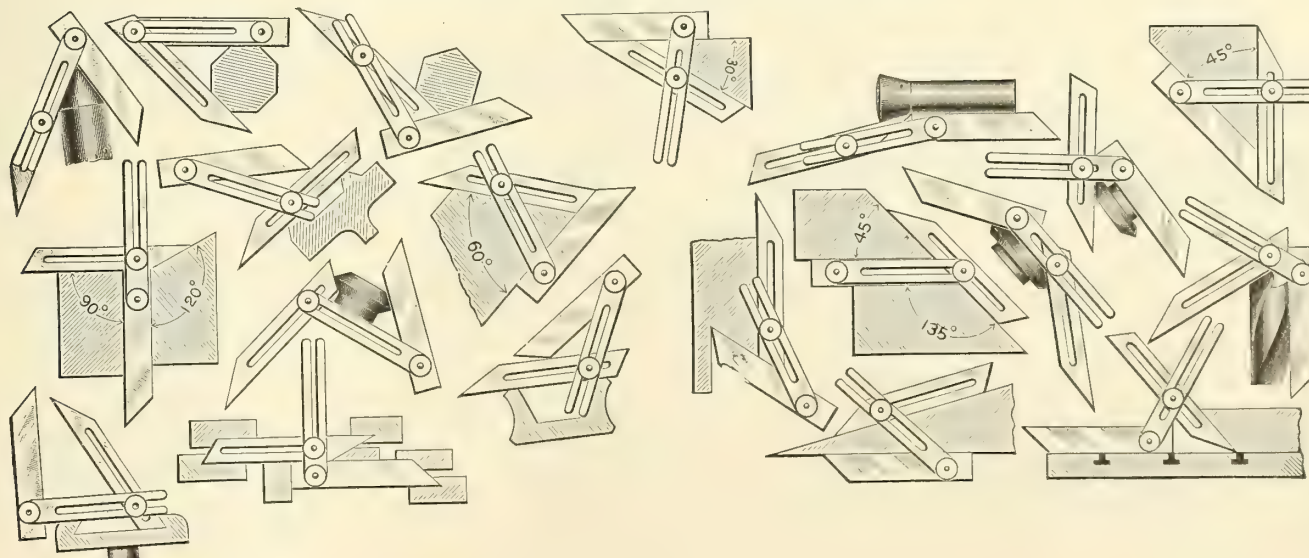


An Improved Universal Bevel, 3 inches long, with an offset blade that admits of the measurement of all angles.

The case is solid on the top for 1½ inches from the square end.

No. 499 \$1.50

Suggestions for Use of Combination Bevel



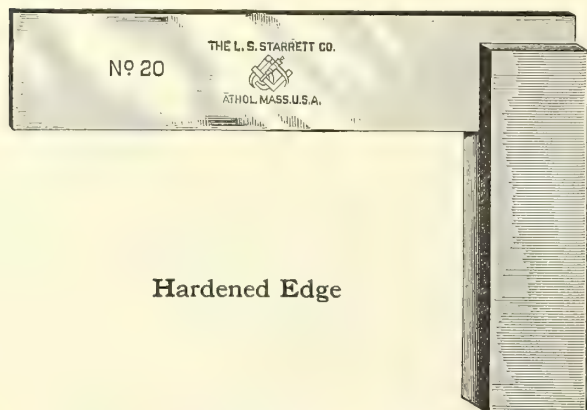
SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Steel Squares

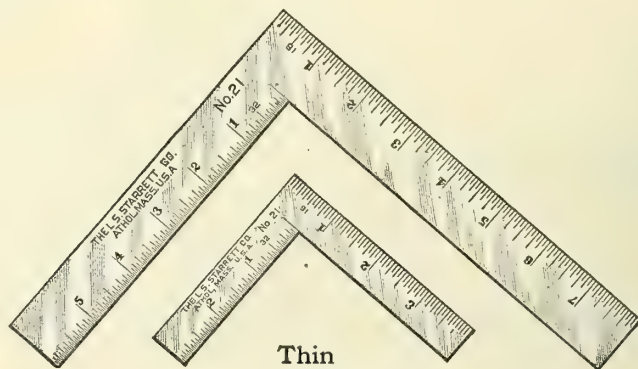
Starrett



Hardened Edge

No. 20. Not Graduated

1-inch blade inside beam, full length of beam 1 inch.....	\$1.50
1½-inch blade inside beam, full length of beam 1½ inches.....	1.75
2-inch blade inside beam, full length of beam 1⅞ inches.....	2.00
3-inch blade inside beam, full length of beam 2⅜ inches.....	2.50
4½-inch blade inside beam, full length of beam 3½ inches.....	3.50
6-inch blade inside beam, full length of beam 4⅝ inches.....	4.50
9-inch blade inside beam, full length of beam 5⅞ inches.....	6.50
12-inch blade inside beam, full length of beam 7 inches.....	9.00
15-inch blade inside beam, full length of beam 8⅝ inches.....	15.00
18-inch blade inside beam, full length of beam 10½ inches.....	18.00
24-inch blade inside beam, full length of beam 12⅝ inches.....	25.00

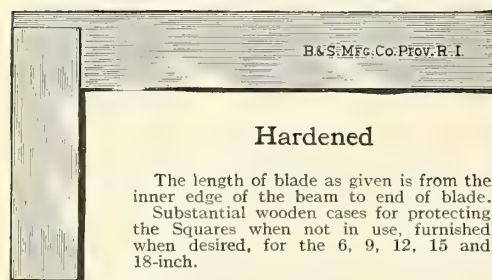


Thin

No. 21. English Measure

2 x 1 inch, ⅛ inch thick, graduated 16ths, 64ths, one side; 32ds, 64ths other.....	\$1.00
3 x 2 inch, ⅛ inch thick, graduated 16ths, 64ths one side, 32ds, 64ths other.....	1.50
4 x 3 inch, ⅛ inch thick, graduated 16ths and 32ds both sides.....	2.00
6 x 4 inch, ⅛ inch thick, graduated 16ths and 32ds both sides.....	3.00
8 x 6 inch, ⅛ inch thick, graduated 16ths and 32ds both sides.....	4.00
10 x 8 inch, ⅛ inch thick, graduated 16ths and 32ds both sides.....	5.00
12 x 8 inch, ⅜ inch thick, graduated 16ths and 32ds both sides.....	6.00
No. 21 M. Graduated in millimeters and ½ millimeters	
5 cm.....	\$1.00
10 cm.....	2.00
15 cm.....	3.00
20 cm.....	4.00

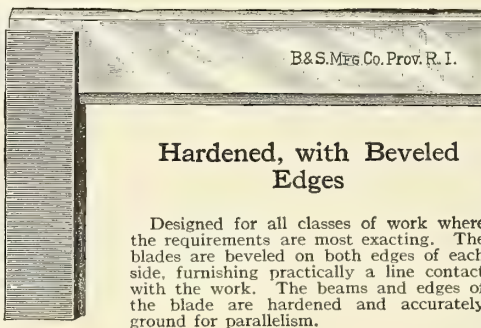
Brown & Sharpe



Hardened

The length of blade as given is from the inner edge of the beam to end of blade. Substantial wooden cases for protecting the Squares when not in use, furnished when desired, for the 6, 9, 12, 15 and 18-inch.

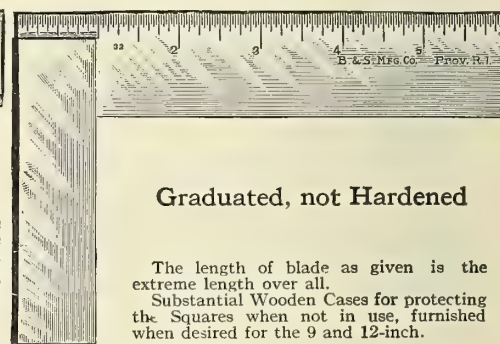
Number	Length of Blade Inches	Length of Beam Inches	Each	Wooden Case
540	1½	1⅞	\$1.75	
540	3	2⅞	2.50	
540	4½	3⅞	3.50	
540	6	4⅞	4.50	.50
540	9	5⅞	6.50	.50
540	12	7⅞	9.00	.75
540	15	8⅞	15.00	1.00
540	18	10⅞	18.00	1.50



Hardened, with Beveled Edges

Designed for all classes of work where the requirements are most exacting. The blades are beveled on both edges of each side, furnishing practically a line contact with the work. The beams and edges of the blade are hardened and accurately ground for parallelism.

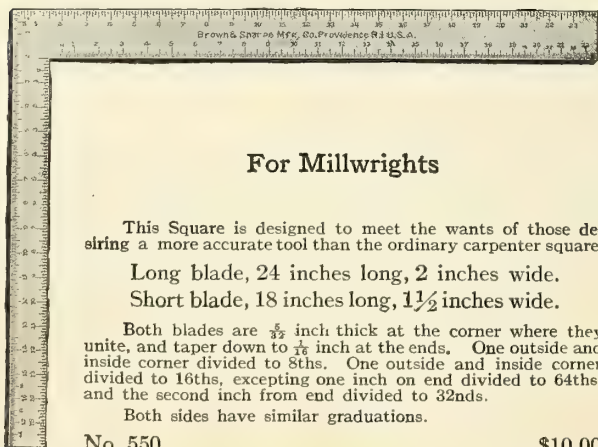
Number	Length of Blade Inches	Length of Beam Inches	Each
542	1½	1⅞	\$2.25
542	3	2⅞	3.25
542	4½	3⅞	4.50
542	6	4⅞	6.00



Graduated, not Hardened

The length of blade as given is the extreme length over all. Substantial Wooden Cases for protecting the Squares when not in use, furnished when desired for the 9 and 12-inch.

Number	Length of Blade Inches	Length of Beam Inches	Each	Wooden Case
544	3	2	\$2.00	
544	4	2⅞	2.50	
544	6	3⅞	3.50	
544	9	5	6.00	.50
544	12	6⅞	7.00	.75



For Millwrights

This Square is designed to meet the wants of those desiring a more accurate tool than the ordinary carpenter square.

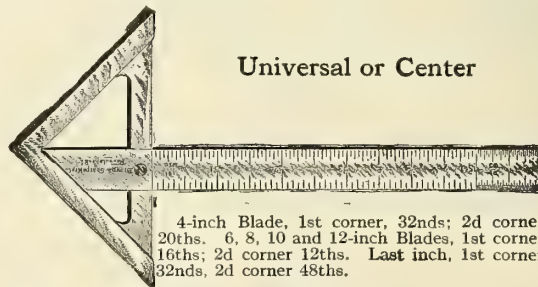
Long blade, 24 inches long, 2 inches wide.

Short blade, 18 inches long, 1½ inches wide.

Both blades are ⅜ inch thick at the corner where they unite, and taper down to ⅛ inch at the ends. One outside and inside corner divided to 8ths. One outside and inside corner divided to 16ths, excepting one inch on end divided to 32nds, and the second inch from end divided to 32nds.

Both sides have similar graduations.

No. 550.....	\$10.00
--------------	---------



Universal or Center

4-inch Blade, 1st corner, 32nds; 2d corner 20ths. 6, 8, 10 and 12-inch Blades, 1st corner 16ths; 2d corner 12ths. Last inch, 1st corner 32nds, 2d corner 48ths.

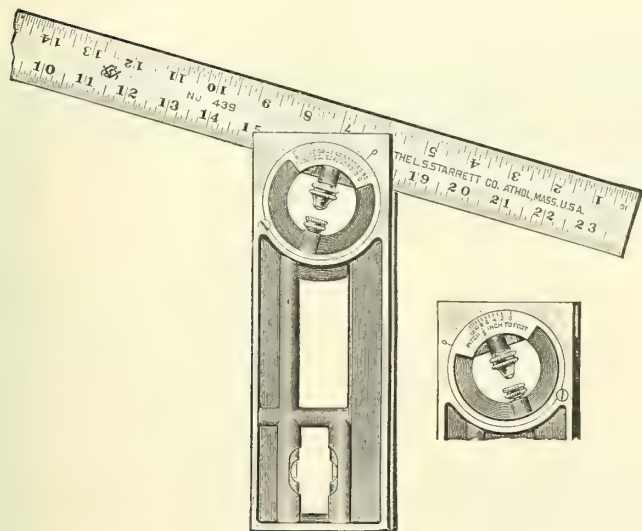
Number	Each	Length of Blade Inches	Length of Head Inches
556	\$2.00	4	3
556	2.50	6	4
556	3.50	8	5½
556	5.00	10	7
556	6.00	12	8¾

Steel Squares

Starrett

Patent Double Square
With Hardened Blade

Patent Builders Combination Tool

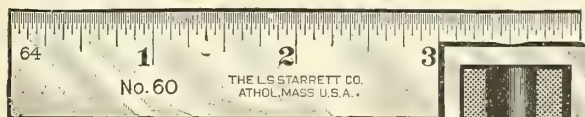


The stock is 9 inches long, with sliding blade either 18 or 24 inches long, 1½ inches wide, with No. 4 graduations. This blade is adjustable through the revolving turret, which is graduated on one side in degrees with two rows of figures reading either right or left, and on the other to show the pitch to foot, the graduations showing ½ inch pitch. With levels set in each side of the stock, any incline by degrees or pitch to foot can be leveled up, either on top or under the work. For laying out to cut for valleys or hips of whatever pitch, set the blade to show pitch desired, lay off the line, then place the square end of stock against the work and draw line against blade, which will give, without mental calculation, the complementary angle to that angle or pitch. This combination tool can be used as a try square, also as a mortise or depth gauge, and the blade may be slipped back when full length is not needed, thus affording great convenience in handling.

In short, it is a substitute for a full kit of try-squares, a bevel protractor, pitch to foot indicator, a 24-inch level or plumb using the blade, and a 9-inch using the stock, and a complementary angle indicator, all in one simple compact tool weighing with a 24-inch blade less than 3 pounds.

No. 439	18-inch	.....	\$6.00
No. 439	24-inch	.....	7.00

"Reliable" Try-Squares

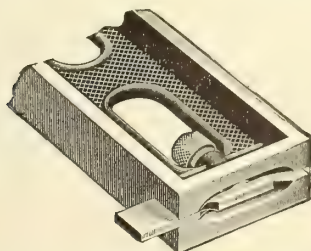


The 18-inch and 24-inch sizes of No. 61 Squares are equipped with the convenient stock support as illustrated, which projects beyond the side of the stock, or, when not in use, is contained wholly within the stock, and may be clamped firmly in either position.

No. 61

Blade with Hardened Edge, Not Graduated

Length of Blade Inches	Length of Beam Inches	Each
4	2 5/16	\$1.25
5	3	1.50
6	3 5/8	1.75
9	5 1/16	2.25
12	6	3.00
18	9	12.00
24	12	18.00



No. 60 M, Metric Measure

Graduated Blade, Not Hardened

Length of Blade CM.	Length of Beam Inches	Each
10	2 5/16	\$1.00
15	3 3/8	1.25
20	5 1/16	2.00
30	6	2.75

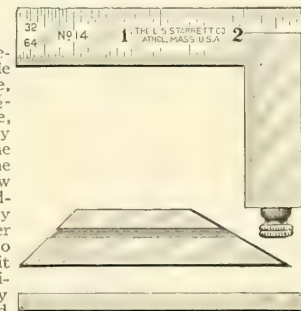
The blade is not riveted or soldered to the stock, but is firmly held by patent bolt and nut, by means of which the tool can be readily taken apart, and when worn the blade and stock can be reground or lapped, and put together again as good as new.

No. 60

English Measure
Graduated Blade, Not Hardened

Length of Blade Inches	Length of Beam Inches	Each
4	2 5/16	\$1.00
5	3	1.15
6	3 5/8	1.25
9	5 1/16	2.00
12	6	2.75

Double Square
With Hardened Head and Blades



This cut represents a double solid steel Square, with patent 2½-inch sliding scale, and is especially designed for fine tool makers. The rule being narrow and instantly adjusted to any length, however short, allows it to be used where it would be impossible to use any square with a fixed blade. The scale is graduated on one side only, in 32ds and 64ths.

Fitted to go with this stock, we supply not only a bevel blade, but a very narrow straight one, about ½ inch wide, highly prized by die makers for squaring small holes. Both blades will be sent with the square unless otherwise ordered.

No. 14A	Square	.....	\$2.00
No. 14B	Square, with either bevel or narrow blade	.....	2.30
No. 14C	Square, complete	.....	2.60

Sent complete (No. 14C) unless otherwise ordered.

Metric Measure

Same as above, with 5cm. blade, graduated in millimeters and ½ millimeters.

No. 14MA	Square	.....	\$2.00
No. 14MB	Square, with either bevel or narrow blade	.....	2.30
No. 14MC	Square, complete	.....	2.60

Steel Squares

Sargent

Carpenters

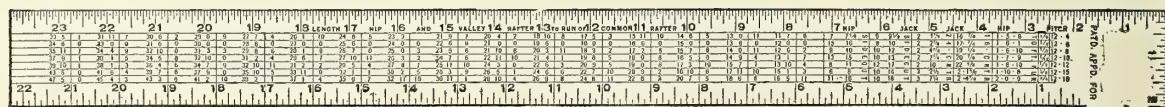


Number	Body Inches	Tongue Inches	Graduations and Marking	Finish	Dozen
3 } 3N }	24x2	16x1½	1/16, 1/8 and 1/4 inch Brace Measure, and Essex's Board Measure	Polished	\$15.00
10 } 10N }	12x1½	8x1	1/8, 1/4, 1/2 inch	Nickel	17.90
14 } 30 }	24x2	16x1½	1/8, 1/4, 1 inch, Essex's Board Measure	Polished	9.75
30N }	18x1½	12x1	1/16, 1/8, 1/4 inch	Nickel	12.20
40N }	6x1	4x¾	1/32, 1/16, 1/8 inch	Polished	12.75
100C }	24x2	16x1½	1/100, 1/32, 1/16, 1/8, 1/4, 1/2 inch Brace Measure, 8 Square and Essex's Board Measure	Nickel	16.00
100N }				Nickel	10.10
100B }				Royal Copper	30.00
100VG }				Blued, white markings	21.60
100CR }				Galvanized, red markings	23.00
100NR }	24x2	18x1½	1/32, 1/16, 1/8, 1/4, 1/2 inch Brace Measure, 8 Square and Patent Rafter Table	Royal Copper	31.60
100BR }				Nickel	23.20
100VGR }				Blued, white markings	24.60
				Galvanized, red markings	24.60

*Also made in 16-inch tongue, if preferred

New Rafter Framing

Carpenters



These Squares have, in addition to the usual markings—1/100, 1/32, 1/16, 1/8, 1/4, 1/2 inch Brace Measure and Patent Rafter Table—a table for hip, valley, jack and cripple rafters and table of cuts for common Polygons. Full directions for using packed with each square.

	Body is 24 x 2 inches; tongue, *18 x 1¾ inches	Dozen
No. 500 CR	Royal Copper	\$37.60
No. 500 NR	Nickel	28.70
No. 500 BR	Blued, white markings	30.20
No. 500 VGR	Galvanized, red markings	30.20

*Also made in 16-inch tongue, if preferred

Books

Practical Uses of the Steel Square

By Fred T. Hodgson

Vol. I

A publication giving a full description of the square and its uses in obtaining the lengths and bevels of all kinds of rafters, hips, groins, braces, brackets, purlins, collar beams and jack rafters; also its application in obtaining the bevels and cuts for hoppers, spring mouldings, octagons, stairs, diminished stiles, etc., etc. Illustrated by nearly 100 engravings. Each, \$1.00

Vol. II

An advanced book containing many new problems and exhaustive studies that are not contained in volume I. Each, \$1.00

SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Steel Squares

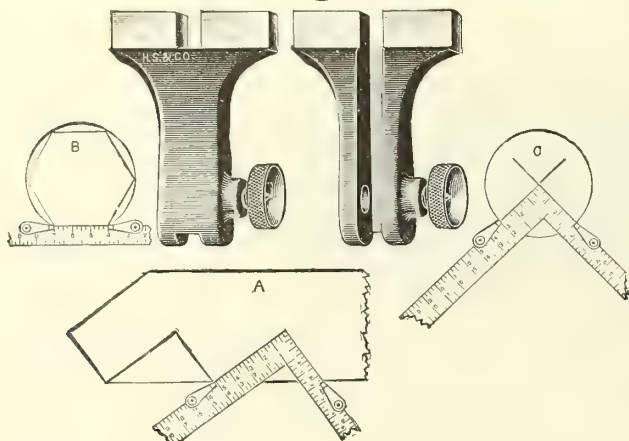
Nicholls

Carpenters Rafter Framing

23	22	21	20	19	18	17
LENGTH	OF COMMON	RAFTER	PER FOOT	RUN	21 63	20 80
DIFFERENCE	IN LENGTH	OF JACKS	16 INCHES	CENTERS	24 75	24 04
FIGURES	GIVING	SIDE CUT	OF JACKS	2 FEET	3 7 1/4	3 5 3/8
		CUT OF	OF HIP OR	VALLEY	10 18	8 14
		SHEATHING	IN VALLEY	RAFTERS	11 16	7 10
				OR HIP	18 10	14 8
22	21	20	19	18	17	16
15	14	13	12	11	10	9

This Square is marked $\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 , $1\frac{1}{2}$, 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 13 , 14 , 15 , 16 , 17 , 18 , 19 , 20 , 21 , 22 , 23 , 24 , 25 , 26 , 27 , 28 , 29 , 30 , 31 , 32 , 33 , 34 , 35 , 36 , 37 , 38 , 39 , 40 , 41 , 42 , 43 , 44 , 45 , 46 , 47 , 48 , 49 , 50 , 51 , 52 , 53 , 54 , 55 , 56 , 57 , 58 , 59 , 60 , 61 , 62 , 63 , 64 , 65 , 66 , 67 , 68 , 69 , 70 , 71 , 72 , 73 , 74 , 75 , 76 , 77 , 78 , 79 , 80 , 81 , 82 , 83 , 84 , 85 , 86 , 87 , 88 , 89 , 90 , 91 , 92 , 93 , 94 , 95 , 96 , 97 , 98 , 99 , 100 , 101 , 102 , 103 , 104 , 105 , 106 , 107 , 108 , 109 , 110 , 111 , 112 , 113 , 114 , 115 , 116 , 117 , 118 , 119 , 120 , 121 , 122 , 123 , 124 , 125 , 126 , 127 , 128 , 129 , 130 , 131 , 132 , 133 , 134 , 135 , 136 , 137 , 138 , 139 , 140 , 141 , 142 , 143 , 144 , 145 , 146 , 147 , 148 , 149 , 150 , 151 , 152 , 153 , 154 , 155 , 156 , 157 , 158 , 159 , 160 , 161 , 162 , 163 , 164 , 165 , 166 , 167 , 168 , 169 , 170 , 171 , 172 , 173 , 174 , 175 , 176 , 177 , 178 , 179 , 180 , 181 , 182 , 183 , 184 , 185 , 186 , 187 , 188 , 189 , 190 , 191 , 192 , 193 , 194 , 195 , 196 , 197 , 198 , 199 , 200 , 201 , 202 , 203 , 204 , 205 , 206 , 207 , 208 , 209 , 210 , 211 , 212 , 213 , 214 , 215 , 216 , 217 , 218 , 219 , 220 , 221 , 222 , 223 , 224 , 225 , 226 , 227 , 228 , 229 , 230 , 231 , 232 , 233 , 234 , 235 , 236 , 237 , 238 , 239 , 240 , 241 , 242 , 243 , 244 , 245 , 246 , 247 , 248 , 249 , 250 , 251 , 252 , 253 , 254 , 255 , 256 , 257 , 258 , 259 , 260 , 261 , 262 , 263 , 264 , 265 , 266 , 267 , 268 , 269 , 270 , 271 , 272 , 273 , 274 , 275 , 276 , 277 , 278 , 279 , 280 , 281 , 282 , 283 , 284 , 285 , 286 , 287 , 288 , 289 , 290 , 291 , 292 , 293 , 294 , 295 , 296 , 297 , 298 , 299 , 300 , 301 , 302 , 303 , 304 , 305 , 306 , 307 , 308 , 309 , 310 , 311 , 312 , 313 , 314 , 315 , 316 , 317 , 318 , 319 , 320 , 321 , 322 , 323 , 324 , 325 , 326 , 327 , 328 , 329 , 330 , 331 , 332 , 333 , 334 , 335 , 336 , 337 , 338 , 339 , 340 , 341 , 342 , 343 , 344 , 345 , 346 , 347 , 348 , 349 , 350 , 351 , 352 , 353 , 354 , 355 , 356 , 357 , 358 , 359 , 360 , 361 , 362 , 363 , 364 , 365 , 366 , 367 , 368 , 369 , 370 , 371 , 372 , 373 , 374 , 375 , 376 , 377 , 378 , 379 , 380 , 381 , 382 , 383 , 384 , 385 , 386 , 387 , 388 , 389 , 390 , 391 , 392 , 393 , 394 , 395 , 396 , 397 , 398 , 399 , 400 , 401 , 402 , 403 , 404 , 405 , 406 , 407 , 408 , 409 , 410 , 411 , 412 , 413 , 414 , 415 , 416 , 417 , 418 , 419 , 420 , 421 , 422 , 423 , 424 , 425 , 426 , 427 , 428 , 429 , 430 , 431 , 432 , 433 , 434 , 435 , 436 , 437 , 438 , 439 , 440 , 441 , 442 , 443 , 444 , 445 , 446 , 447 , 448 , 449 , 450 , 451 , 452 , 453 , 454 , 455 , 456 , 457 , 458 , 459 , 460 , 461 , 462 , 463 , 464 , 465 , 466 , 467 , 468 , 469 , 470 , 471 , 472 , 473 , 474 , 475 , 476 , 477 , 478 , 479 , 480 , 481 , 482 , 483 , 484 , 485 , 486 , 487 , 488 , 489 , 490 , 491 , 492 , 493 , 494 , 495 , 496 , 497 , 498 , 499 , 500 , 501 , 502 , 503 , 504 , 505 , 506 , 507 , 508 , 509 , 510 , 511 , 512 , 513 , 514 , 515 , 516 , 517 , 518 , 519 , 520 , 521 , 522 , 523 , 524 , 525 , 526 , 527 , 528 , 529 , 530 , 531 , 532 , 533 , 534 , 535 , 536 , 537 , 538 , 539 , 540 , 541 , 542 , 543 , 544 , 545 , 546 , 547 , 548 , 549 , 550 , 551 , 552 , 553 , 554 , 555 , 556 , 557 , 558 , 559 , 560 , 561 , 562 , 563 , 564 , 565 , 566 , 567 , 568 , 569 , 570 , 571 , 572 , 573 , 574 , 575 , 576 , 577 , 578 , 579 , 580 , 581 , 582 , 583 , 584 , 585 , 586 , 587 , 588 , 589 , 590 , 591 , 592 , 593 , 594 , 595 , 596 , 597 , 598 , 599 , 600 , 601 , 602 , 603 , 604 , 605 , 606 , 607 , 608 , 609 , 610 , 611 , 612 , 613 , 614 , 615 , 616 , 617 , 618 , 619 , 620 , 621 , 622 , 623 , 624 , 625 , 626 , 627 , 628 , 629 , 630 , 631 , 632 , 633 , 634 , 635 , 636 , 637 , 638 , 639 , 640 , 641 , 642 , 643 , 644 , 645 , 646 , 647 , 648 , 649 , 650 , 651 , 652 , 653 , 654 , 655 , 656 , 657 , 658 , 659 , 660 , 661 , 662 , 663 , 664 , 665 , 666 , 667 , 668 , 669 , 670 , 671 , 672 , 673 , 674 , 675 , 676 , 677 , 678 , 679 , 680 , 681 , 682 , 683 , 684 , 685 , 686 , 687 , 688 , 689 , 690 , 691 , 692 , 693 , 694 , 695 , 696 , 697 , 698 , 699 , 700 , 701 , 702 , 703 , 704 , 705 , 706 , 707 , 708 , 709 , 710 , 711 , 712 , 713 , 714 , 715 , 716 , 717 , 718 , 719 , 720 , 721 , 722 , 723 , 724 , 725 , 726 , 727 , 728 , 729 , 730 , 731 , 732 , 733 , 734 , 735 , 736 , 737 , 738 , 739 , 740 , 741 , 742 , 743 , 744 , 745 , 746 , 747 , 748 , 749 , 750 , 751 , 752 , 753 , 754 , 755 , 756 , 757 , 758 , 759 , 760 , 761 , 762 , 763 , 764 , 765 , 766 , 767 , 768 , 769 , 770 , 771 , 772 , 773 , 774 , 775 , 776 , 777 , 778 , 779 , 780 , 781 , 782 , 783 , 784 , 785 , 786 , 787 , 788 , 789 , 790 , 791 , 792 , 793 , 794 , 795 , 796 , 797 , 798 , 799 , 800 , 801 , 802 , 803 , 804 , 805 , 806 , 807 , 808 , 809 , 810 , 811 , 812 , 813 , 814 , 815 , 816 , 817 , 818 , 819 , 820 , 821 , 822 , 823 , 824 , 825 , 826 , 827 , 828 , 829 , 830 , 831 , 832 , 833 , 834 , 835 , 836 , 837 , 838 , 839 , 840 , 841 , 842 , 843 , 844 , 845 , 846 , 847 , 848 , 849 , 850 , 851 , 852 , 853 , 854 , 855 , 856 , 857 , 858 , 859 , 860 , 861 , 862 , 863 , 864 , 865 , 866 , 867 , 868 , 869 , 870 , 871 , 872 , 873 , 874 , 875 , 876 , 877 , 878 , 879 , 880 , 881 , 882 , 883 , 884 , 885 , 886 , 887 , 888 , 889 , 890 , 891 , 892 , 893 , 894 , 895 , 896 , 897 , 898 , 899 , 900 , 901 , 902 , 903 , 904 , 905 , 906 , 907 , 908 , 909 , 910 , 911 , 912 , 913 , 914 , 915 , 916 , 917 , 918 , 919 , 920 , 921 , 922 , 923 , 924 , 925 , 926 , 927 , 928 , 929 , 930 , 931 , 932 , 933 , 934 , 935 , 936 , 937 , 938 , 939 , 940 , 941 , 942 , 943 , 944 , 945 , 946 , 947 , 948 , 949 , 950 , 951 , 952 , 953 , 954 , 955 , 956 , 957 , 958 , 959 , 960 , 961 , 962 , 963 , 964 , 965 , 966 , 967 , 968 , 969 , 970 , 971 , 972 , 973 , 974 , 975 , 976 , 977 , 978 , 979 , 980 , 981 , 982 , 983 , 984 , 985 , 986 , 987 , 988 , 989 , 990 , 991 , 992 , 993 , 994 , 995 , 996 , 997 , 998 , 999 , 1000 , 1001 , 1002 , 1003 , 1004 , 1005 , 1006 , 1007 , 1008 , 1009 , 1010 , 1011 , 1012 , 1013 , 1014 , 1015 , 1016 , 1017 , 1018 , 1019 , 1020 , 1021 , 1022 , 1023 , 1024 , 1025 , 1026 , 1027 , 1028 , 1029 , 1030 , 1031 , 1032 , 1033 , 1034 , 1035 , 1036 , 1037 , 1038 , 1039 , 1040 , 1041 , 1042 , 1043 , 1044 , 1045 , 1046 , 1047 , 1048 , 1049 , 1050 , 1051 , 1052 , 1053 , 1054 , 1055 , 1056 , 1057 , 1058 , 1059 , 1060 , 1061 , 1062 , 1063 , 1064 , 1065 , 1066 , 1067 , 1068 , 1069 , 1070 , 1071 , 1072 , 1073 , 1074 , 1075 , 1076 , 1077 , 1078 , 1079 , 1080 , 1081 , 1082 , 1083 , 1084 , 1085 , 1086 , 1087 , 1088 , 1089 , 1090 , 1091 , 1092 , 1093 , 1094 , 1095 , 1096 , 1097 , 1098 , 1099 , 1100 , 1101 , 1102 , 1103 , 1104 , 1105 , 1106 , 1107 , 1108 , 1109 , 1110 , 1111 , 1112 , 1113 , 1114 , 1115 , 1116 , 1117 , 1118 , 1119 , 1120 , 1121 , 1122 , 1123 , 1124 , 1125 , 1126 , 1127 , 1128 , 1129 , 1130 , 1131 , 1132 , 1133 , 1134 , 1135 , 1136 , 1137 , 1138 , 1139 , 1140 , 1141 , 1142 , 1143 , 1144 , 1145 , 1146 , 1147 , 1148 , 1149 , 1150 , 1151 , 1152 , 1153 , 1154 , 1155 , 1156 , 1157 , 1158 , 1159 , 1160 , 1161 , 1162 , 1163 , 1164 , 1165 , 1166 , 1167 , 1168 , 1169 , 1170 , 1171 , 1172 , 1173 , 1174 , 1175 , 1176 , 1177 , 1178 , 1179 , 1180 , 1181 , 1182 , 1183 , 1184 , 1185 , 1186 , 1187 , 1188 , 1189 , 1190 , 1191 , 1192 , 1193 , 1194 , 1195 , 1196 , 1197 , 1198 , 1199 , 1200 , 1201 , 1202 , 1203 , 1204 , 1205 , 1206 , 1207 , 1208 , 1209 , 1210 , 1211 , 1212 , 1213 , 1214 , 1215 , 1216 , 1217 , 1218 , 1219 , 1220 , 1221 , 1222 , 1223 , 1224 , 1225 , 1226 , 1227 , 1228 , 1229 , 1230 , 1231 , 1232 , 1233 , 1234 , 1235 , 1236 , 1237 , 1238 , 1239 , 1240 , 1241 , 1242 , 1243 , 1244 , 1245 , 1246 , 1247 , 1248 , 1249 , 1250 , 1251 , 1252 , 1253 , 1254 , 1255 , 1256 , 1257 , 1258 , 1259 , 1260 , 1261 , 1262 , 1263 , 1264 , <

Stair Gauge Fixtures



Readily clamped to a steel carpenter square to form a gauge for various uses. Sketch A shows the gauge as applied for laying out a stair stringer; Sketch B, laying off hexagon angles; Sketch C, when used as a center gauge or in quartering a circle.

Starrett No. 111 Pair \$.75

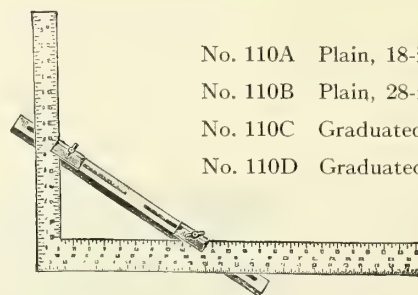
Stair Gauge



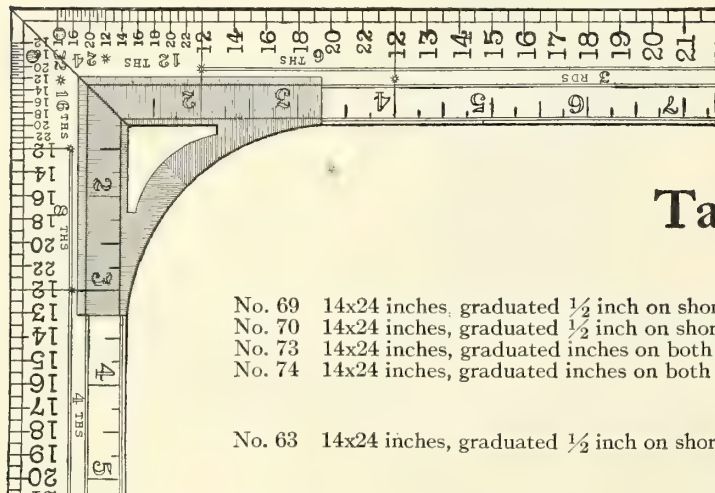
To be used in connection with any carpenter steel square, and can be adjusted to any pitch or angle desired. For cutting in rafters, braces, stairs, etc.

The attachment is furnished either plain or graduated in inches, 4ths, 12ths, and 24ths.

It is made in the shape of a steel angle, $7\frac{7}{8} \times 5\frac{1}{8}$, $\frac{1}{8}$ inch thick, ground straight and nickel-plated.



		Each
No. 110A	Plain, 18-inch, nickel-plated....	\$1.00
No. 110B	Plain, 28-inch, nickel-plated....	1.50
No. 110C	Graduated, 18-inch, nickel-plated	1.50
No. 110D	Graduated, 28-inch, nickel-plated	2.25



Tailors Squares

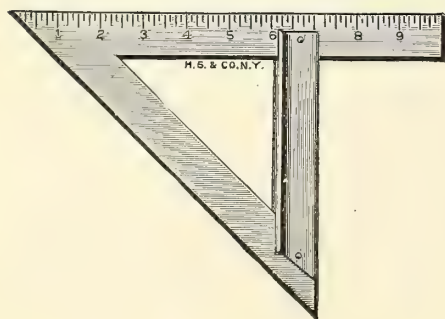
Maple

		Dozen
No. 69	14x24 inches, graduated $\frac{1}{2}$ inch on short arm, $\frac{1}{8}$ inch on long arm, caps.....	\$17.00
No. 70	14x24 inches, graduated $\frac{1}{2}$ inch on short arm, $\frac{1}{8}$ inch on long arm, no caps.....	15.00
No. 73	14x24 inches, graduated inches on both sides, curved brace joint, no caps.....	12.00
No. 74	14x24 inches, graduated inches on both sides, no curve brace joint, no caps.....	10.00

Boxwood

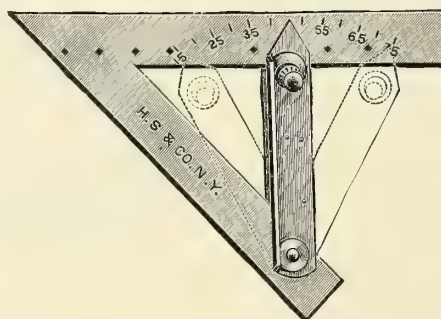
No. 63	14x24 inches, graduated $\frac{1}{2}$ inch on short arm, $\frac{1}{8}$ inch on long arm, caps.....	22.00
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Combined Square and Mitre



No. 3 10-inch blade,
all steel, nickel-
plated, dozen \$12.00

Combined Square, Mitre and Bevel



Has the advantages of a combined square and mitre with the additional feature of a bevel. Angle graduations on one side, scale on the other.

No. 1, dozen..... \$9.00

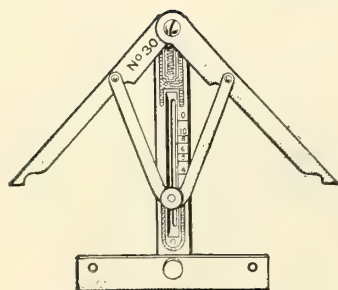
Angle Dividers

Stanley

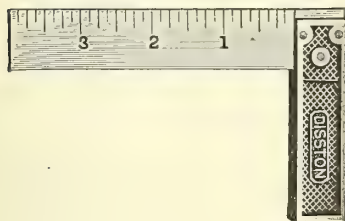
Is practically a double bevel. The two blades each fit one side of an angle and the handle gives the center line. The cut is marked from the center. Handle is graduated on the under side for laying out 4, 6 or 8 sided work, and by means of a removable T-head (see cut) it can also be used as a T-square.

No. 30 $7\frac{3}{8}$ inches long, nickel-plated..... \$1.50

Packed one in a box.

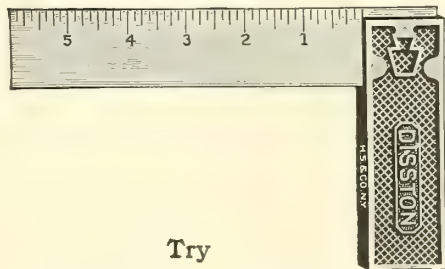


Squares Disston



Try

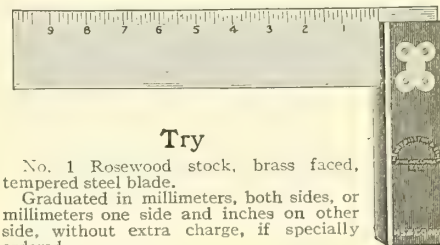
No. 4 1/2 4-inch, iron stock. Square inside and out same as No. 5 1/2 but narrower.
Dozen..... \$3.25



Try

No. 5 1/2 Iron stock, hardened and tempered steel blade, square inside and out.

Size, inches.	4	6	8	10	12
Dozen.....	\$3.25	3.75	4.75	6.20	7.35

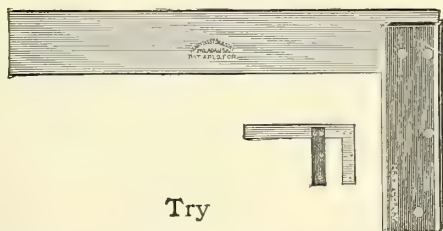


Try

No. 1 Rosewood stock, brass faced, tempered steel blade.
Graduated in millimeters, both sides, or millimeters one side and inches on other side, without extra charge, if specially ordered.

Size Inches	Dozen	Size Inches	Dozen
3	\$4.10	10	\$ 9.35
4 1/2	4.65	12	11.50
6	6.20	14	13.50
7 1/2	6.70	15	14.50
8	7.00	16	18.30
9	8.65	18	19.50

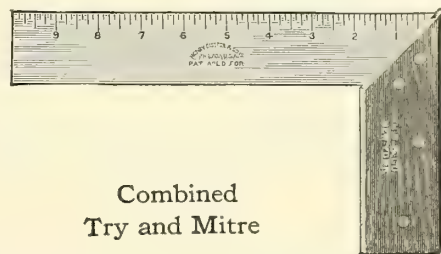
Nos. 15, 16 and 18-inch are supplied with rest



Try

No. 15 Rosewood stock, polished, with flush, heavy brass face plate. Square inside and out.

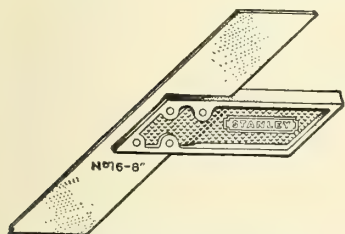
Size, inches.	4	6	8	10
Dozen.....	\$5.70	8.10	9.80	12.00



Combined
Try and Mitre

No. 10 Rosewood stock. Heavy brass face plate, tempered steel blade.
Size, inches..... 4 1/2 6 7 1/2 9 12
Dozen..... \$7.25 9.50 10.65 12.85 16.00

Improved Mitre



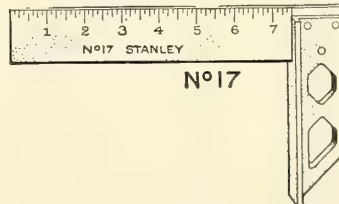
These have the blades permanently set at an angle of 45 degrees with the handle. Much in demand for picture framing, as well as for other classes of regular mitred work.

The blades are machined, insuring accuracy. Not graduated.

Both handles and blades are nickel-plated.
No. 16 10-inch blade, 5 5/8-inch handle, nickel-plated, dozen.... \$8.80

Stanley

Combined Try and Mitre



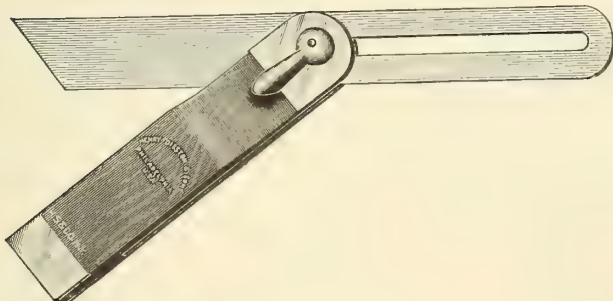
No 17

Can be used equally well as Mitre Squares or Try Squares. Square inside and out, and the edges of the blade are machined, insuring accuracy. Regularly graduated in 8ths of inches, but will be graduated in Metric if desired without additional charge. Designed especially for manual training schools. It is light, weighing only 8 ounces, and the

form of the handle enables the student to hang up out of the way when not in use.

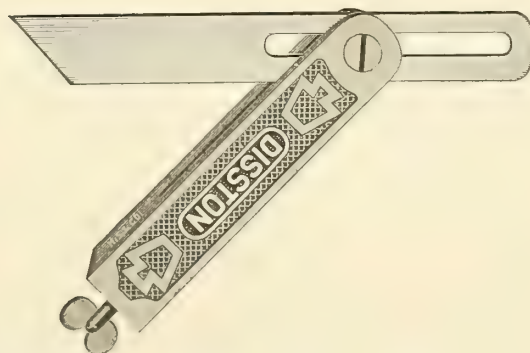
No. 17 7 1/2-inch blade, 5-inch handle, nickel-plated \$7.70

Sliding T Bevels Disston



Rosewood stock, heavy brass-plated, hardened and tempered and blued steel blade.

Inches.	6	8	10	12	14
No. 2 Dozen.....	\$5.75	6.50	6.75	7.50	8.10



Nickel-plated iron stock, steel blade. The blade is easily secured by turning the thumb-screw at the lower end of handle.

Inches.	6	8	10
No. 3 Dozen.....	\$4.85	6.20	6.75

Tempered Steel Rules

Brown & Sharpe

All Brown & Sharpe Steel Rules are divided in parts of inches as follows:

No. 1 Graduation	No. 2 Graduation	No. 4 Graduation
1st cor. 10, 20, 50, 100	8	8
2d cor. 12, 24, 48	10, 20, 50, 100	16
3d cor. 14, 28	12, 24, 48	32
4th cor. 16, 32, 64	16, 32, 64	64

No. 5 Graduation

1st cor. 11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25
2d cor. 16, 32, 64
3d cor. 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38
4th cor. 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100

No. 6 Graduation

1st cor. 32
2d cor. 48
3d cor. 50
4th cor. 64

No. 10 Graduation

1st cor. 32
2d cor. 64

No. 13 Graduation

1st cor. 8
2d cor. 16
3d cor. ..
4th cor. ..

No. 7 Graduation

16
32
64
100

No. 11 Graduation

64
100

No. 14 Graduation

8
32
..
..

No. 9 Graduation

10, 20
16
32, 64
50, 100

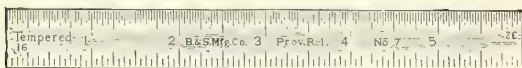
No. 12 Graduation

50
100

No. 16 Graduation

32
64
50
100

No. 300—English Measure



About $\frac{1}{16}$ inch thick

Length Inches	Approximate Width Inches	Number of Graduations	Each
1	$\frac{29}{64}$	4 or 7	\$.15
2	$\frac{1}{2}$	4, 7 or 9	.25
3	$\frac{35}{64}$	1, 2, 4, 6 or 7	.35
4	$\frac{19}{32}$	1, 2, 4, 6 or 7	.45
6	$\frac{11}{16}$	1, 2, 4, 6 or 7	.65
9	$\frac{53}{64}$	1, 2, 4, 6 or 7	1.00
12	$\frac{31}{32}$	1, 2, 4, 6 or 7	1.25
18	1	1, 2, 4, 6 or 7	2.00
24	1	1, 2, 4, 6 or 7	2.50
36	1	1, 2, 4, 6 or 7	5.00

No. 301—Metric Measure

First corner graduated to $\frac{1}{2}$ mm., remaining 3 corners to 1 mm.

Length	Each
Length, 10 Centimetres.....	\$.45
Length, 15 Centimetres.....	.65
Length, 20 Centimetres.....	.85
Length, 30 Centimetres.....	1.25
Length, 50 Centimetres.....	2.00

No. 302—Metric and English Measure

The 10 and 15 cm. sizes have first corner graduated to $\frac{1}{16}$ of an inch, second corner to 1 mm., third corner to $\frac{1}{100}$ of an inch, fourth corner to $\frac{1}{2}$ mm.; the 20, 30 and 50 cm. have first corner graduated, 2 to $\frac{1}{16}$ of an inch, the remainder to $\frac{1}{16}$ of an inch; second corner to 1 mm., third corner, 2 inches to $\frac{1}{100}$ of an inch, the remainder to $\frac{1}{50}$ of an inch fourth corner to $\frac{1}{2}$ mm.

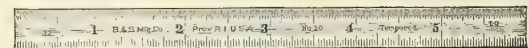
Length	Each
Length, 10 Centimetres.....	\$.45
Length, 15 Centimetres.....	.65
Length, 20 Centimetres.....	.85
Length, 30 Centimetres.....	1.25
Length, 50 Centimetres.....	2.00

Patent End Graduations



All Tempered and Standard Steel Rules, 2 to 12 inches in length, with No. 4 Graduations are furnished with Patent End Graduations, reading to 32nds of an inch on two ends of one side. This feature will be found advantageous in measuring the depth and width of grooves, countersinks and recesses of various kinds.

Flexible



No. 306—English Measure

Graduated on one side only

Length Inches	Approximate Width Inch	Number of Graduations	Each
4	$\frac{1}{2}$	10, 11, 12, 13 or 14	\$.45
6	$\frac{1}{2}$	10, 11, 12, 13 or 14	.65
9	$\frac{1}{2}$	10, 11, 12, 13 or 14	1.00
12	$\frac{1}{2}$	10, 11, 12, 13 or 14	1.25
18	$\frac{3}{4}$	10, 11, 12, 13 or 14	2.00
24	$\frac{3}{4}$	10, 11, 12, 13 or 14	2.50
36	$\frac{3}{4}$	10, 11, 12, 13 or 14	5.00

No. 307—Metric Measure

Graduated on one side only. First corner graduated to $\frac{1}{2}$ mm., second corner to 1 mm

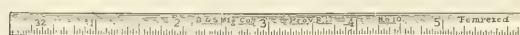
Length	Each
Length, 10 Centimetres.....	\$.45
Length, 15 Centimetres.....	.65
Length, 20 Centimetres.....	.85
Length, 30 Centimetres.....	1.25
Length, 50 Centimetres.....	2.00

No. 308—Metric and English Measure

Graduation on one side only, First corner graduated to $\frac{1}{2}$ mm., second corner to 64ths.

Length	Each
Length, 10 Centimetres.....	\$.45
Length, 15 Centimetres.....	.65
Length, 20 Centimetres.....	.85
Length, 30 Centimetres.....	1.25
Length, 50 Centimetres.....	2.00

Narrow



These Rules are about $\frac{1}{16}$ inch thick and about $\frac{1}{32}$ inch wide. They are graduated on one corner of each side only.

No. 303—English Measure

Length, Inches	Number of Graduations	Each
4	10, 11 or 12	\$.45
6	10, 11 or 12	.65
9	10, 11 or 12	1.00
12	10, 11 or 12	1.25

No. 304—Metric Measure

Graduated on one corner of each side only. First corner graduated to $\frac{1}{2}$ mm., second corner to 1 mm.

Length	Each
Length, 10 centimetres.....	\$.45
Length, 15 centimetres.....	.65
Length, 20 centimetres.....	.85
Length, 30 centimetres.....	1.25

No. 305—Metric and English Measure

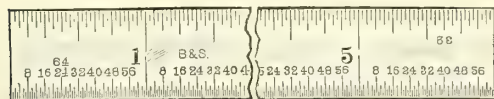
Graduated on one corner of each side only. First corner graduated to $\frac{1}{2}$ mm., second corner to 64ths of an inch.

Length	Each
Length, 10 centimetres.....	\$.45
Length, 15 centimetres.....	.65
Length, 20 centimetres.....	.85
Length, 30 centimetres.....	1.20

Steel Rules

Brown & Sharpe

Tempered

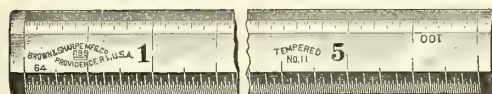


No. 315, with Figured Graduations

These Rules are furnished with the 64th graduations numbered every eighth graduation line, as 8, 16, 24, etc. This assists the user in quickly ascertaining the number of 64ths in $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ inch, etc.

These Rules are furnished with No. 4 Graduation only.

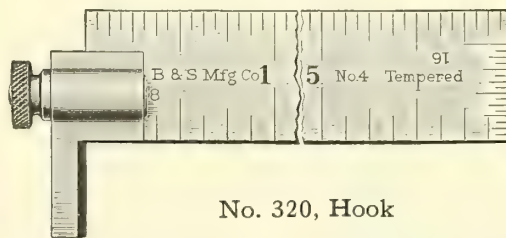
Length Inches	Approximate Width Inch	Approximate Thickness Inch	Each
1	$\frac{29}{64}$	$\frac{1}{20}$	\$.15
2	$\frac{1}{2}$	$\frac{1}{20}$	.25
3	$\frac{35}{64}$	$\frac{1}{20}$	.35
4	$\frac{19}{32}$	$\frac{1}{20}$	.45
6	$\frac{1}{2}$	$\frac{1}{20}$	.65
9	$\frac{53}{64}$	$\frac{1}{20}$	1.00
12	$\frac{31}{32}$	$\frac{1}{20}$	1.25
18	1	$\frac{1}{20}$	2.00
24	1	$\frac{1}{20}$	2.50



No. 318, with Beveled Edges

These Rules are beveled on both edges of one side, and are graduated on the beveled edges only.

Length Inches	Approximate Width Inch	Number of Graduations Inches	Each
1	$\frac{3}{8}$	10 and 11	\$.15
2	$\frac{3}{8}$	10 and 11	.25
3	$\frac{3}{8}$	10 and 11	.35
4	$\frac{3}{8}$	10 and 11	.45
6	$\frac{11}{16}$	10 and 11	.65
9	$\frac{53}{64}$	10 and 11	1.00
12	1	10 and 11	1.25
18	1	10 and 11	2.00
24	1	10 and 11	2.50

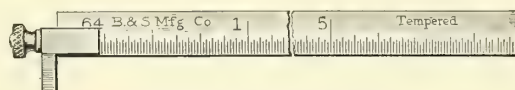


No. 320, Hook

These Rules are found convenient for measuring diameters of flanges or circular pieces, through the hubs of pulleys, setting calipers and dividers and work of a similar character.

The hook is held rigidly in position by the simple tightening of the knurled nut shown at the left. The hook is carefully hardened.

Length Inches	Approximate Width Inches	Number of Graduations	Each
4	$\frac{19}{32}$	1, 2, 4, 6 or 7	\$.75
6	$\frac{11}{16}$	1, 2, 4, 6 or 7	1.00
9	$\frac{53}{64}$	1, 2, 4, 6 or 7	1.40
12	$\frac{31}{32}$	1, 2, 4, 6 or 7	1.75
18	1	1, 2, 4, 6 or 7	2.50
24	1	1, 2, 4, 6 or 7	3.00
36	1	1, 2, 4, 6 or 7	5.75



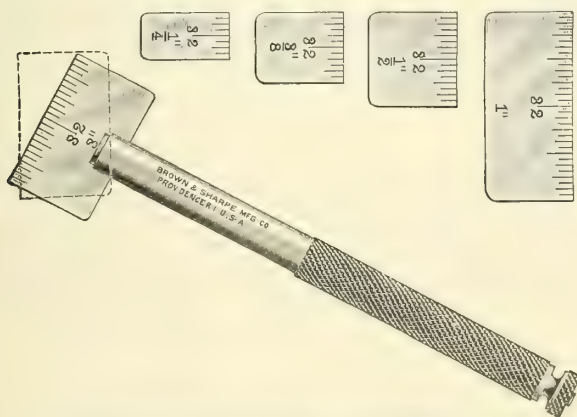
No. 325, Narrow Hook

These Rules are the same in construction as described above. They differ only in that this rule is narrow and allows measurements to be taken through a hole $\frac{1}{8}$ inch in diameter.

Length Inches	Number of Graduations	Each
4	10, 11 or 12	\$.70
6	10, 11 or 12	.90
9	10, 11 or 12	1.25
12	10, 11 or 12	1.50

Hook Rules furnished with metric graduations when ordered.

No. 335, with Holder



English or Metric Measure

Convenient in measuring a recess or keyway as well as the general class of tool and die work.

The holder takes either of the five sizes of rules. The barrel is knurled for finger grip. The rules are held in a split chuck, adjusted by a knurled nut at the top of the barrel and can be set at various angles according to the work.

The Rules are of tempered steel, graduated on both sides, 32ds on one side and 64ths on the other. The 1 inch and $\frac{1}{2}$ inch are also furnished graduated to 50ths on one side and 100ths on the other.

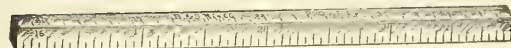
These Rules are also furnished graduated on one side to millimeters and on the other side to half-millimeters.

Five Rules interchangeable in one Holder..... \$1.50

Extra Parts

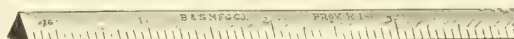
Length, Inch	Length, mm.	Without Holder	With Holder
$\frac{1}{4}$	5	\$.20	\$.70
$\frac{3}{8}$	10	.20	.70
$\frac{1}{2}$	15	.20	.70
$\frac{3}{4}$	20	.20	.70
1	25	.20	.70

Holder only \$.50



No. 360 Square

Standard



No. 365, Triangular

Length Inches	Number of Graduations	Each
3	4, 7 or 17	\$.45
4	4, 7 or 17	.60
6	4, 7 or 17	.90

These Rules are divided into parts of an inch as follows:

No. 4 Graduation	No. 7 Graduation	No. 17 Graduation
1st cor. 8	16	16
2d cor. 16	32	50
3d cor. 32	64	64
4th cor. 64	100	100

Length Inches	Number of Graduations	Each
3	20, 21 or 22	\$.50
4	20, 21 or 22	.70
6	20, 21 or 22	1.00
12	20, 21 or 22	2.00

These Rules are divided into parts of an inch as follows:

No. 20 Graduation	No. 21 Graduation	No. 22 Graduation
1st cor. 16	16	12, 24, 48
2d cor. 64	32	20, 50, 100
3d cor. 100	64	16, 32, 64

For list of graduations, see page 306

SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Steel Rules

Starrett

Spring Tempered



These Rules are about $\frac{3}{4}$ inch thick.

English Measure

No. 300 Graduated 8ths, 16ths, 32nds and 64ths.
No. 302 Graduated 8ths, 10ths, 12ths, 16ths, 20ths, 24ths, 32nds, 48ths, 50ths, 64ths and 100ths.
No. 307 Graduated 16ths, 32nds, 64ths and 100ths.

Length, Inches	Width, Inches	Each
1	$\frac{1}{2}$	\$.15
2	$\frac{1}{2}$	.25
3	$\frac{1}{2}$	.35
4	$\frac{5}{8}$	.45
6	$\frac{3}{4}$	.65
9	$\frac{7}{8}$	1.00
12	1	1.25
18	$1\frac{1}{8}$	2.00
24	$1\frac{1}{4}$	2.50
36	$1\frac{1}{4}$	5.00
48	$1\frac{1}{4}$	7.00

Metric Measure

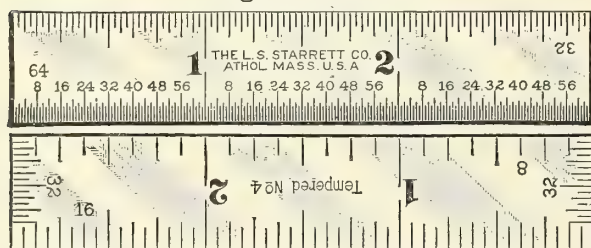
No. 340 Graduated three corners in millimeters, one corner in $\frac{1}{2}$ millimeters.

Length Cm.	Each	Length Cm.	Each
5	\$.25	40	\$1.65
10	.45	50	2.00
15	.65	60	2.50
20	.85	80	5.00
25	1.05	1Mm.	7.00
30	1.25		

Metric and English Measure

No. 350 Graduated in millimeters, $\frac{1}{2}$ millimeters, 32nds and 64ths of an inch. Prices same as No. 340 above.

English Measure



This Rule is the same as the No. 300, except that on one side it is figured as shown to assist the user in reading the 64ths.

No. 603 Graduated 8ths, 16ths, 32nds and 64ths, with 32nds on ends of one side.

Length Inches	Width Inch	Each	Length Inches	Width Inches	Each
2	$\frac{1}{2}$	\$.25	9	$\frac{7}{8}$	\$1.00
3	$\frac{9}{16}$	.35	12	1	1.25
4	$\frac{5}{8}$	.45	18	$1\frac{1}{8}$	2.00
6	$\frac{3}{4}$	.65	24	$1\frac{1}{4}$	2.50

Machinists and others who have had occasion to use a scale graduated to 64ths of an inch know the difficulty of obtaining accurate measurements, the eye-strain, and loss of time, due to the fineness and closeness of the lines.

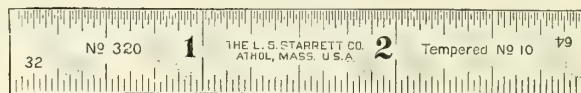
On account of the closeness of the lines it is impossible to number each one, so after arriving at the measurement, it is necessary to refer back to the last figure and count up the 64ths.

The Allen Improved Scale overcomes these difficulties. Any even number of 64ths has an equivalent in 32nds or 16ths, so one side is designed to take care of all even 64ths, upper edge being graduated to 16ths, lower edge to 32nds.

Other side takes care of all odd 64ths, and embodies an entirely new idea in marking of a machinist scale. Every odd 64th of an inch is given, and is found on either upper or lower edge. On lower edge the first graduation mark is $\frac{1}{64}$ th of an inch from end of rule, and is numbered "1"; the next mark on that edge is $\frac{2}{64}$ th of an

Starrett

Flexible



These are very thin spring-tempered rules, nicely graduated on one side only. Those from 1 inch to 12 inches are $\frac{1}{8}$ inch wide, and will easily conform to a 2-inch circle. Those from 18 inches to 48 inches are $\frac{3}{4}$ inch wide, and are made from a trifle heavier stock.

English Measure

No. 320 Graduated 32nds and 64ths.
No. 321 Graduated 64ths and 100ths.

Length Inches	Each	Length Inches	Each
1	\$.15	12	\$1.25
2	.25	18	2.00
3	.35	24	2.50
4	.45	36	5.00
6	.65	48	7.00
9	1.00		

Metric Measure

No. 345 Graduated in millimeters and $\frac{1}{2}$ millimeters.

Length Cm.	Each	Length Cm.	Each
5	\$.25	40	\$1.65
10	.45	50	2.00
15	.65	60	2.50
20	.85	80	5.00
25	1.05	1Mm.	7.00
30	1.25		

Metric and English Measure

No. 355 Graduated in millimeters and 64ths of an inch. Prices same as No. 345 above.

Improved Hook



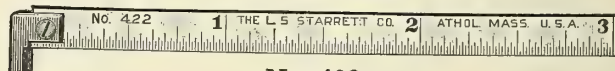
No. 420 Graduated in 8ths, 16ths, 32nds and 64ths of an inch.

Very convenient in taking measurements from round corners, through hubs of pulleys, setting inside calipers, etc. The 6-inch may be carried in the pocket.

The hook can be quickly removed by turning eccentric stud one half round.

Inches..... 6 9 12 18 24 36
Each..... \$1.00 1.40 1.75 2.50 3.00 5.75

Narrow Hook



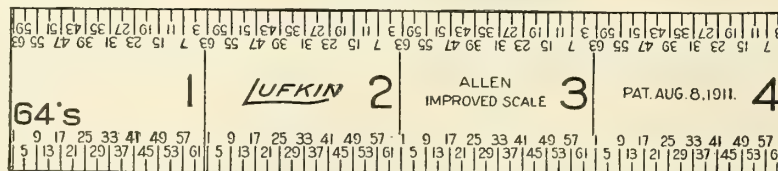
No. 422

Designed for use in taking measurements through small holes where regular hook rules cannot be used. They can also be used for setting inside calipers, etc. Measurements through holes as small as $\frac{3}{16}$ inch can be obtained.

The rules are graduated one side in 32ds and the other in 64ths of an inch.

Inches..... 4 6 9 12
Each..... \$.70 .90 1.25 1.50

Lufkin



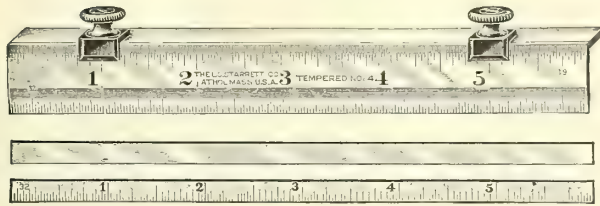
inch from end of rule, and is numbered "5"; the next "9," etc., up to first inch mark. On upper edge of same side are given intervening odd 64ths, i. e., $\frac{1}{64}$ inch mark would be $\frac{1}{64}$ th of an inch from end of rule, and would be numbered 3; $\frac{3}{64}$ th 7; $\frac{5}{64}$ th 11, etc., up to first inch mark. This system of graduation is then repeated each inch.

A distance of $\frac{1}{64}$ th of an inch between graduations makes it possible to number each graduation mark with a figure large enough to be easily read.

Number	Length Inches	Each	Per Dozen
2208, Tempered	6	\$.65	\$7.80
2608, Half-flexible	6	.65	7.80

Steel Key Seat Rules

Starrett



It is impossible to hold an ordinary rule on the cylindrical surface of a shaft and keep it parallel with the axis while laying off measurements or drawing lines. The round surface of the work makes it difficult to hold the rule in place and it is liable to form a slight angle with the axis, causing a measurement to be shorter than the true length, which should be made as it will be cut on the milling machine. This is an important matter when measuring lengths for splining keyways on shafting. To overcome this difficulty there have been designed rules with flanges, called key-seat rules.

This Rule is an improvement over the ordinary type in that the machinist scale is used as part of the key-seat rule. This is made possible by a device which holds two straight edges together in the form of a box square. One of these rules is a plain straight edge and the other the rule with which the machinist ordinarily works. The two edges forming the box square when applied to the surface of the cylindrical piece keep the graduated edge of the rule in a line parallel with the axis.

The steel auxiliary straight edge is either plain or graduated in 32ds and 64ths as desired, and sent when ordered. Unless otherwise ordered the key-seat rule is sent without auxiliary straight edges.

English

	Each
No. 105A 6 inches.....	\$2.25
No. 105B With auxiliary straight edge, plain, 6 inches.....	2.75
No. 105C With auxiliary straight edge, graduated, 6 inches.....	3.00
No. 105D 9 inches.....	3.00
No. 105E 9 inches.....	3.75
No. 105F 9 inches.....	4.25

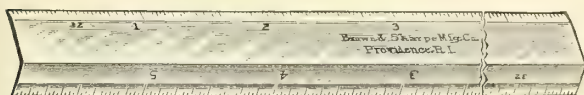
Where the style is not designated in an order, No. 105A will be sent.

Metric

One side of scale graduated both edges in mm., the other side graduated one edge in mm., and the other in $\frac{1}{2}$ mm. The auxiliary straight edge graduated in mm., and $\frac{1}{2}$ mm.

	Each
No. 105MA 15 cm.....	\$2.25
No. 105MB With auxiliary straight edge, plain, 15 cm.....	2.75
No. 105MC With auxiliary straight edge, graduated, 15 cm.....	3.00
No. 105MD 20 cm.....	3.00
No. 105ME 20 cm.....	3.75
No. 105MF 20 cm.....	4.25

Brown & Sharpe



No. 374 English

Parallel lines for key seats, mortises, etc., can be readily and accurately drawn with these rules on shafts not less than $\frac{7}{8}$ inch in diameter.

The edges are beveled, and graduated to 32nds of an inch.

	Each
Length, 4 inches.....	\$2.50
Length, 6 inches.....	3.00
Length, 8 inches.....	3.75

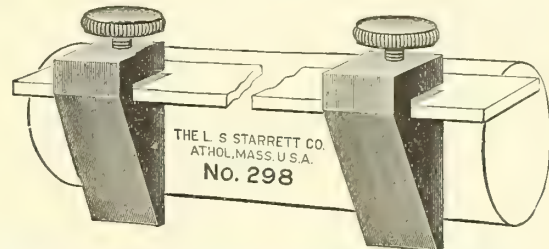
No. 375 Metric

These Rules differ from those above only in reading to metric measure and being graduated to half-millimeters.

	Each
Length, 10 cm.....	\$2.50
Length, 15 cm.....	3.00
Length, 20 cm.....	3.75

Clamps

Starrett
Key-Seat

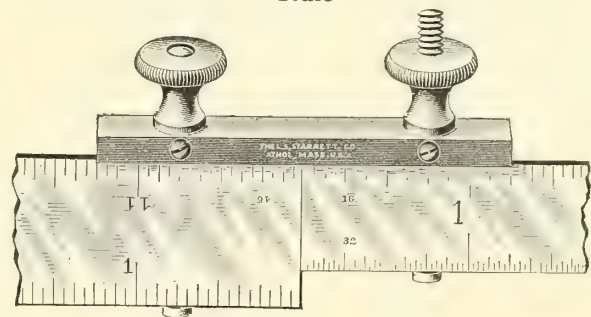


Designed to transform any common steel scale into a Key-Seat Rule. They are made from steel, case hardened, and ground accurate. A pair weighs but one ounce. They can be put on or off almost instantly, and are a complete substitute for a more costly tool.

They may be used with Combination Square Blades, or with any straight rule, with accurate results.

No. 298 Pair..... \$.60

Rule



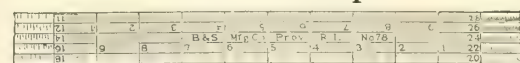
This little tool is used to clamp two steel rules together, end to end, making one long rule. The rules may be of the same or different widths up to $1\frac{1}{4}$ inches. This clamp will be of special value to mechanics, whose tool chests will usually not hold rules longer than 12 inches.

No. 299 Each..... \$.50



Steel Gear Rules

Brown & Sharpe



No. 377 English

These rules greatly facilitate the measurement of wheels to be sized according to diametral pitch.

Style 1

This Rule is 12 inches long and contains four lines of graduations upon each side, one each as follows: 18, 20, 22, 24, 26, 28, 30, 32 parts of an inch, whole length.

The following example will explain the use of this Rule:

Required the outside diameter of a wheel to have 60 teeth of 20 pitch. Find 60 on the line graduated to 20ths, this is the pitch diameter of the required wheel; add to this two of the divisions. The result, 62-20, is the outside diameter.

Style 2

This Rule is 12 inches long and is graduated 1 inch only on each end, as follows: 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36 and 38 parts of an inch. The intermediate 10 inches are blank except that the inch lines are made clear across the Rule.

The following example will explain the use of this Rule:

Required the outside diameter of a wheel to have 83 teeth of 10 pitch. Take 8 of the blank inches and 3 of the 10ths graduations, which gives the pitch diameter; add two to the 10ths graduations and the result, 8.5 inches, is the outside diameter.

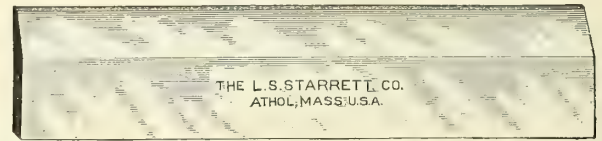
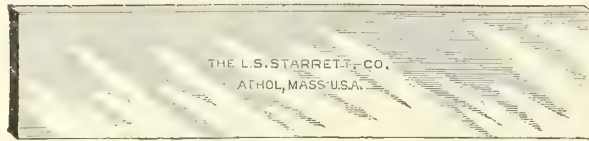
Each..... \$3.00

Straight Edges

No. 380 Plain

Starrett

No. 385 Beveled



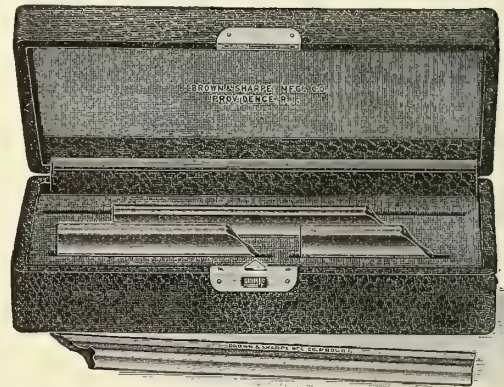
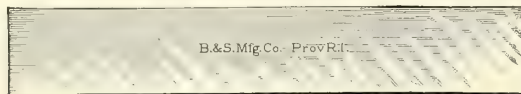
Length, Inches	Width, Inches	Thickness, Inch	Each
12	1	$\frac{3}{16}$	\$ 1.20
18	$1\frac{1}{4}$	$\frac{3}{16}$	1.80
24	$1\frac{1}{2}$	$\frac{3}{16}$	2.40
36	2	$\frac{1}{4}$	5.00
48	$2\frac{1}{2}$	$\frac{1}{4}$	8.00
60	3	$\frac{1}{4}$	12.00
72	3	$\frac{1}{4}$	16.00

Length, Inches	Width, Inches	Thickness, Inch	Each
12	1	$\frac{3}{16}$	\$1.50
18	$1\frac{1}{4}$	$\frac{3}{16}$	2.50
24	$1\frac{1}{2}$	$\frac{3}{16}$	3.50
36	2	$\frac{1}{4}$	6.00
48	$2\frac{1}{2}$	$\frac{1}{4}$	10.00
60	3	$\frac{1}{4}$	15.00
72	3	$\frac{1}{4}$	20.00

No. 528 Standard

Brown & Sharpe

No. 530 Toolmakers Knife Edge



These straight edges are made from the best quality of steel and every care is taken to insure their being straight

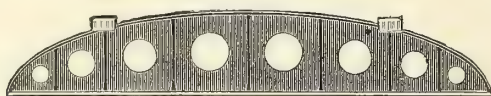
Length, Inches	Width, Inches	Thickness, Inch	Each
6	1	$\frac{5}{64}$	\$.60
9	$1\frac{1}{8}$	$\frac{5}{64}$	.90
12	$1\frac{1}{4}$	$\frac{5}{64}$	1.25
18	$1\frac{1}{2}$	$\frac{3}{32}$	2.00
24	2	$\frac{3}{32}$	2.75
36	$2\frac{1}{2}$	$\frac{1}{16}$	5.00
48	3	$\frac{1}{16}$	8.00
60	3	$\frac{1}{8}$	12.00
72	3	$\frac{1}{8}$	16.00

No. 525 Draughtsman



Length, Inches	Width, Inches	Thickness, Inch	Each
15	$1\frac{1}{4}$	$\frac{3}{64}$	\$.90
18	$1\frac{1}{2}$	$\frac{3}{64}$	1.00
24	$1\frac{1}{2}$	$\frac{3}{64}$	1.50
30	$1\frac{3}{4}$	$\frac{3}{64}$	2.25
36	2	$\frac{1}{16}$	3.00
42	$2\frac{1}{4}$	$\frac{1}{16}$	4.00
48	$2\frac{1}{2}$	$\frac{1}{16}$	6.00
60	$2\frac{3}{4}$	$\frac{5}{64}$	8.00
72	$2\frac{3}{4}$	$\frac{5}{64}$	10.00

Cast Iron



These straight edges are of a form best adapted to retain a straight line. The edge of each is scraped to form a true surface, and the straight edges when thus made are indispensable in the proper scraping of the ways of planer and lathe beds, etc.

Size, Inches	Weight, Pounds	Each with Cover
18x $1\frac{1}{2}$	5	\$7.00
24x $1\frac{5}{8}$	10	9.50
30x $1\frac{3}{4}$	15	12.00
36x $1\frac{7}{8}$	15	15.00
48x2	35	20.50
60x $2\frac{1}{8}$	50	26.50
72x $2\frac{1}{4}$	75	33.00
84x $2\frac{3}{4}$	120	36.00
96x $2\frac{3}{8}$	145	39.00
120x $2\frac{3}{4}$	300	50.00
*144x3	420	
*180x $3\frac{1}{2}$	835	

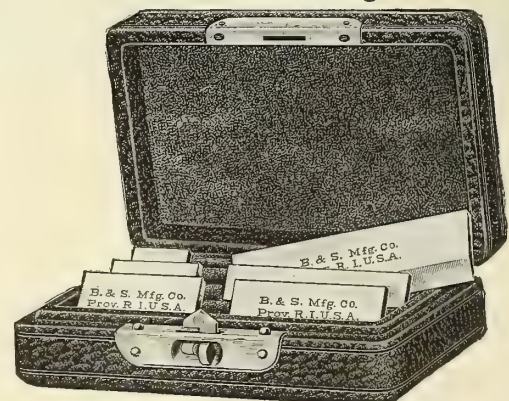
*Made to order only. Price upon application.

For work that requires extreme accuracy. Made from the best quality of steel and every care is taken to insure their being straight and true. In cloth-covered cases

Length, Inches	Width, Inch	Each
$2\frac{1}{4}$	$\frac{13}{16}$	\$2.75
$3\frac{1}{4}$	$\frac{13}{16}$	3.75
$4\frac{1}{2}$	$\frac{13}{16}$	4.75
$6\frac{1}{4}$	$\frac{13}{16}$	7.00

Test bar, in cloth-covered case.....	\$6.00
Leather case for complete set.....	1.00
Cloth-covered case for test bar.....	.20
Cloth-covered cases for straight edges, each.....	.15
No. 531 Glass test bar and 4 straight edges, 1 each, $2\frac{1}{4}$, $3\frac{1}{4}$, $4\frac{1}{2}$ and $6\frac{1}{4}$ inches long, in leather case.....	24.00

No. 536 Narrow Edge

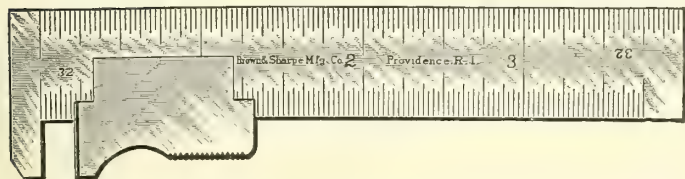


Similar in design to beveled edge straight edges, but are made of tempered steel, being $\frac{5}{64}$ ths of an inch thick and $\frac{1}{32}$ nds of an inch wide. The set comprises six lengths, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inches. Useful in testing flanged and ball-bearing washers and are particularly adapted for toolmakers use for testing surfaces where it would be impossible to use a regular straight edge.

Set complete in morocco case \$2.00

Steel Caliper Rules

Brown & Sharpe No. 385 English or Metric Measure



Made of steel, $4\frac{3}{16}$ inches long and $\frac{1}{16}$ inch thick. Graduated on corners to 32nds of an inch. The jaws are $\frac{3}{8}$ inch deep.

The Metric Rules are graduated to half millimeters.

No. 385 English or Metric Measure, each..... \$1.25



No. 391 English Measure

Length, 3 inches..... Each \$2.00
Length, 4 inches..... 2.50

Convenient for use in the stock room or store, in selecting sheet or bar stock, wire, tubing, etc. The slide of the 3-inch can be drawn out to measure $2\frac{1}{4}$ inches and the 4-inch to measure $3\frac{1}{4}$ inches.

The 3-inch rule can be furnished nickel-plated for 15 cents extra. They are divided into parts of an inch as follows:

	A	B	C	D
1st cor.	8, 14, 28	8, 14, 28	8	8
2d cor.	12, 24, 48	12, 24, 48	16	16
3d cor.	16, 32, 64	16, 32, 64	32	32
4th cor.	20, 50, 100	20, 50, 100	64	64
Slide	32 and 64	64 and 100	32 and 64	64 and 100

No. 392 Metric Measure

Length, 75 mm..... Each \$2.00
Length, 100 mm..... 2.50

The slide of the 75 mm. can be drawn out to measure 50 mm., and of the 100 mm. to measure 75 mm. They are graduated to millimeters and half millimeters.

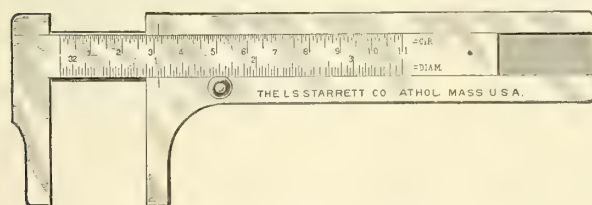
No. 397, with Button Gauge

This differs from the No. 391 Steel Caliper Rule only in that the outside is graduated to 16ths, 20ths, 32nds and 40ths of inch and the slide to 40ths and 80ths of an inch.

No. 397 Each..... \$2.00

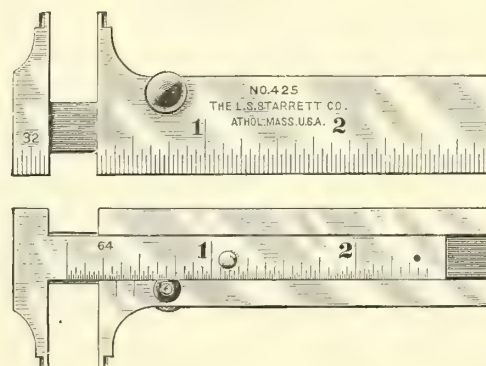
Starrett

No. 424, with Circumference Gauge



This Gauge has a double function—being graduated to read the circumference as well as the diameter of the thing measured, the relation of circumference to diameter being shown by the graduations on upper corners of the rule (capacity $3\frac{1}{2}$ inches, about 11 inches circumference). It was originally designed for rope or cordage manu-

Starrett



No. 425 Graduated in 32nds and 64ths.

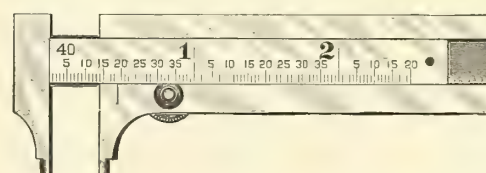
No. 425A Graduated in 32nds on the stock and 100ths on the slide.

No. 425M The 7 cm. is graduated in half millimeters on slide and millimeters on stock. The 13 cm. is graduated millimeters and half millimeters on slide, and millimeters on stock.

No. 425ME Graduated in half millimeters and 64ths inch on slide, and 32nds inch on stock.

Each
3-inch or 7 cm..... \$2.00
5-inch or 13 cm..... 3.00

No. 431, with Button Gauge



Same size and similar to No. 425. The difference is that it is graduated on the slide only to 40ths of an inch.

Special attention is called to the fact that every fifth line is figured, so as to assist the user to more quickly read the 40ths, as shown in the cut.

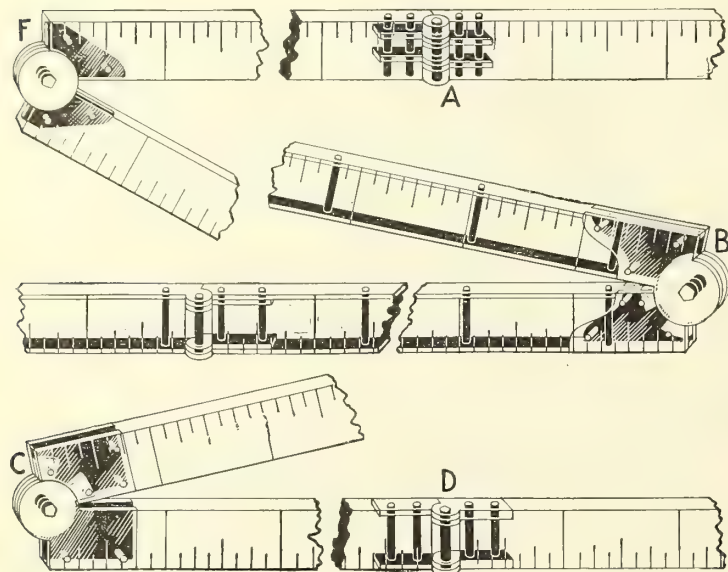
No. 431 3-inch, each..... \$2.00

facturers. It makes a first-class slide rule caliper of large scope, opening $3\frac{1}{2}$ inches. The jaws, being $1\frac{5}{16}$ inches deep, will caliper a cylinder up to $2\frac{1}{2}$ inches in diameter. The rule is graduated in 32nds of an inch standard and 16ths of an inch circumference measure. All corners of the tool are rounded smooth to make it fit to carry in the pocket and agreeable to handle. The circumference measure will assist in calculating how many feet a minute the cutting tool in a lathe is doing on any diameter within the scope of the gauge and so help determine whether the tools should have a faster or slower speed.

Rule—The circumference being shown by the Gauge, multiply the same by the speed the lathe runs per minute and the result will show the number or inches of feet the circumference is running and the tool cutting.

No. 424 Each..... \$3.50

Boxwood Rules



We show in the accompanying illustrations, the various styles of joints and plates used in the manufacture of these rules.

Round joint "F" is the one used in the cheapest grade of rules. In this form there is one flange or wing imbedded in each leg of the rule, the leg and wing being pinned together as shown.

Square joint "C" has two wings to each leg, one on each outside face of the wood. This is a much stronger construction than the round joint type as the two wings are securely held together by rivets which go clear through all three. The additional quantity of brass used in this form of joint also adds to the strength of the rule.

Arch joint "B" follows practically the same form of construction as the square joint. However, the wings are larger, more graceful in form and, covering as they do more of the surface of the wood, add to the life of the rule.

Middle plates "A" have the plates let into the wood and pinned.

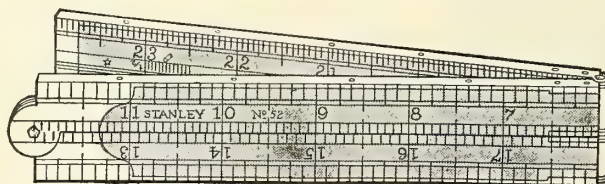
Edge plates "D" have the plates fastened on the outer edges of the wood by means of rivets which go through both wood and plates, holding all three firmly together. This form insures a much stronger joint.

A full bound rule is one having a brass binding extending along both inside and outside edges of each leg.

A half-bound rule is one having the brass binding extending only along the outside edges of the legs.

Bitted rules have a brass plate inserted on the edge of the rule to protect wood from closing pins. All rules listed have heavy brass tips.

Note—Rules with metric graduations on both sides or with metric on one side and inches on the other, also with "English marking"—that is with numbers reading from left to right—can be furnished, if so ordered.



Two-Foot, Four-Fold 3/4 inch wide when closed

No. 61 1/2	Square joint, middle plates, 8ths and 16ths.....	Dozen \$3.25
No. 62 1/2	Square joint, bound, 8ths, 10ths, 12ths and 16ths..	8.00

1 inch wide when closed

No. 68	Round joint, middle plates, 8ths and 16ths.....	2.50
No. 61	Square joints, middle plates, 8ths and 16ths.....	3.00
No. 53	Arch joints, edge plates, 8ths, 10ths, 12ths, 16ths and drafting scales.....	4.50
No. 52	Arch joint, half bound, 8ths, 10ths, 12ths, 16ths and drafting scales.....	7.25
No. 54	Arch joint, full bound, 8ths, 10ths, 12ths, 16ths and drafting scales.....	8.75
No. 59M	Double arch joint, bitted, 8ths, 16ths and drafting scales and millimeters.....	5.25
No. 60	Double arch joint, full bound, 8ths, 10ths, 12ths, 16ths and drafting scales.....	10.75
No. 62	Square joint, full bound, 8ths, 10ths, 12ths, 16ths, and drafting scales.....	8.00
No. 84	Square joint, half-bound, 8ths, 10ths, 12ths, 16ths and drafting scales.....	6.50

1 3/8 inches wide when closed

No. 70	Square joint, middle plates, 8ths, 16ths and drafting scales.....	4.00
No. 78 1/2	Double arch joint, full bound, 8ths, 10ths, 16ths and drafting scales.....	12.00
No. 75	Arch joint, edge plates, 8ths, 10ths, 16ths and drafting scales.....	6.00

One-Foot, Four-Fold 5/8 inch wide when closed

No. 57	Arch joint, full bound, 8ths and 16ths.....	Dozen \$6.25
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Two-Foot, Two-Fold

1 3/8 inches wide when closed

No. 29	Round joint, 8ths and 16ths.....	2.75
No. 18	Square joint, 8ths and 16ths.....	4.00

Three-Foot, Four-Fold

1 inch wide when closed

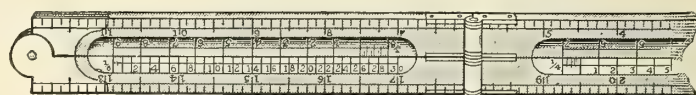
No. 66 1/2	Arch joint, middle plates, 8ths and 16ths.....	6.00
No. 66 3/4	Arch joint, full bound, 8ths and 16ths.....	15.00
No. 66 1/4	Arch joint, edge plates, 8ths and 16ths.....	7.00

Four-Foot, Four-Fold

1 1/2 inches wide when closed

No. 94	Arch joint, full bound, 8ths and 16ths.....	26.00
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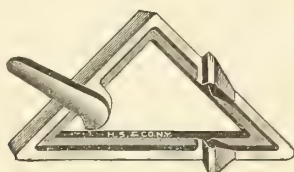
Architect



Arch joint, edge plates, 8ths, 10ths, 12ths, 16ths, with inside beveled edges and architects drafting scales. 1-inch wide. Two-foot four-fold.

No. 53 1/2	Boxwood, dozen.....	\$8.00
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Rule Tool



This handy little tool, which can be carried in the pocket, may be easily and quickly adjusted to an ordinary two-foot rule and can then be used as a square, depth gauge, mitre, or in many other ways. It has no loose parts to get lost.

Dozen.....	\$3.00
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We want *you* to know

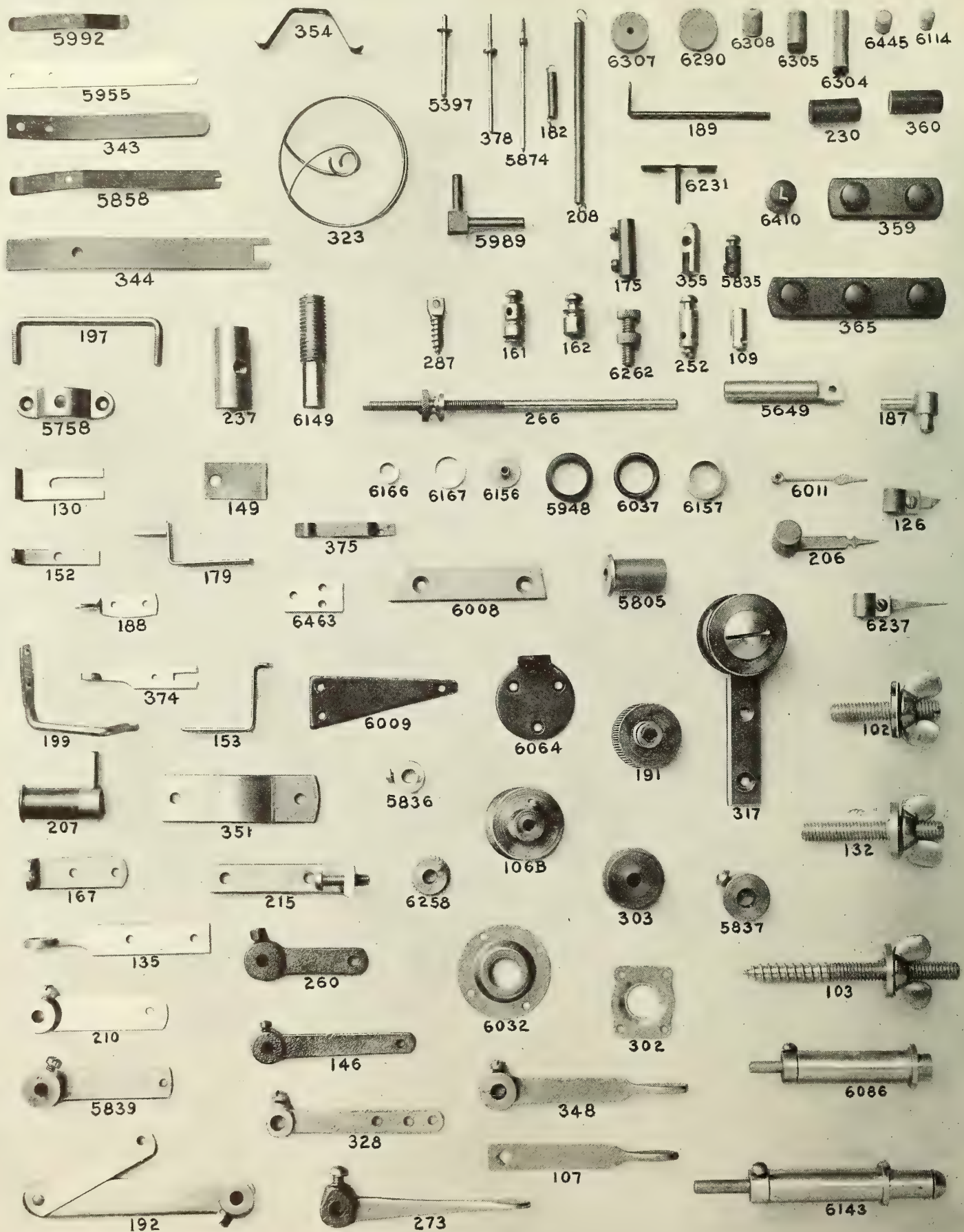
that one of the largest departments of our business is devoted to the making of all manner of special parts for manufacturers.

Screw machine and lathe work; die and sand castings; drawn or stamped parts; forgings, spun brass flanges, ferrules, etc.

Illustrations herewith (numbered merely for general convenience) are taken at random from work we have produced.

It is necessary to send us samples of your wants, properly marked for correct identification, along with specifications as to quantities and deliveries, and with such detail in hand we are in excellent position to quote the lowest possible prices, consistent with strictly high grade material and workmanship.

Hammacher, Schlemmer & Company

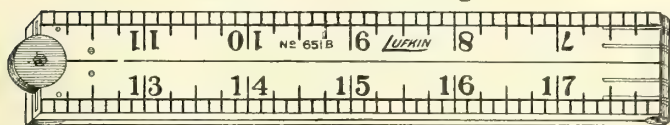


See preceding page.

Also pages facing 344, 857 and 888

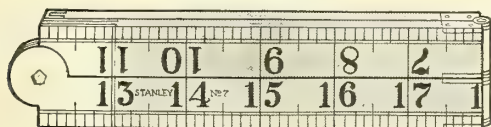
Rules

Boxwood With Printed Markings



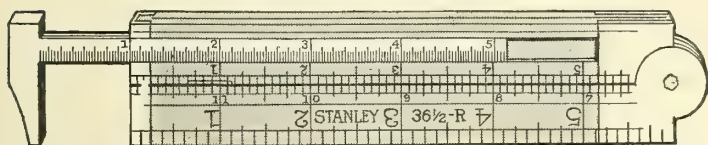
No. 651B Round joint, middle plates, marked 8ths and 16ths, with heavy, clear and distinct figures, dozen \$2.50

Blind Man



No. 7 Square Joint, 8ths and 16ths, 1 3/8 inches wide, dozen . . . \$11.00
 No. 8 Square Joint, 8ths and 16ths, 1 inch wide 12.00

With Caliper Slide



No. 36 1/2-R

All right hand as shown in illustration; the slide is graduated in 32nds.

Six-Inch, Two-Fold

No. 36 Square Joint, 8ths, 10ths, 12ths and 16ths. 7/8 inch wide when closed, dozen \$4.50
 No. 14 Square Joint, full bound, 8ths, 10ths, 12ths and 16ths. 7/8 inch wide when closed, dozen 8.00

One-Foot, Four-Fold

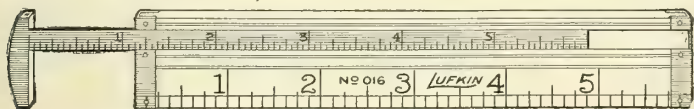
No. 32 Arch Joint, edge plates, 8ths, 10ths, 12ths and 16ths. 1 inch wide when closed, dozen 7.00
 No. 32 1/2 Arch Joint, full-bound, 8ths, 10ths, 12ths and 16ths. 1 inch wide when closed, dozen 10.00

One-Foot, Two-Fold

No. 36 1/2 Square Joint, 8ths, 10ths, 12ths and 16ths. 1 3/8 inches wide when closed, dozen 6.50
 No. 35 Square Joint, 8ths, 10ths, 12ths and 16ths. 1 inch wide when closed, dozen 6.20

Two-Foot, Four-Fold

No. 62C Square Joint, full-bound, 8ths, 10ths, 12ths and 16ths, 1 inch wide when closed, dozen 13.50



All right hand, as shown in illustration. The slide is graduated in 32nds.

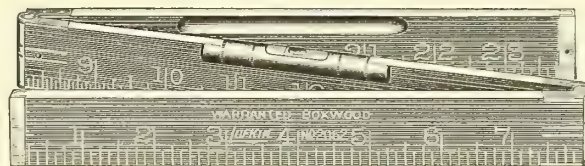
No. 013 1 inch wide, 3 inches long, marked 8ths and 16ths . . . \$3.50
 No. 014 1 inch wide, 4 inches long, marked 8ths and 16ths . . . 4.00
 No. 016 1 inch wide, 6 inches long, marked 8ths and 16ths . . . 4.50
 No. 024 1 3/8 inches wide, 4 inches long, marked 8ths and 16ths . . 4.50
 No. 026 1 3/8 inches wide, 6 inches long, marked 8ths and 16ths . . 5.00

With Button Gauge



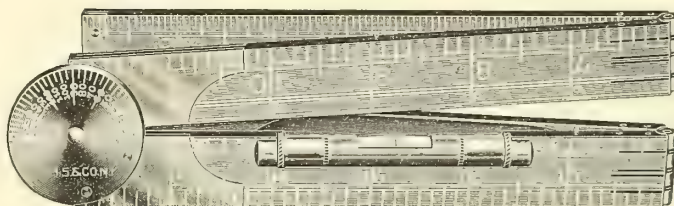
No. 100 Brass trimmed. Upper part of Slide marked in Paris button lines; lower part in 40ths of an inch (U. S. Standard). Back of Rule inches and 8ths, dozen \$18.00
 No. 024B Same as No. 024, shown on this page, except marked in 40ths of an inch, dozen 4.50

Combination



No. 2062 Made of highly finished boxwood, 2-foot, 3-fold, 1 inch wide, edge plates; graduated one side 8ths, other side 16ths. An entirely new and very useful tool for carpenters, plumbers, etc., each \$1.00

Combination



With Bevel and Level

Two-Foot, Four-Fold

Bevel is graduated to 5 degrees, but closer readings can be taken with the eye. 1 1/2 inches wide when closed. Arch joints, extra heavy middle plates, bitted.

Graduated 8ths, 16ths, and drafting scales.

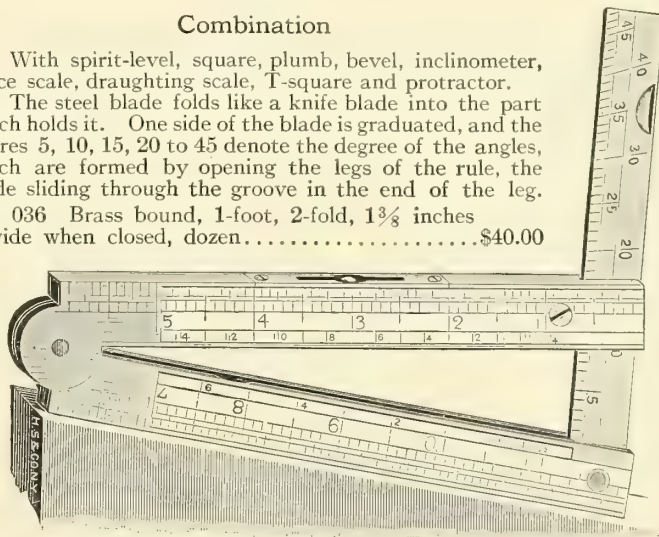
No. 863L Unbound, each \$1.25
 No. 873L Half-bound, each 1.50

Combination

With spirit-level, square, plumb, bevel, inclinometer, brace scale, draughting scale, T-square and protractor.

The steel blade folds like a knife blade into the part which holds it. One side of the blade is graduated, and the figures 5, 10, 15, 20 to 45 denote the degree of the angles, which are formed by opening the legs of the rule, the blade sliding through the groove in the end of the leg.

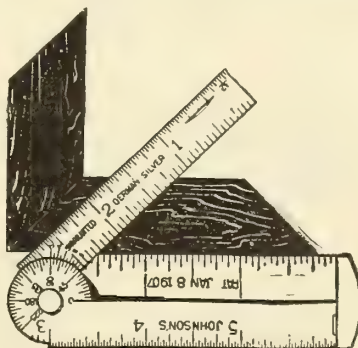
No. 036 Brass bound, 1-foot, 2-fold, 1 3/8 inches wide when closed, dozen \$40.00



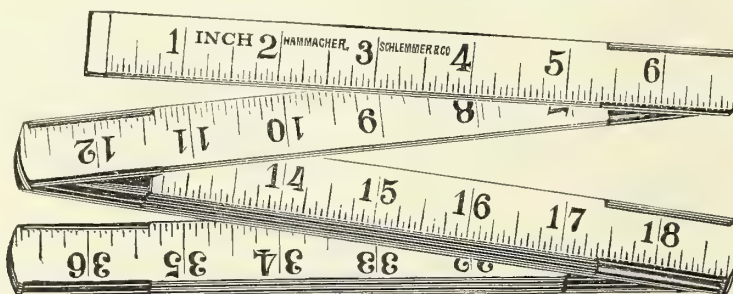
German Silver Johnson Combination

Can be used in many ways—as an ordinary rule, square, caliper, bevel, etc. The bevel reads directly to 5 degrees, and to half a degree by means of the Vernier. Graduated in 16ths and 32nds. Made of German silver and finely finished. Each rule in a neat leather case.

No. 46 6-inch, 4-fold . . . \$2.50
 No. 45 12-inch, 4-fold . . 4.20



Pocket Folding Rules



H. S. & Co.

6-Inch Folds. $\frac{5}{8}$ Inch Wide, Metal Tips

*Regular figuring, concealed spring lock-joints, as illustrated, yellow finish.

Number.....	1512	1513	1514	1514½	1515	1516	1518
Feet.....	2	3	4	4	5	6	8
Number of folds...	4	6	8	8	10	12	16
Graduations, inches	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
Dozen.....	\$2.55	3.75	5.00	5.00	6.30	7.50	10.00

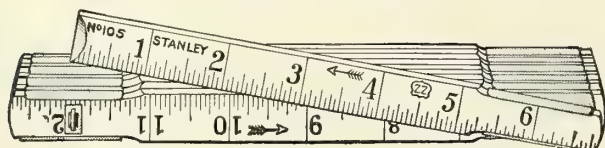
and MM.

4-Inch Folds. $\frac{7}{16}$ Inch Wide

*Regular figuring, concealed spring-lock joints, yellow finish.

Number.....	942	943	944
Feet.....	2	3	4
Number of folds.....	6	9	12
Graduated, inches.....	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
Dozen.....	\$4.00	6.00	8.00

Stanley Zigzag

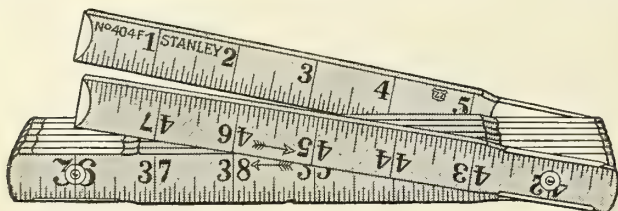


6-Inch Joint. $\frac{5}{8}$ Inch Wide, Metal Tips

*Regular figuring, concealed spring lock-joint, white enamel finish.

Number.....	104	104 M	105	106	108
Feet.....	4	4	5	6	8
Number of folds.....	8	8	10	12	16
Graduations, inches.....	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
Dozen.....	\$4.80	4.80	6.00	7.20	9.60

and MM.



6-Inch Folds. $\frac{5}{8}$ Inch Wide, Metal Tips

*Style "F" figuring, riveted spring-joints, yellow finish.

Number.....	404 F	405 F	406 F	408 F
Feet.....	4	5	6	8
Number of folds.....	8	10	12	16
Graduations, inches.....	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
Dozen.....	\$4.00	5.00	6.00	8.00

*Styles of figuring are as follows:

Regular number of inches commence on outside of Rule and run consecutively entire length.

Style "T" numbers commence on outside of rule and run from 1 to 11 inches. Each foot is marked with large figures, such as 1F, 2F, 3F, etc. After each foot the inches repeat 1 to 11.

Style "F." The number of inches commence on the inside of the rule, allowing the rule to lie flat when open. The figures 12, 24, 36, etc., are made extra large.

K and E

6-Inch Folds. $\frac{5}{8}$ Inch Wide, Metal Tips

*Regular figuring, white ivorine finish, riveted spring-joints. Have a patented white coating on which the black graduations show up very distinctly. This coating is very durable; resists heat and moisture and can be cleaned with water, alcohol or oil. Graduated in 16ths.

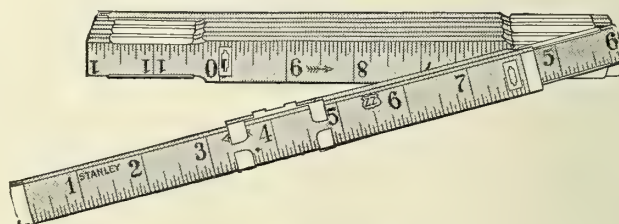
Feet.....	3	4	5	6	8
Number of folds.....	6	8	10	12	16
No. 1730 IV.....dozen	\$3.30	4.40	5.60	7.00	9.00

6-Inch Folds. $\frac{5}{8}$ Inch Wide

*Style "T" figuring, metal tips, riveted spring-joints, yellow finish. Graduated in 16ths.

Feet.....	4	5	6	8
Number of folds.....	8	10	12	16
No. 1730 F.....dozen	\$2.80	3.60	4.40	5.80

Stanley Zigzag Extension

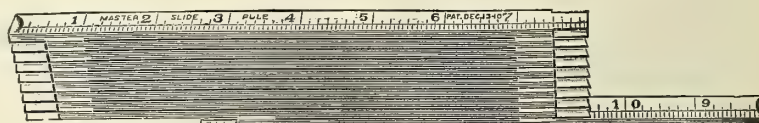


6-Inch Folds. $\frac{5}{8}$ Inch Wide

*Regular figuring. Have an extension slide by means of which the rule may be used to obtain inside dimensions. Concealed spring lock joint. Yellow finish. Graduated in 16ths.

No. 206. 6 feet long, 12 folds.....dozen \$9.90

Master Slide Rule



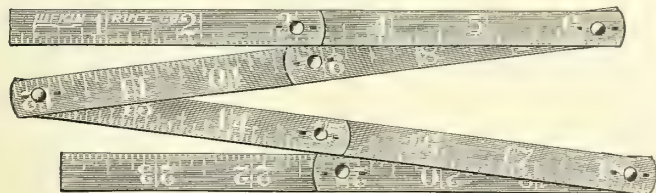
8-Inch Folds. $\frac{1}{2}$ Inch Wide

Designed for taking inside measurements of doors, windows, boilers, etc. One side of the rule reads inside measurements directly while the other is intended for ordinary measurements. The rule is more quickly opened and closed than an ordinary folding rule. Made of select boxwood and trimmed with brass-plated steel. When extended it is kept in place rigidly by strong steel springs that cannot get out of order. Graduated in 16ths.

Feet.....	4	5	6
Number of folds.....	8	10	12
Dozen.....	\$12.00	15.00	18.00

Steel Folding Rules

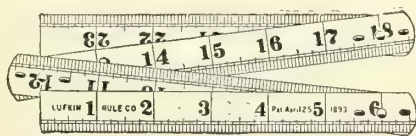
Lufkin



4-inch Folds

Flexible spring-steel, $\frac{3}{8}$ inch wide, with stop-joints. Graduated in 16ths, both sides, raised figures.

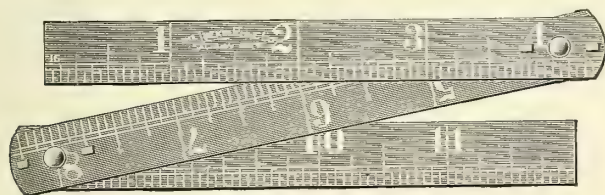
	Dozen
No. 1141 1-foot, 4-inch stops, 3-fold	\$ 4.00
Leather cases, extra	1.50
No. 1142 2-foot, 6-fold	7.50
Leather cases, extra	2.00
No. 1143 3-foot, 9-fold	11.00
Leather cases, extra	2.50



6-inch Folds. Stop-Joints

Tempered steel, $\frac{3}{4}$ inch wide. Surface of rule is bright, with sunken figures. Graduated in 16ths.

	Dozen
No. 1172 2-foot, 4-fold	\$16.80
No. 1173 3-foot, 6-fold	25.20
No. 1174 4-foot, 8-fold	33.60
No. 1175 5-foot, 10-fold	42.00
No. 1176 6-foot, 12-fold	50.40



4-inch Folds. Machine Divided

Flexible steel, $\frac{1}{2}$ inch wide. Graduated one side in 8ths, other side in 16ths. With stop-joints.

	Dozen
No. 4141 1-foot, 3-fold	\$9.00
No. 4142 2-foot, 6-fold	15.00
No. 4143 3-foot, 9-fold	22.50
No. 4144 4-foot, 12-fold	30.00
Leather cases for Nos. 4141 and 4142	2.50
Leather cases for Nos. 4143 and 4144	3.00



No. 041. 1-foot Folding Steel Pocket Rule, made of finest quality spring-steel, $\frac{3}{8}$ inch wide, No. 28 gauge. Will bend around a 3-inch circle. In leather case, dozen

\$2.00

Extension Rules

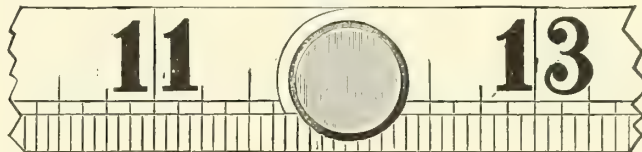
Very useful for accurately measuring the distance between two fixed points. When extended to required length, the sections may be

Stanley



	Dozen
No. 240 2 to 4 feet long	\$ 8.00
No. 360 3 to 6 feet long	9.00
No. 480 4 to 8 feet long	10.00
No. 510 5 to 10 feet long	12.00
No. 612 6 to 12 feet long	15.00

Lufkin

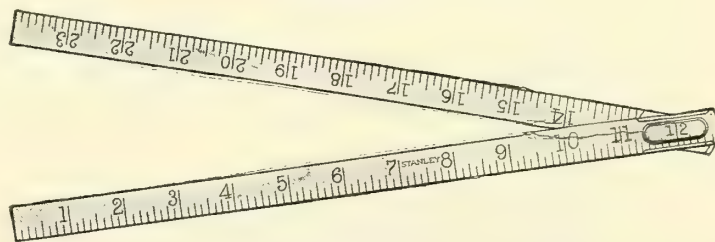


Blacksmith

No. 85T Stop-joint, 2-foot 2-fold, $\frac{3}{4}$ inch wide, steel, brass tipped. Graduated in 8ths and 16ths, dozen

\$13.00

Stanley



Blacksmith

Consists of two legs made from spring-brass, joined by a brass joint containing a stiff spring which holds the rule rigid when open. Particularly adapted for measuring hot metal, as it can be cooled without rusting by plunging in water.

No. 17 2-foot, 2-fold, $\frac{3}{4}$ inch wide. Graduated in 8ths and 16ths, dozen

\$ 6.00

Hook and Handle Rule

Starrett



Blacksmith

To enable blacksmiths to measure hot pieces more conveniently, and for convenience in measuring through holes, or from the inside when held against a corner, etc., the blacksmiths hook and handle rule has been devised. This is an ordinary rule with a hook at zero, so that by placing the hook against the work the reading may be made readily from the scale at the edge. A handle on the opposite end from the hook permits using the rule without getting the hand near the work. Can be cooled without rusting by plunging in water.

These rules are made from hard rolled sheet brass $\frac{1}{16}$ of an inch thick, $1\frac{1}{16}$ inches wide, with heavy graduations and figures, graduated from the end in $\frac{1}{16}$ -inch on one side, and from the inside of the hook in 16ths of an inch on the other adapting them for taking measurements either from the hook or from the outside edge. They are graduated 12 inches, have flat handles and measure over all, $16\frac{3}{4}$ inches.

No. 65, each

\$1.15

H. S. & Co.

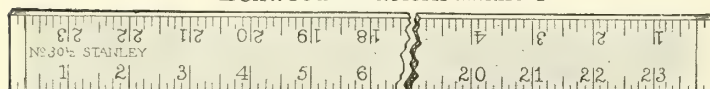


	Each
No. 31 $\frac{1}{2}$ Extends from 3 to 6 feet, with set screw	\$2.10
No. 4 Extends from 4 to 8 feet, with set screw	5.30
No. 5 Extends from 5 to 10 feet, with set screw	6.50
No. 6 Extends from 6 to 12 feet, with set screw	7.50

Shrinkage Rules

Stanley

Boxwood—Pattern Makers



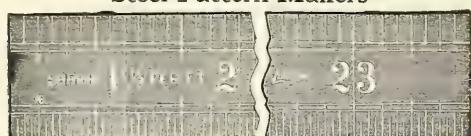
No. 30 1/2

All castings shrink in cooling, depending on the kind of metal, the thickness, and the condition under which cast. For instance: The shrinkage per foot of castings where the thickness runs about 1 inch, cast under ordinary conditions, would average, in cast iron 1/8 inch, in brass 1/16 inch, in steel, 1/4 inch, in tin, 1/2 inch, etc. Thicker castings under the same conditions will shrink less, and thinner ones more than this average. To allow for shrinkage, patterns must be made larger than castings are wanted. Shrinkage rules are graduated to allow for shrinkage in different metals. The spacing of graduations are based for work on patterns, the figuring of graduations refer to castings.

	1 1/2 Inches Wide						
Number.....	30 1/2 A	30 1/2 B	30 1/2 C	30 1/2 D	30 1/2 E	30 1/2 F	30 1/2 G
Length, inches .	24 1/8	24 1/2	24 3/4	24 1/2	24 1/4	24 3/8	24 1/2
Shrinkage, per foot, inch.....	1/16	1/12	1/10	3/32	1/8	3/16	1/4
Graduated in 8ths, 10ths, 12ths and 16ths. Graduated 8ths and 16ths only, if so ordered. Each.....							\$1.50

Lufkin

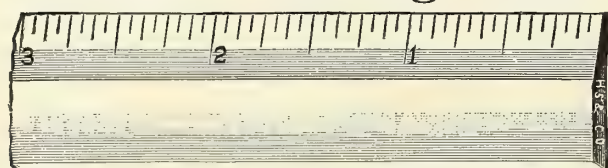
Steel—Pattern Makers



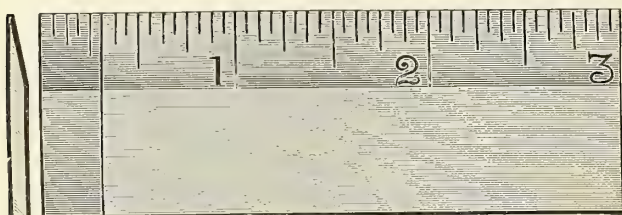
Tempered and polished steel, 1 1/8 x 3/16 inch. Bright surface with sunken figures and graduations, black and distinct. A first-class flexible and practically indestructible rule, guaranteed accurate at all times.

	90A	90B	90C	90D	90E	90F	90G	90H
Extreme length, in.	24 1/8	24 1/2	24 3/4	24 1/2	24 1/4	24 3/8	24 1/2	24 5/8
Shrinkage, per foot, inch.....	1/16	1/12	1/10	3/32	1/8	3/16	1/4	5/16
Graduated 8ths and 16ths both sides, each.....								\$2.00

Manual Training Rules



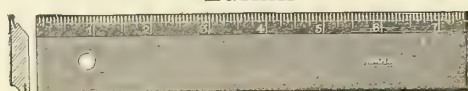
No. 3 Boxwood, 12 inches long, 1 1/8 inch wide, graduated as shown, from right to left, per dozen.....	\$1.80
No. 150 Maple, 12 inches long, 7/8 inch wide, graduated from left to right in 16ths, per dozen.....	1.00



No. 1 Boxwood, 12 inches long, 1 1/8 inches wide, graduated in 16ths from left to right, brass bound ends, dozen.....	\$6.70
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Wooden Desk Rules

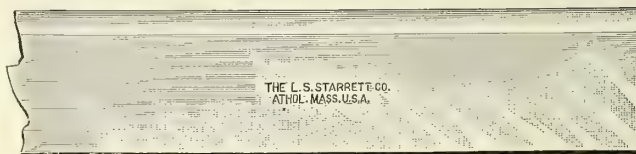
Lufkin



No. 7204. Boxwood. Two inlaid brass edges.				
Length, inches.....	12	15	18	24
Per dozen.....	\$6.00	7.80	9.60	13.20
No. 7103. Maple. One inlaid brass edge.				
Length, inches.....	12	15	18	24
Per dozen.....	\$1.75	1.90	2.60	4.00

Steel Desk Rules

Starrett



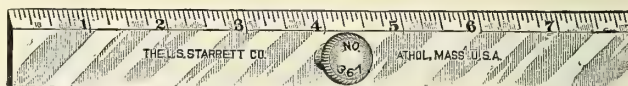
For Draftsmen, Bookkeepers, Etc.

These Rules are thin, light and handsome, of spring-tempered steel, about 1-inch wide and 3/16ths inch thick, nicely finished and nickel-plated.

One edge is sharply beveled, so that ink will not stick to it. This prevents blotting the paper and smearing the fingers.

The thinness of the Rule brings the working edge close to the paper, which is an advantage anyone will appreciate who has done hit-or-miss ruling with a common ruler, the edge of which stands up a quarter of an inch from the work.

No. 365 12-inch, not graduated.....	\$.50
No. 365 15-inch, not graduated.....	.75
No. 365 18-inch, not graduated.....	1.00
No. 366 12-inch, graduated one edge, 16ths.....	1.00
No. 366 15-inch, graduated one edge, 16ths.....	1.25
No. 366 18-inch, graduated one edge, 16ths.....	1.50



Heavily nickel-plated, beveled and graduated in 16ths of an inch. For convenience in picking up a knob is secured to its side. This Rule makes an excellent paper weight and its beveled edge a fine paper cutter.

No. 367 8 inches long, 1 inch wide, 3/16 inch thick.....	\$1.00
No. 367 12 inches long, 1 inch wide, 3/16 inch thick.....	1.50

Steel Rules

Lufkin



English Pattern, Tempered, Machine Divided

One rounded end with hole. Numbers with the suffix N are 1/2 inch wide, 25 gauge. Numbers without the suffix N are 3/4 inch wide, 21 gauge in 4 and 6-inch lengths 1 1/8 inches wide, 19 gauge, in 12-inch lengths.

No. 2700 and No. 2700N Graduated one side only, first two inches in 32nds, third-inch, first 3/4-inch in 32nds, next quarter in 64ths, remainder 16ths, bottom edge only.

Inches.....	4	6	12
Dozen.....	\$2.40	3.00	4.80

No. 2701 and No. 2701N Graduated one side only; bottom edge 16ths, top edge 8ths. Lengths and prices as above.

No. 2703 and No. 2703N Graduated both sides; one side bottom edge 16ths, top edge 8ths, other side, bottom edge, first 3 inches 32nds, first half, 4th inch 64ths; remainder of bottom edge graduated in 1/8ths, top edge graduated entire length in 1/8ths.

Inches.....	4	6	12
Dozen.....	\$4.20	5.40	7.80

No. 2705 and No. 2705N Graduated one side only; bottom edge first inch in 20ths, second inch in 50ths, third inch in 100ths, remainder in 10ths. Top edge first two inches in 32nds, third inch in 64ths, remainder in 16ths.

Inches.....	4	6	12
Dozen.....	\$3.60	4.20	6.60

Wood Bench Rules



Nos. 40, 45, 50 and 60 graduated in 8ths on both sides; Nos. 34½, 34¾, 200, 300, 400, 500 and 600 graduated in 8ths on one side and 16ths on other.

Maple, Brass Tipped

	Each
No. 34½ 2-feet long, 1¼ inches wide, 5/32-inch thick.....	\$.60
No. 34¾ 2-feet long, 1¾ inches wide, 7/64-inch thick.....	.60
No. 40 4-feet long, 1¾ inches wide, 3/16-inch thick.....	1.30
No. 45 3¾-feet long, 1½ inches wide, ¼-inch thick.....	1.20
No. 50 5-feet long, 1½ inches wide, ¼-inch thick.....	1.70
No. 60 6-feet long, 2 inches wide, ¼-inch thick.....	3.00

Maple, Brass Bound

	Each
No. 200 2-feet long, 1½ inches wide, ¼-inch thick.....	\$1.60
No. 300 3-feet long, 1½ inches wide, ¼-inch thick.....	3.20
No. 400 4-feet long, 1½ inches wide, ¼-inch thick.....	4.20
No. 500 5-feet long, 1½ inches wide, ¼-inch thick.....	5.30
No. 600 6-feet long, 1½ inches wide, ¼-inch thick.....	7.30

Yard Sticks

Nos. 1, 2 and 11, graduated in 8ths on both sides. Nos. 7121, 7122 and 7422, graduated in 8ths on one side; other side fractions of yards.

	Dozen
No. 1 Maple, 1¼ inches wide, 8-inch thick. Brass tipped.	\$5.00
No. 2 Maple, 1-inch wide, ¾-inch thick. Brass capped...	4.00
No. 11 Maple, 1¾ inches wide, ¼-inch thick. Brass tipped.	7.00
No. 7121 Maple, 1-inch wide, ¼-inch thick. Plain.....	1.90
No. 7122 Maple, 1-inch wide, ¼-inch thick. Brass tipped....	3.10
No. 7422 Hickory, 7/8-inch wide, 1/8-inch thick, Brass capped, round edges, flexible.....	4.00

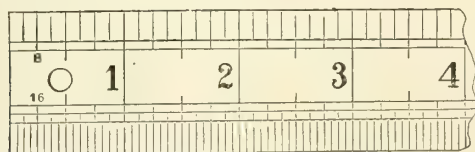
Scarf Cutter



45 inches long, 3 inches wide, 3/8-inch thick. Graduated in 8ths of an inch and 8ths of a yard. One edge and both ends brass bound

Each..... \$3.00

Steel Bench Rules



Bright surface, black sunken markings.

No. 62 1¼ inches wide, No. 16 gauge, graduated both sides, upper edge in 8ths, lower edge in 16ths.

Length, feet.....	1	2	3	4	5	6
Dozen.....	\$8.00	15.00	22.00	28.00	48.00	60.00

No. 60 ¾-inch wide, No. 20 gauge. Graduated on lower edge only, 8ths on one side, 16ths on other.

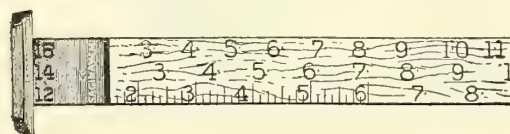
	Dozen
1 foot.....	\$4.00
2 feet.....	8.00

Steel Straight Edges



	Each
No. 74 4-feet, 2 inches wide, beveled edge, ¼-inch thick....	\$5.75
No. 76 6-feet, 2 inches wide, beveled edge, ¼-inch thick....	9.90
No. 74A 4-feet, 2 inches wide, beveled edge, 1/8-inch thick...	5.00
No. 76A 6-feet, 2 inches wide, beveled edge, 1/8-inch thick....	7.50

Hickory Board Rules



No. 1 Right hand, 3-Tier, 3½-foot Inspector, 1½ inches wide. Brazed head.

Dozen..... \$27.00

No. 3 Right hand, 3-Tier, 3-foot, 1½ inches wide, Brazed head.

Dozen..... \$23.00

Above rules are all marked on one side to measure 12, 14 and 16 feet. Opposite side 8, 10 and 18 feet.

No. 8 Right hand, 4-Tier, 3-foot, 1¼ inches wide, Brazed head.

Dozen..... \$25.00

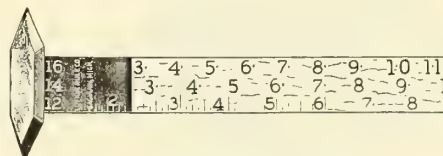
No. 8 L Same as No. 8, except left hand.

Dozen..... \$25.00

Above rules are all marked on one side to measure 12, 10, 14, 16 feet, opposite side 9, 11, 13 and 15 feet.

No. 8 X Right hand, same as No. 8, except marked to measure on one side 12, 14, 16, 18 feet; other side 8, 10, 20, 22 feet.

Dozen..... \$25.00



Diamond Head

No. 8 D. H. Same as No. 8, but with diamond head, as illustrated.

Dozen..... \$25.00

Books

The Timbers of Commerce and Their Identification

By H. Stone

Each, \$3.50

Illustrated with 186 photomicrographs of sections prepared by Arthur Deane; 5 x 9 inches.

Contents: Introduction; Practical Hints; Description of Species; Magnoliaceæ; Anonaceæ; Bixineæ; Dipterocarpeæ; Malvaceæ; Tiliaceæ; Zygophyllaceæ; Rutaceæ; Simarubeæ; Olacineæ; Ilicineæ; Platanaceæ; Unknown Species of Dicotyledons; Comferæ; Scales of Measurement; Bibliography.

Timber

By J. R. Baterden

Each, \$2.00

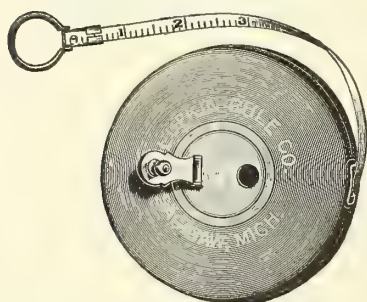
Fifty-four illustrations; 360 pages; 6 x 8½ inches.

Contents: Timber; The World's Forest Supply; Quantities of Timber Used; Timber Imports into Great Britain; European, United States and Canadian Timber; Timbers of South America, Central America, West India Islands, India, Burma, Andaman Islands, Straits Settlements, Malay Peninsula, Japan and South and West Africa, Australian Timbers; Timbers of New Zealand and Tasmania; Causes of Decay and Destruction of Timber; Seasoning and Impregnation of Timber; Defects in Timber and General Notes; Strength and Testing of Timber; "Figure" in Timber.

Steel Tape Measures

Lufkin

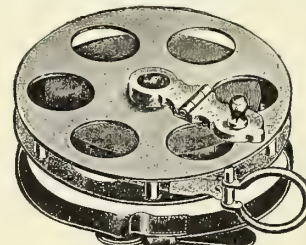
Engineers Pattern



Hard leather, steel-lined cases, $\frac{1}{4}$ -inch heavy tapes. Nickel-plated trimmings. The tape can be readily detached from the case, and an extra ring is furnished for the other end. The steel is heavier and stronger than is furnished with regular steel tapes, and the cases are thinner.

Marked feet and 12ths; inches and Eighths Number	Marked feet 10ths and 100ths Number	Length feet	Diameter of Case Inches	Each
233	233D	50	$4\frac{1}{4}$	\$6.00
235	235D	75	$4\frac{3}{4}$	9.50
236	236D	100	$5\frac{1}{4}$	12.00

Wolverine Engineers Pattern

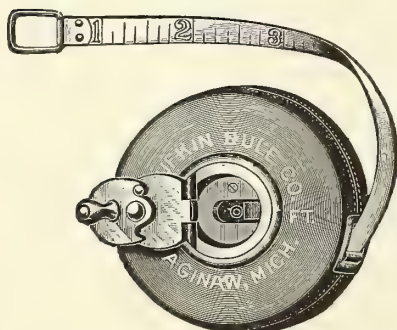


With one-quarter-inch tapes, which can be readily detached from the reel. Two detachable rings furnished.

In open metal reel, with nickel-plated brass-folding handle. Leather strap on the reverse side, by which the tape can be firmly held while winding. Extremely light and convenient, yet sufficiently strong and durable to withstand the most severe usage. The metal is given a satin finish, which presents a beautiful appearance.

Marked feet and 12ths; inches and Eighths Number	Marked feet 10ths and 100ths Number	Length feet	Diameter of Reel Inches	Each
1373	1373D	50	$4\frac{1}{8}$	\$7.00
1375	1375D	75	$4\frac{5}{8}$	9.50
1376	1376D	100	$5\frac{1}{4}$	12.00

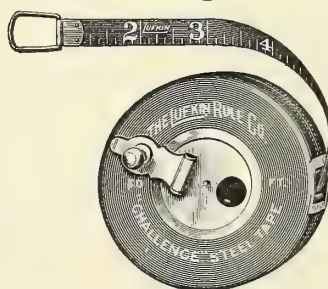
Reliable



Hard-leather case, steel-lined, with $\frac{3}{8}$ -inch tape. Double folding flush handle, opened by pressing on opposite side. Nickel-plated trimmings. Measurements guaranteed perfectly accurate. Marked on front in feet and 12ths, inches and 8ths; on back in links and poles.

Numbers.....	200	203	205	206
Feet.....	25	50	75	100
Diameter, case....	$2\frac{3}{4}$	$3\frac{1}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$
Each.....	\$4.50	7.20	10.40	12.80

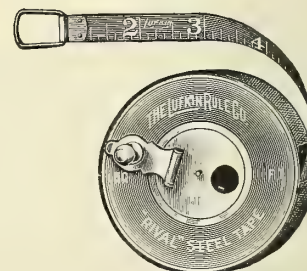
Challenge



Hard-leather case, steel-lined, with $\frac{3}{8}$ -inch tape. Flush handle, opened by pressing on opposite side nickel-plated trimmings. Measurements guaranteed perfectly accurate. Marked one side only in feet and 12ths, inches and 8ths.

Numbers.....	260	263	265	266
Feet.....	25	50	75	100
Diameter case....	$2\frac{3}{4}$	$3\frac{1}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$
Each.....	\$3.25	4.00	5.25	6.75

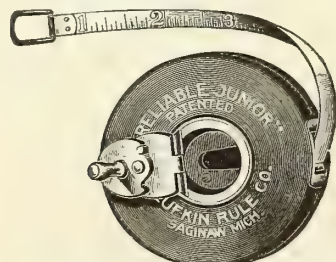
Rival



Nickel-plated steel-case. With $\frac{3}{8}$ -inch tape. Flush handle, opened by pressing on opposite side. Marked one side only in feet and 12ths, inches and 8ths.

Numbers.....	240	243	245	246
Feet.....	25	50	75	100
Diameter, case....	$2\frac{3}{4}$	$3\frac{1}{4}$	$3\frac{3}{4}$	$4\frac{1}{4}$
Each.....	\$2.75	3.40	4.50	5.75

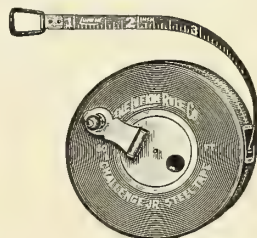
Reliable Junior



With $\frac{1}{4}$ -inch tape, same as Reliable, but about one-half the size and weight intended to fit the vest pocket. Marked in feet and 12ths, inches and 16ths.

Number	Length Feet	Diameter Inches	Weight Ounces	Each
100	25	$2\frac{1}{4}$	4	\$3.75
103	50	$2\frac{3}{4}$	6	4.60

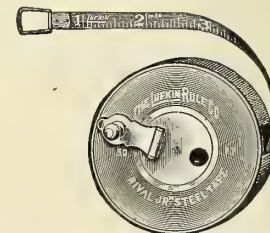
Challenge Junior



With $\frac{1}{4}$ -inch tape. Same as Challenge, but about one-half the size and weight. Marked in feet and 12ths, inches and 16ths.

Number	Length Feet	Diameter Inches	Weight Ounces	Each
1260	25	$2\frac{1}{4}$	4	\$3.00
1263	50	$2\frac{7}{8}$	6	3.50

Rival Junior



With $\frac{1}{4}$ -inch tape. The same as the Rival but smaller and lighter. Marked in feet and 12ths, inches and 16ths.

Number	Length Feet	Diameter Inches	Weight Ounces	Each
1240	25	$2\frac{1}{4}$	4	\$2.50
1243	50	$2\frac{3}{4}$	6	3.00

Steel Tape Measures

Roe

With Right-Angle Attachment and Automatic Handle Opener

Indispensable to every progressive engineer, surveyor, contractor, mason, builder, etc. Consists of a strong steel tape, $\frac{3}{8}$ -inch wide, graduated on one side only, into feet, inches and eighths, and if enclosed in leather case. Its accuracy is guaranteed. This tape can be used for all kinds of measurements and also for laying out right angles much quicker than by any other method and equally accurate. Its principle is the old trigonometrical formula that 6, 8 and 10 feet, sides of a triangle secure a right angle. This formula is embodied in this tape, by providing it at the 1, 9, 19 and 25-foot marks with eyelets, the 9 and 19-foot marks being joints. To use the tape, fasten it at the starting point with a small marking pin or nail through the eyelet at figure 1 on the tape; then fasten it at figure 9 as shown in illustration; place the 25-foot mark over the starting point and taking hold of the tape at the 19-foot mark, pull it straight as shown in cut. You will then have a perfect right angle at the starting point. The advantages of this tape are obvious. A perfect right angle is obtained in a few minutes by one person, while the operator is not encumbered with a surveying instrument or other tools. The tape is also equal to any other for straight work and all kinds of measurements.

Mason squaring foundation with Roe Angle Steel Tape

No. 242	50 feet.....	Each \$4.00
No. 244	75 feet.....	5.25
No. 246	100 feet.....	6.75

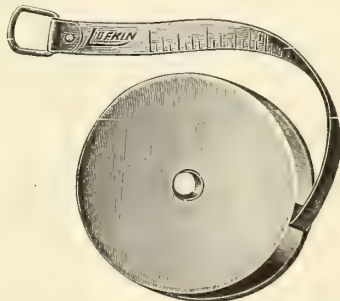
Pocket Steel Tape Measures



With $\frac{1}{4}$ -inch Tape

Nickel-plated brass-case, spring-wind, with centre-stop. Numbers with "M" are graduated in inches and 16ths on one side, millimeters on on the other. Other numbers are graduated in inches and 16ths on one side only.

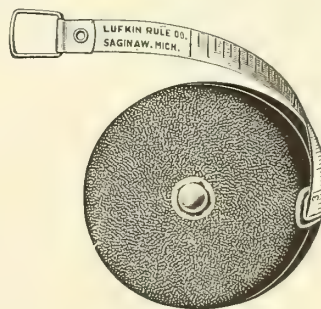
Number.....	143	143 M	145	145 M	146	146 M	148	148 M
Length, feet....	3	3	5	5	6	6	8	8
Dozen.....	\$7.00	8.00	9.00	10.00	10.00	12.00	14.00	16.00



Marvel With $\frac{1}{4}$ -Inch Tape

Nickel-plated case, spring-wind, centre-stop. 36 inches long, marked in inches and 16ths.

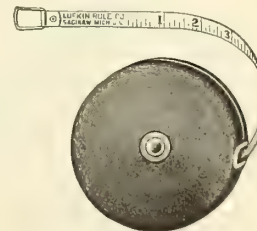
No. 3143	Dozen.....	\$5.00
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With $\frac{1}{4}$ -inch Tape

Leather-case, metal-lined. Spring-wind, centre-stop. Silver-plated trimmings. Numbers with "M" are graduated in inches and 16ths on one side, millimeters on the other. Other numbers are graduated on one side only in inches and 16ths.

Number.....	123	123 M	125	125 M
Length, feet....	3	3	5	5
Dozen.....	\$15.00	17.00	18.00	20.00



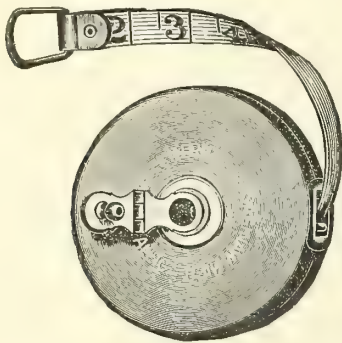
Midget With $\frac{5}{16}$ -inch Tape

The smallest tape made. Leather-case, metal-lined, 36 inches long. Spring-wind, centre-stop. Silver-plated trimmings. Diameter of case, 1-inch.

No. 123 $\frac{1}{2}$	Marked inches and 16ths.....	Dozen \$18.00
No. 123 $\frac{1}{2}$ M	Marked inches and 16ths on one side, millimeters on the other.....	20.00

Tape Measures

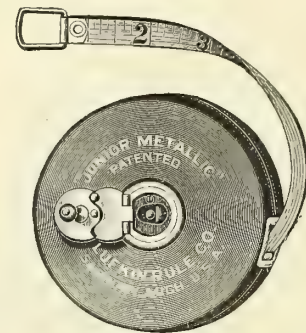
Lufkin



Metallic

With $\frac{5}{8}$ -inch tape, made of best woven linen with metallic warp. Hard leather cases, brass nickel-plated folding handles and brass nickel-plated trimmings. Graduated in $\frac{1}{2}$ ths.

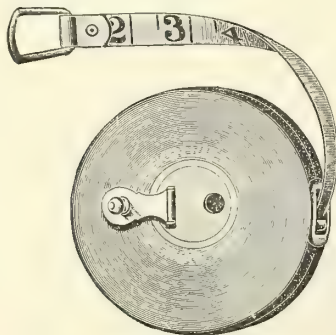
Numbers.....	500	503	505	506
Length, feet.....	25	50	75	100
Dozen.....	\$20.40	30.00	37.20	46.80
Tapes only, dozen.....	9.60	16.80	21.60	31.20



Junior Metallic

Hard leather cases, double-folding flush handle, nickel-plated trimmings. With $\frac{3}{8}$ -inch tape, made of best woven linen, with metallic warp. Graduated in 8ths. Vest pocket size.

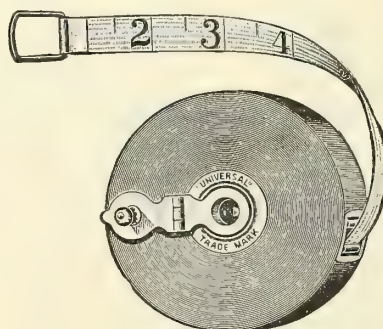
Number.....	660	663
Length, feet.....	25	50
Each.....	\$1.80	2.25



Sterling

With $\frac{5}{8}$ -inch tape, made of pure linen, reinforced with leather the first four inches and heavily coated. Hard leather case, flush handle, nickel-plated trimmings. Graduated in $\frac{1}{2}$ ths.

Numbers.....	400	403	405	406
Length, feet.....	25	50	75	100
Dozen.....	\$15.00	20.00	25.00	30.00

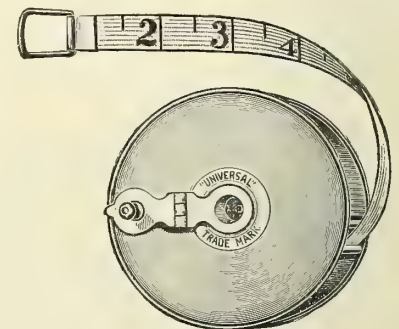


Universal

With One-Half Inch Linen Corded Tape.
Waterproof Coated

Cases of pressed leather, nicely enameled. Brass folding handles and trimmings. Graduated in 4ths.

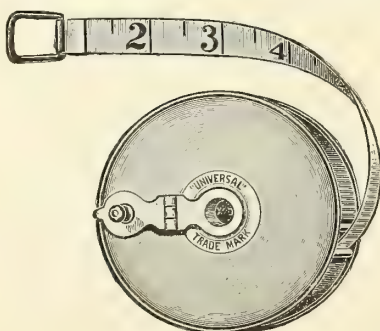
Number.....	1030	1033	1035	1036
Length, feet.....	25	50	75	100
Dozen.....	\$6.50	10.00	13.00	15.00



Universal

With $\frac{1}{2}$ -inch extra grade corded linen tape, brass-bound case, enameled sides. Brass folding handles and trimmings. Graduated in 4ths.

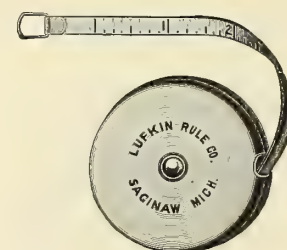
Numbers.....	730	733	735	736
Length, feet.....	25	50	75	100
Dozen.....	\$5.00	5.50	10.00	12.50



Universal

With $\frac{1}{2}$ -inch cotton tape. Ass skin brass-bound cases, brass folding handles and trimmings. Graduated in 4ths.

Numbers.....	710	713	715	716
Length, feet.....	25	50	75	100
Dozen.....	\$3.75	5.00	7.50	9.00



Pocket

With $\frac{1}{4}$ -inch enameled linen tape. Nickel-plated brass case, spring wind, with center stop. Graduated in 8ths.

Numbers.....	173	175	176
Length, feet.....	3	5	6
Dozen.....	\$3.50	4.50	5.00

Plumbs and Levels

Plain

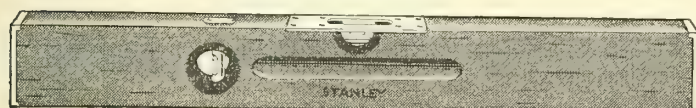
Stanley

Brass Bound Adjustable



Made from $1\frac{3}{8} \times 3\frac{1}{8}$ -inch stock	
No. 00 Hardwood. Arch top plate, two side views, polished, 18, 20 and 22 inches.....	Dozen \$8.75
No. 0 Hardwood. Arch top plate, two side views, polished, 24 inches.....	9.90
Made from $1\frac{1}{4} \times 2\frac{5}{16}$ -inch stock	
No. $1\frac{3}{4}$ Mahogany. Arch top plate, two brass lipped side views, and brass tips, polished and tipped. 12, 16 and 18 inches.....	14.70
Made from $1\frac{1}{4} \times 2\frac{3}{8}$ -inch stock	
No. 104 Hardwood. Arch top plate, two side views, polished, 12, 14, 16 and 18 inches.....	7.60

Adjustable



Made from $1\frac{3}{8} \times 3\frac{1}{8}$ -inch stock	
No. 3 Hardwood. Arch top plate, two side views, polished. Brass tips. 18, 20, 22, 24, 26, 28 and 30 inches. Dozen.....	\$16.50

Victor Adjustable



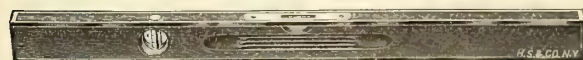
Three-ply hardwood. $1\frac{3}{8} \times 3\frac{1}{8}$ -inches	
A high grade level, only surpassed by the ground glass and brass-bound levels. They have heavy top-plates and two plumb-glasses so set that the user can plumb from either end of the level without reversing. Brass lips and brass tips. Each level is given an extra finish and packed in a pasteboard box.	
Made from $1\frac{3}{8} \times 3\frac{1}{8}$ -inch selected stock, in 24, 26, 28 and 30-inch lengths. In ordering give the number and length required.	
No. 15 Dozen.....	\$24.00

Duplex Adjustable



Three-ply Hardwood. $1\frac{3}{8} \times 3\frac{1}{8}$ -inches	
Can be read conveniently, even if held at arm length above the head. Have three glasses: A level glass set in the top in the usual way, a plumb glass, and a second level glass set in the side. These latter two glasses are set close to one surface of the stock so that the angle of vision of the bubble is greatly increased. Brass lips and brass tips.	
The second level glass can be readily reversed to form a second plumb if desired. All three glasses are adjustable.	
The opening on the reverse side of the extra level and plumb glasses is brass trimmed.	
They are made from $1\frac{3}{8} \times 3\frac{1}{8}$ -inch selected stock, in 24, 26, 28 and 30-inch lengths.	
No. 50 Dozen.....	\$24.00

Disston Brass Bound, Small Stock



Made of solid natural wood, with no stain, thoroughly polished; full brass bound, with an arch top-plate: solid brass ends. The stocks are 2 inches wide and 1 inch thick.			
Length, inches.....	12	18	24
No. 60, mahogany, dozen.....	\$21.00	\$25.00	\$30.00
No. 65, cherry, dozen.....	17.00	20.00	23.50

For information concerning Stanley Plumbs and Levels, see page 325

Mahogany

The life of a wooden level is greatly increased by having the edges brass bound which prevents the surface and edges from becoming damaged.

Brass Bound Levels have solid brass tips. The four edges are each protected by one piece of brass of special form, dovetailed the entire length into the wood and through the solid tips of solid brass or steel, heavily brass-plated to prevent rusting.

All brass lipped levels have brass plumb rings. Ground glasses, except No. 93 which has proved glasses. Made from especially selected, carefully polished and finished $1\frac{3}{8} \times 3\frac{1}{8}$ -inch stock. No. 98 levels have proportionately smaller cross sections. The No. 96 has 5-piece stock. Each level is packed in a pasteboard box.

Made in 24, 26, 28 and 30-inch lengths. In ordering give the number and length required.

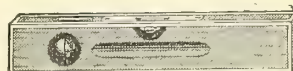
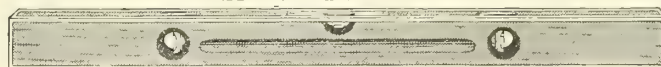
No. 93 Dozen.....	\$36.00
No. 96 Five-ply brass lips, dozen.....	66.00



Same as No. 92 except Rosewood, $1\frac{3}{8} \times 3\frac{1}{8}$ inches. Brass lips and brass tips and ground glasses.

No. 98 6 inches long.....	Each \$2.00
No. 98 9 inches long.....	2.50
No. 98 12 inches long.....	2.75
No. 98 18 inches long.....	3.50

Brass Bound Small Stock



$1\frac{1}{8} \times 2\frac{1}{8}$ -inch stock

Mahogany, with Proved Glasses

No. 1093 12 inches long, 1 Plumb.....	\$2.00
No. 1093 16 inches long, 1 Plumb.....	2.40
No. 1093 18 inches long, 1 Plumb.....	2.60
No. 1093 20 inches long, 1 Plumb.....	2.80
No. 1093 22 inches long, 1 Plumb.....	3.00
No. 1093 24 inches long, 1 Plumb.....	3.20
No. 1093 26 inches long, 1 Plumb.....	3.40
No. 1093 28 inches long, 1 Plumb.....	3.60
No. 1093 30 inches long, 1 Plumb.....	3.80
No. 1193 12 inches long, 2 Plumbs.....	2.20
No. 1193 16 inches long, 2 Plumbs.....	2.60
No. 1193 18 inches long, 2 Plumbs.....	2.80
No. 1193 20 inches long, 2 Plumbs.....	3.00
No. 1193 22 inches long, 2 Plumbs.....	3.20
No. 1193 24 inches long, 2 Plumbs.....	3.40
No. 1193 26 inches long, 2 Plumbs.....	3.60
No. 1193 28 inches long, 2 Plumbs.....	3.80
No. 1193 30 inches long, 2 Plumbs.....	4.00

Rosewood, with Ground Glasses and Brass Lips

No. 1197 12 inches long, 2 Plumbs.....	3.20
No. 1197 16 inches long, 2 Plumbs.....	3.80
No. 1197 18 inches long, 2 Plumbs.....	4.10
No. 1197 20 inches long, 2 Plumbs.....	4.40
No. 1197 22 inches long, 2 Plumbs.....	4.70
No. 1197 24 inches long, 2 Plumbs.....	5.00
No. 1197 26 inches long, 2 Plumbs.....	5.30
No. 1197 28 inches long, 2 Plumbs.....	5.60
No. 1197 30 inches long, 2 Plumbs.....	5.90

With Ground Glasses

The ground level glass is accurately fitted in a brass case, and the only plaster used is that necessary to plug the ends of this case. This brass case is fastened by a screw at each end, directly to the stock of the level, and is entirely independent of the top plate. Can easily be adjusted when a change is necessary.

Plumbs and Levels

Masons Wood with Double Plumb

Stanley



No. 80 Mahogany. Adjustable square top-plate, two brass-lipped side views, two plumbs with ground glasses, 42 inches, each..... \$3.85

No. 8 Hardwood. Non-adjustable arch top-plate, two plumbs, two side views, polished. Proved glasses. 42 inches, each.... 1.80

Combined Plumb Rule and Level



No. 35 Soft wood. Adjustable level, non-adjustable plumb, has one opening for plumb bob and line. 42 inches, each..... \$1.75



No. 45 1/2 Soft wood. Adjustable, with two openings for use of plumb bob and line, each..... \$3.00

Masons Plumb Rule



White pine. 4 1/2 x 54 inches, each..... \$.80

Iron

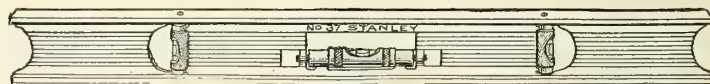
Stanley



Iron

No. 36G Japanned, nickel-plated trimmings, with proved glasses. Two plumbs. Grooved bottom for working on shafting, piping, etc. Equally serviceable for ordinary use.

Inches.....	6	9	12	18	24
Each.....	\$1.25	1.50	1.75	2.00	2.25



Iron

No. 37G 12, 18 and 24-inch, nickel-plated, ground glasses, two plumbs. Grooved bottom for working on shafting, piping, etc. Equally serviceable for ordinary use. Glass can be covered when not in use by simply turning outer shell of level case, each..... \$4.00

Davis

Adjustable, and Inclinometer



Iron

No. 2 Japanned, 12 inches long, with proved glasses, each.... \$2.50



Iron

No. 49 Japanned, 24 inches long, with proved glasses, each... \$5 00

Aluminum

Sand



No. 24



No. 30

Made of best aluminum. Are very light weight and durable. Will not rust or warp under any conditions. The Level Glasses are protected by heavy plate-glass for keeping out the dust, dirt and water.

Nos. 42 and 45 are same style as No. 30, illustrated above.

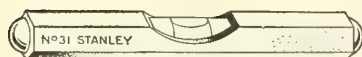
	Each
No. 24 24 inches long, 2 3/4 inches wide.....	\$2.75
No. 30 30 inches long, 3 inches wide.....	3.25
No. 42 42 inches long, 3 1/4 inches wide.....	4.50
No. 45 45 inches long, 3 inches wide.....	5.50

For information concerning Stanley Plumbs and Levels, see page 325

Pocket Levels

Stanley

Hexagon



Length, inches..... 2½ 3 3½
No. 31 Nickel-plated proved glass, dozen... \$4.20 5.10 6.00



No. 130 Japanned iron, 3½ inches long, each..... \$.40



No. 41 Japanned-iron body, brass top-plate, 3¼ inches long.
Can easily be attached to any straight-edge, dozen..... \$1.68



No. 46 Japanned-iron body, brass top-plate, 3 inches long, dozen \$2.28
Proved Glasses. Can easily be attached to any straight edge or square.



No. 38½ Iron, nickel-plated, proved glasses, 4 inches long..... Dozen \$5.00
No. 39½ Iron, nickel-plated, proved glasses, 6 inches long..... 6.00

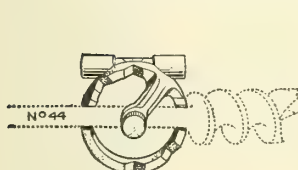


N°34-V

Eclipse

No. 34V Nickel-plated, ground-glass. When not in use the glass can be covered by simply turning the outer shell of the case.
6 inches, each..... \$1.50
8 inches, each..... 2.00
Has V-grooved bottom for leveling shafting, piping, etc. Equally serviceable for ordinary use

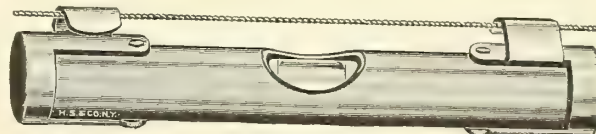
Bit and Square Level



The frame has three pairs of V-slots on its back edges. A thumb-screw secures the Level to the bit, and boring can be done with perfect accuracy as to perpendicular, horizontal or angle of forty-five degrees, by observing the bubble-glass while turning the bit.

The frame can also be attached to a carpenter square. Two shoulders rest on the top of the horizontal leg of the Square, thus making it an accurate spirit level and the upright leg of the Square will then indicate an exact Plumb-line.

No. 44 Bit and Square Level, brass frame, dozen..... \$3.60



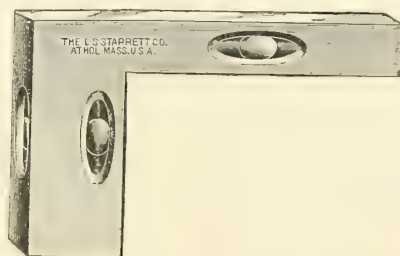
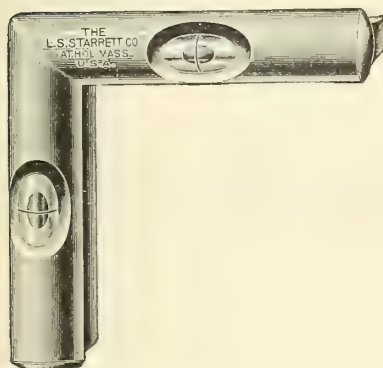
Stevens Line

Consists of an accurate proved level glass placed in a 3-inch aluminum tube with spring German silver end pieces and hooks formed from one piece of metal. The end pieces are attached to the tube by German silver rivets that pass through the tube and through lugs at top and bottom, between the hooks and the center of the level, thus preventing the hooks from pulling out of alignment in case of severe strain or rough usage.

Each..... \$1.00

Cross-Test Levels

Starrett



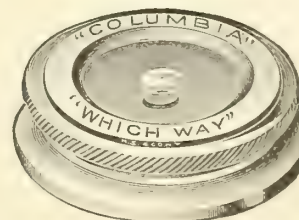
As the cut shows, two levels are united in one frame, extending at right angles 2¾ inches each way. The level weighs but 4 ounces. When placed on work to be leveled in both directions, it is not necessary to move the tool.

No. 136 Each..... \$.65

No. 134 2x3 x ½ inches thick, steel, nickel-plated, Leveling is indicated every way once by this tool without removing it from the work. Each..... \$1.50

Which-Way Level

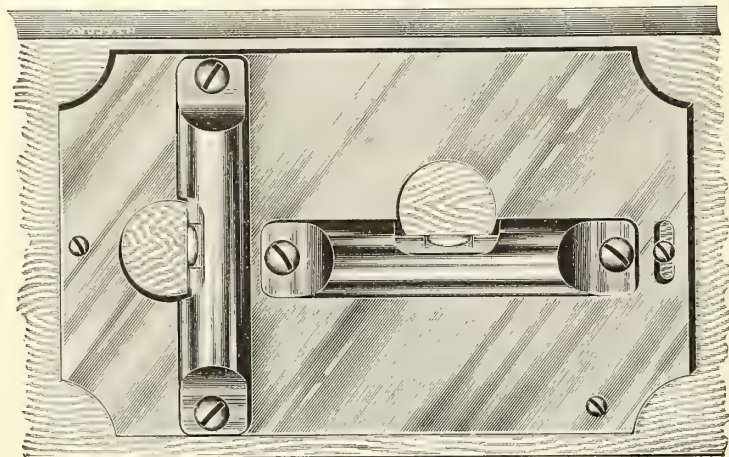
Columbia



Nickel-plated, 1½ inches diameter, each \$.50

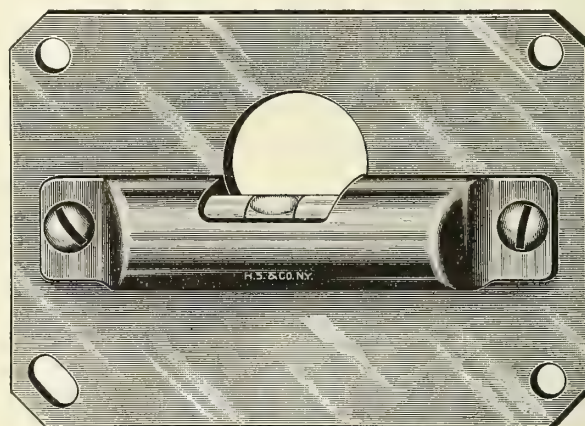
Plumbs and Levels for Straight Edges

Roe



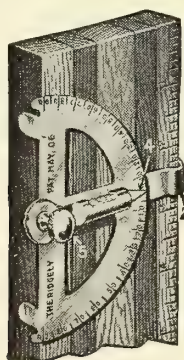
Quickly attachable to any straight edge; especially adapted for plumbing at long distances or in windy weather. Is not a complicated device, being very simple in construction, and always reliable. Is made of high grade materials and fitted with luminous level vials. Note—Test accuracy in adjustment by reversing straight edge.

	Dozen
Polished and Lacquered Brass	\$15.60
Aluminized Steel	10.30



Has only one vial, and can be put on any board, or straight edge, either as a plumb or a level.

Made to furnish a cheaper Level to those who do not need the double vial.	
Dozen	\$6.00

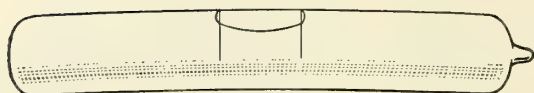


Ridgely

No. 2 Gives not only plumb and level, but verifies any angle desired. Made of highly polished brass, 4 inches long by 2 inches wide, and has large graduations. Can be used on any straight edge—you simply snap it on and the spring marked "2" in the cut holds it firmly. No screws to fuss with. Any graduation for panel or relief work obtained instantly by moving bubble pointer marked "4" in cut, then setting it by means of set-screw "5."

Each	\$1.25
----------------	--------

Level Glasses



Proved

Made of extra thick tubing by a patented process. Each Glass is marked at its central or crowning point by two indelible lines, enabling the user to very quickly center the bubble.

Length, inches	1	1¼	1½	1¾	2	2¼
Dozen	\$.80	.80	.80	.80	.84	.88
Length, inches	2½	3	3½	4	4½	Asst'd
Dozen	\$.88	.96	1.08	1.20	1.25	.96



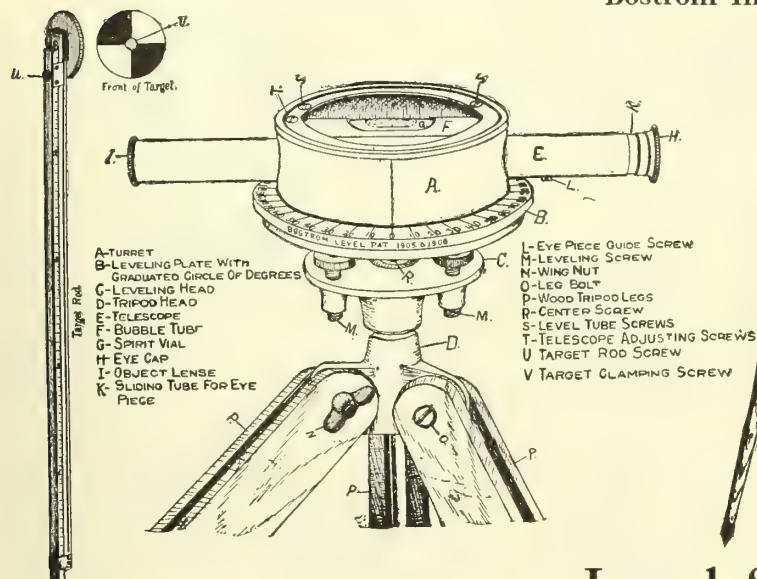
Ground

The inside surface is ground smooth and true, making the bubble extremely sensitive. The same system of marking is used on these Glasses as explained in the description of Proved Glasses opposite.

Length, inches	1	1¼	1½	1¾	2
Dozen	\$5.00	5.00	5.00	5.00	6.00
Length, inches	2½	3	3½	4	4½
Dozen	\$6.50	7.00	7.50	8.00	9.00

Farm Level

Bostrom Improved



A simple, accurate, durable and complete outfit for irrigation work, laying tile drain, ditching, terracing, grading, road building, leveling buildings and foundations, running fences, setting out orchards, etc.,

Has a telescope with magnifying glasses like a surveyors instrument.

Designed for use by farmers and others who are not skilled in handling surveying instruments. Outfit includes tripod and sliding target-rod.

Level in neat wooden case.

Each..... \$15.00

Level Sights

Stanley

Can be attached to any level, for leveling from one given point to another a long distance away. When not in use, are easily detached, and can be packed away in a small space for future use.

No. 1 Level Sights for Wood Levels. Package: 1 pair weight, 1/4-pound, pair..... \$.75

No. 2 Level Sights for Iron Levels. Package: 1 pair, weight 1/4-pound, pair..... .75



Information Concerning Stanley Plumbs and Levels

Illustrated on Pages 321 and 322

This group of sectional cuts illustrates the principal mechanical features of the Stanley Plumbs and Levels that are used in combination with various woods, types of glasses and different forms of brass trim to make up the most complete line on the market.

Cut "D"—A level glass set in plaster as in a non-adjustable level.

Cut "A"—The plumb glass in the same form of setting, in the center.

Cut "B"—The adjustable setting of a level glass. The glass is set in plaster in a metal case. This is held at each end against a spiral spring by a screw engaged in a steel-plate which in turn is permanently screwed into the stock of the level. The top-plate is entirely independent of the setting, thus preventing any tampering with the adjustment.

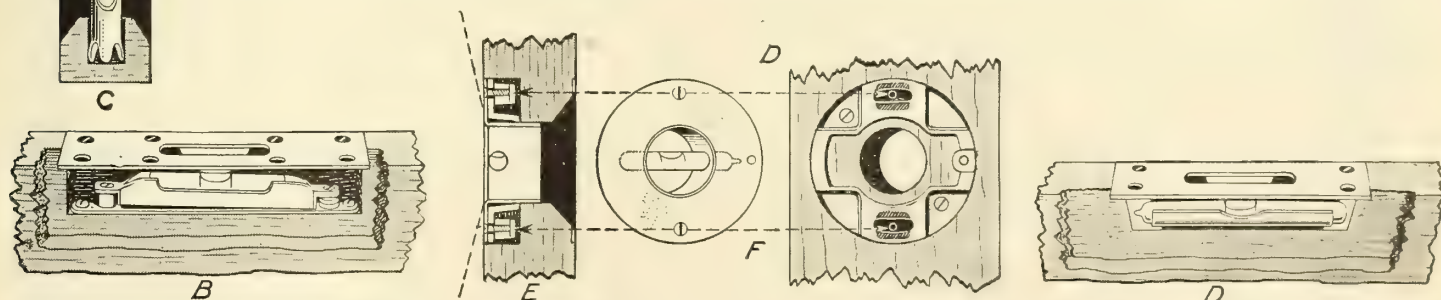
Cut "C"—The adjustable setting of a plumb glass. The glass is set in a metal case 3-pronged at the bottom. The top of this case is screwed to a plate set in the stock; this plate has a slot allowing for the accurate adjustment of the glass. This adjustment is also protected by an independent top-plate.

Cut "F"—The form of setting used for the plumb and the second level glass in the Duplex Levels. The glass is set in a brass cylinder flanged at one end. This flanged cylinder is secured to a specially formed casting so made that there is a leeway for rotating the flanged cylinder for the proper adjustment. This casting is firmly held into the level stock by screws. Casting can be turned to any point to permit of the glasses being used as a plumb or level, as desired.

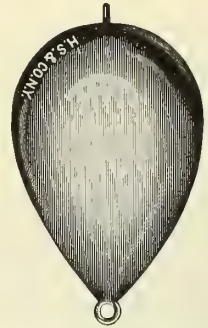
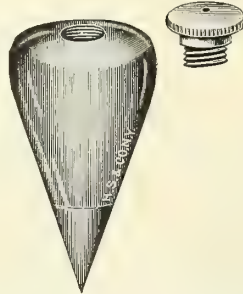
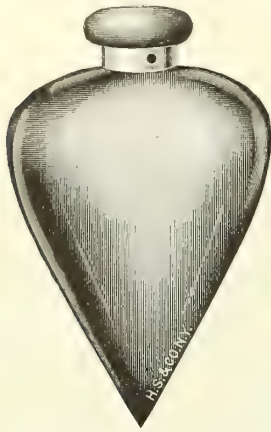
Cut "E"—Showing the position of the Duplex plumb glasses close to the surface of the level with the increased angle of vision as compared with the regular form shown directly above in cut "A".

Cut "G"—A cross section of No. 96 five-piece level, showing the novel method of securely holding the sections of all the 3-ply and 5-piece levels in place by a series of tongues and grooves running the entire length of the levels. Also showing the way the brass binding is secured on the corners of levels.

The "Hand-y" grip, a feature of all Stanley levels, gives the workman a secure hold on his level and decreases the chance of dropping the tool. Both Plumb and Level side views are blackened, a trade mark and exclusive Stanley feature, which concentrates the light directly on the bubble, thus enabling the user to quickly locate its position.



Plumb Bobs



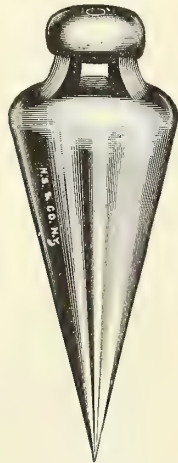
Cast Brass, Hardened Steel Point, Screw Top

Lead, Masons Wire

	Iron Japanned.	Adjusted Top	Dozen
No. 00	18 ounces		\$2.70
No. 0	42 ounces		5.80

		Dozen
No. 5	6 ounces	\$7.25
No. 6	11½ ounces	10.00

		Dozen
No. 13	16 ounces	\$6.25
No. 15	32 ounces	10.50



Iron, Nickel-Plated

		Dozen
No. 11	5⅓ ounces	\$2.00
No. 12	14⅔ ounces	2.50



"Can't-Roll"

		Dozen
Made from Hexagon steel, nickle-plated and polished. Top is screwed on.		
No. 10	8 ounces	\$4.00
No. 20	12 ounces	6.00

H. S. & Co. No. 50 Long Neck, Brass Composition, with Screwed-in Steel Point

Weight, ounces	4	8	12	16	20	24
Dozen	\$7.25	12.00	17.00	21.00	25.00	29.00

Starrett No. 87 Mercury

Each

These bobs are made from solid steel, bored and filled with mercury. Noteworthy features are their great weight in proportion to size, low center of gravity, small diameter, hardened and ground points, and the simple and effective device at top for fastening end of line after winding up. Each is provided with a braided silk line. The line is fastened without a knot and is securely held by the slotted neck at the top.

4 inches long, ½-inch diameter, 3½ ounces	\$1.00
5 inches long, ⅝-inch diameter, 6 ounces	1.50
5½ inches long, ⅞-inch diameter, 12 ounces	2.00
6 inches long, 1-inch diameter, 16 ounces	2.50

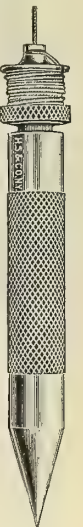
Starrett No. 177 Solid Steel

Each

The same in design as No. 87, but made from solid steel.	
4 inches long, ½-inch diameter, 2¾ ounces	\$.75
5 inches long, ⅝-inch diameter, 5 ounces	1.00
5½ inches long, ⅞-inch diameter, 8½ ounces	1.50
6 inches long, 1-inch diameter, 14½ ounces	2.00



H. S. & Co.



Nos. 87 and 177

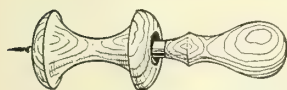
Pencils, Crayons, Chalk and Chalk Lines

Mason and Chalk Lines



No. 5	Braided, 84-foot hanks, dozen hanks.....	\$1.50
No. 7½	Cotton, light, 20-foot hanks, dozen hanks.....	.60
No. 10½	Cotton, heavy, 20-foot hanks, dozen hanks.....	.84
No. 6	Mason linen, light, 84-foot hanks, dozen hanks.....	3.13
No. 15	Mason linen, white, twisted, in ¼-pound balls, dozen	1.60
No. 24	Mason linen, white, twisted, in ½-pound balls, dozen	3.20
No. 27	Mason cotton, 1-pound hanks, about 600 feet to pound, pound.....	.50
No. 36	Mason cotton, 1-pound hanks, about 450 feet to pound, pound.....	.50

Chalk Line Reels



Hardwood, polished, 3 inches long, 2 inches diameter.

No. 14	With scratch awl, dozen.....	\$.95
No. 15	With scratch awl, and 60 feet of line, dozen.....	2.25

Carpenters Chalk

Red	In half-spheres, gross.....	\$1.20
White	In half-spheres, gross.....	.96
Blue	In half-spheres, gross.....	1.20

White Chalk Crayons

For School Use

1 gross in a box, gross.....	\$.18
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Metal Workers Crayon

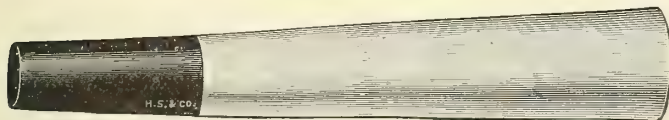


Soapstone

These are made from selected soapstone (or talc) and the marks made with them will not disappear when used on iron and heated. ¼-inch square, 5 inches long, gross..... \$2.00

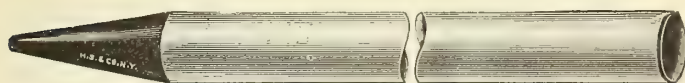
No. 524	⅜x½x5 inches, gross.....	4.00
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Marking Crayons



Black, 5 inches long. For all marking purposes. Will not smut, blur or wash off. Dozen..... \$.54

Checking Crayons



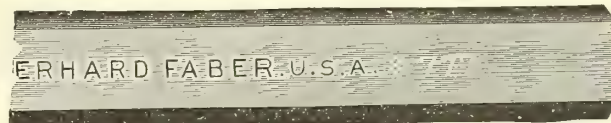
Black, 6½ inches long. Will not smut, blur or wash off. Dozen \$.50

Lumber Pencils



No. 361	Black, 4¾ inches long, ½ inch diameter, dozen.....	\$.50
No. 520	Red, 4¾ inches long, ½ inch diameter, dozen.....	.85
No. 521	Blue, 4¾ inches long, ½ inch diameter, dozen.....	.85

Carpenter or Framers Pencils



No. 777	Octagon Shape Plumb Line, yellow polish, 7-inch. Special fine quality.	
Dozen.....	\$.50 Gross.....	\$ 4.90
No. 807	Octagon shape, mottled finish, 7-inch.	
Dozen.....	\$.50 Gross.....	4.90
No. 757	Octagon shape, natural finish 7-inch.	
Dozen.....	\$.50 Gross.....	4.50
No. 727	Oval, plain cedar, 7-inch	
Dozen.....	\$.30 Gross.....	2.80
No. 729	Oval, plain cedar, 9-inch	
Dozen.....	\$.35 Gross.....	3.40

Gage, Octagon

Plain cedar, 7 inches.

Dozen.....	\$.60 Gross.....	6.00
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Weather-proof Pencils



No. 6639 Round, black polish, with extra thick soft black lead. Specially desirable for mechanics and railroad and express work. Dozen..... \$.50 Gross..... \$4.50

Glass Marking Pencils

No. 785 Round, blue polish, thick blue lead. Specially adapted for marking on all glazed surfaces. Dozen..... \$1.25 Gross..... \$12.00

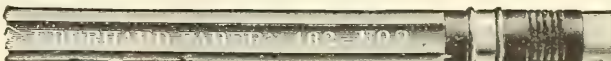
Editors or Press Pencils

No. 6329 Grade 1, round, natural polish, extra thick, soft lead. Dozen..... \$.50 Gross..... \$4.50

Mongol Pencils



No. 480 Round, yellow polish, with metal tip and red rubber, in grades 1, 2, 3, or 4. Dozen..... \$.50 Gross..... \$5.40



No. 482 Hexagon, yellow polish with metal tip and red rubber, in grades 1, 2, F, 3 or 4. Dozen..... \$.50 Gross..... \$5.50

Mongol Drawing Pencils

No. 481 Same as No. 482, except without rubber, and in twelve grades, as follows, 6B, 3B, 2B, B, HB, F, H, 2H, 3H, 4H, 5H, 6H. Dozen..... \$.50 Gross..... \$5.40

Explanation of Grading of Lead Pencils Commercial Styles

No. 1	Very Soft	No. 3	Medium Hard
No. 2	Soft	No. 4	Hard
No. F	Firm or Medium Soft	No. 5	Very Hard

Drawing Styles

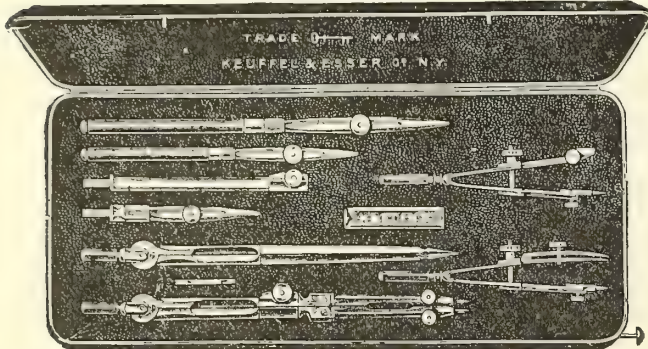
No. 6B	Softest and Blackest	No. H	Medium Hard
No. 5B	Extra Soft and Extra Black	No. 2H	Hard
No. 4B	Extra Soft and Very Black	No. 3H	Very Hard
No. 3B	Extra Soft and Black	No. 4H	Extra Hard
No. 2B	Extra Soft	No. 5H	Extra Hard and Very Firm
No. B	Very Soft	No. 6H	Hardest
No. HB	Soft		
No. F	Firm or Medium Soft		

Drawing Instruments

Keuffel & Esser

Extra Fine German Instruments with Pivot-Joint. Rolled German Silver, Fine Steel Points, Highly Finished, in Fine Morocco Pocket Cases, Velvet Lined

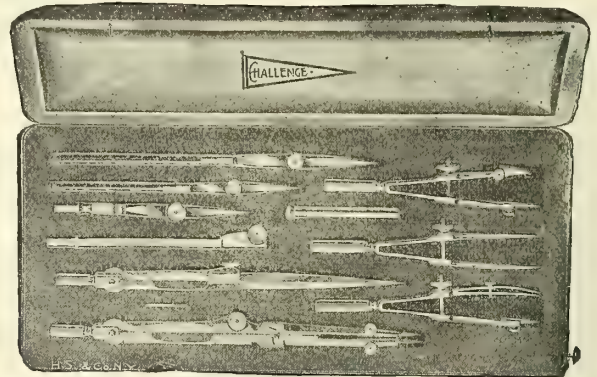
German Silver; Steel Points. Finely Made and Finished. Velvet-Lined Cases



- No. 218 Bar-lock Pocket Case. Each \$12.50
- Containing { 1 Compass, 6½ inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
1 Divider, 5½ inches
1 Each Steel Spring Bow Pen and Pencil
1 Each Drawing Pen, Ebony Handle, upper blade with spring, 4½ and 5½ inches
1 Box with Leads

- No. 218P Pocket Case, folding flaps, containing same assortment as No. 218. Each 12.70

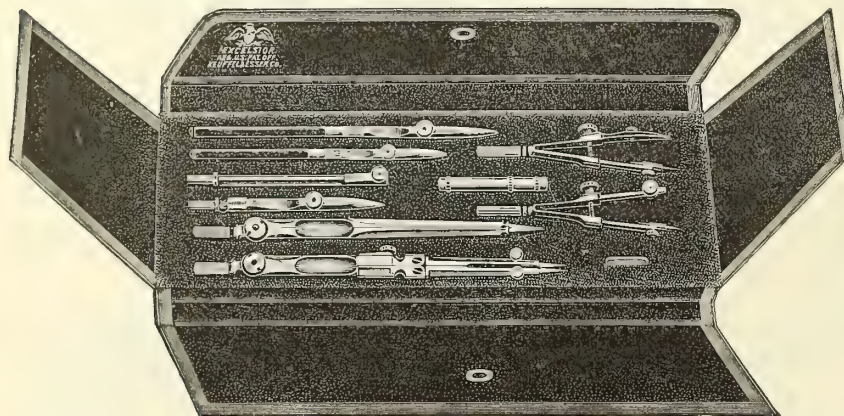
German Silver; Steel Points. Velvet-Lined Cases



- No. 214 Bar-lock Pocket Case. Each \$11.80
- Containing { 1 Compass, 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil Point and Lengthening Bar, 2 Shouldered Needles
1 Hairspring Divider, 6 inches
1 Steel Spring Bow Divider, 3½ inches
1 Steel Spring Bow Pen, 3½ inches, with Needle-Point
1 Steel Spring Bow Pencil, 3½ inches with Needle-Point
1 Each, Drawing Pen, 4½ inches and 5½ inches, with spring blades
1 Box with Leads

- No. 214F Pocket Case with folding flaps, containing same assortment as No. 214. Each 12.40

German Silver of Moderate Price



- No. 206 Bar-lock Pocket Case. Each \$4.50
- Containing { 1 Compass, 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil-Point and Lengthening Bar
1 Divider, 6 inches
1 Drawing Pen, 5½ inches, with spring blade
1 Box with Leads

- No. 206F Pocket Case with folding flaps, containing same assortment as No. 206. Each 4.80

- No. 207 Bar-lock Pocket Case. Each 5.80
- Containing { 1 Compass 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil Point and Lengthening Bar
1 Divider, 6 inches
1 Steel Spring Bow Pen, 3½ inches, with Needle-Point
1 Drawing Pen, 5½ inches, with spring blade
1 Box with Leads

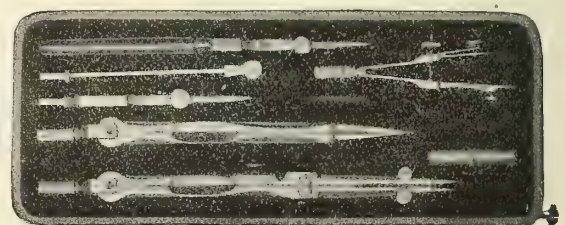
- No. 207F Pocket Case with folding flaps, containing same assortment as No. 207. Each 6.20

- No. 208 Bar-lock Pocket Case. Each 7.70
- Containing { 1 Compass, 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil Point and Lengthening Bar
1 Divider, 6 inches
1 Each, Steel Spring Bow Pen and Pencil, 3½ inches, with Needle Point
1 Each, Drawing Pen, 4½ inches, 5½ inches, with spring blade
1 Box with Leads

- No. 208F Pocket Case with folding flaps, as illustrated, containing same assortment as No. 208, each 8.20

- No. 209 As No. 208, but also including a pair of 3½-inch steel-spring Dividers, and 6-inch Hair-spring Dividers in place of the regular dividers, each 9.40

- No. 209F Pocket Case with folding flaps, containing same assortment as No. 209, each 10.00



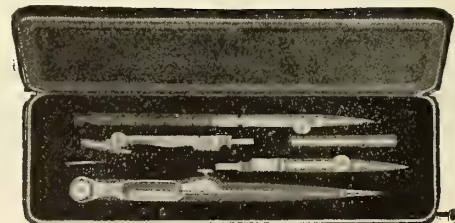
- No. 207½ Pocket Case, with bar-lock. Each \$3.40
- Containing { 1 Compass, 6 inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
1 Divider, 5½ inches
1 Spring Bow Pen, 3¼ inches, with Needle-Point
1 Drawing Pen, 5¼ inches, upper blade with spring
1 Box with Leads

- No. 207½F Pocket Case with folding flaps, containing same assortment as No. 207½. Each 3.70

- No. 227 Pocket Case with bar-lock. Each 4.40
- Containing { 1 Compass, 6 inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
1 Divider, 5½ inches
1 Steel Spring Bow Divider, 3¼ inches
1 Steel Spring Bow Pen, 3¼ inches, with Needle Point
1 Steel Spring Bow Pencil, 3¼ inches, with Needle Point
1 Drawing Pen, 5¼ inches, upper blade with spring
1 Box with Leads

- No. 227F Pocket Case with folding flaps, containing same assortment as No. 227. Each 4.70

Nickel-Plated, of Moderate Price



- No. 106 Bar-lock Pocket Case. Each \$1.15
- Containing { 1 Compass, 5 inches, with Pen and Pencil Point
1 Ruling Pen, 5 inches, with black handle
1 Box with Leads

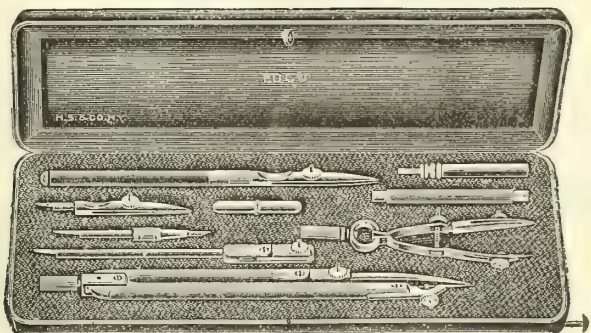
- No. 109 Bar-lock Pocket Case. Each 1.76
- Containing { 1 Compass, 5 inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
1 Divider, 5 inches
1 Ruling Pen, 5 inches, with black handle
1 Box with Leads

For Drafting Protractors, see page 298

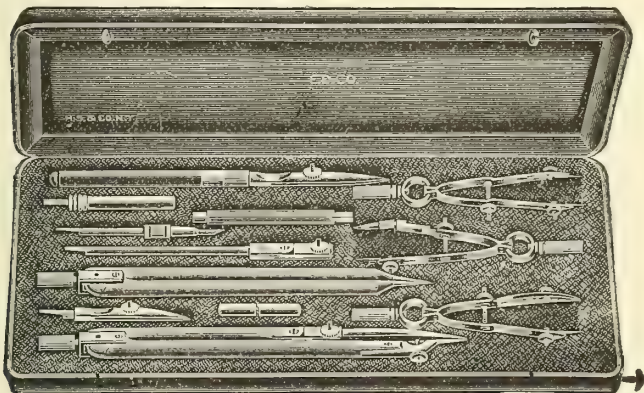
Cases of Drawing Instruments

Dietzgen

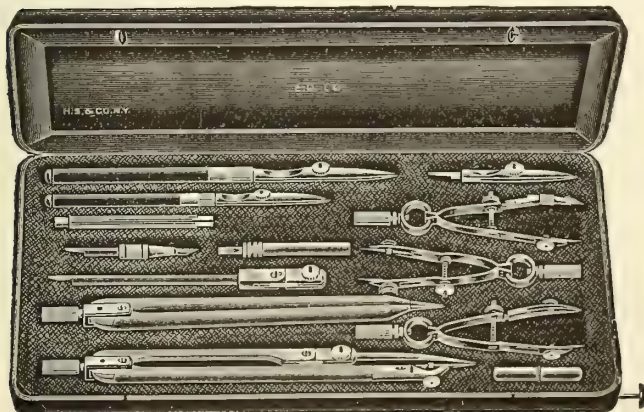
German Silver and Steel Points in Morocco Pocket Cases
Lined with Velvet



- No. 1127 Bar-lock Pocket Case, each\$5.10
- Containing
Ruling Pen, 5¼-inch Spring Blade.
Circular Steel Spring Bow Pen, 3½-inch metal Handle.
Compasses, 6 inches, with Handle Straightening Device, Fixed Needle Point,
Divider Point, Pen, Pencil Point and Lengthening Bar.
Box with 3 Needle Points, Metal Handle for Pen, Pencil and Needle Parts,
Combination Key and Lead Box.



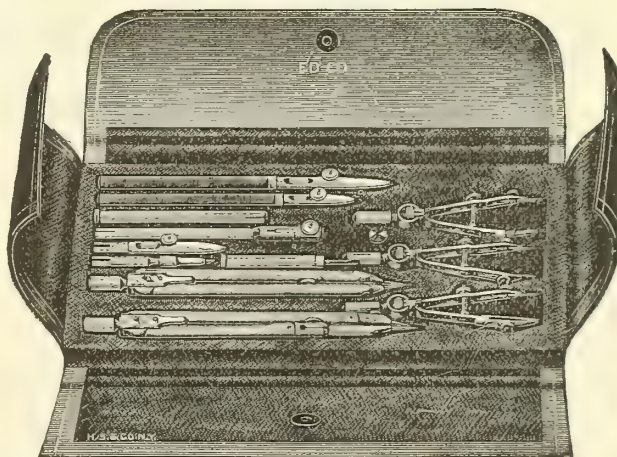
- No. 1130 Bar-lock Pocket Case, each..... \$7.90
- Containing
Ruling Pens, 5¼-inch Spring Blade.
Circular Steel Spring Bow Dividers, 3½-inch Metal Handle.
Circular Steel Spring Bow Pencil, 3½-inch Metal Handle.
Circular Steel Spring Bow Pen, 3½-inch Metal Handle.
Plain Dividers, 6 inches, with Handle Straightening Device.
Compasses, 6 inches, with Handle Straightening Device, with Fixed Needle
Point, Divider-Point, Pen, Pencil-Point and Lengthening Bar.
Box with 3 Needle Points, Metal Handle for Pen, Pencil, and Needle Parts.
Combination Key and Lead Box.
- No. 1131 As above but in Pocket Case, folding flaps, each... \$8.25



- No. 1134 Bar-lock, Pocket Case, each..... \$9.15
- Containing
Ruling Pen, with 4-inch Spring Blade.
Ruling Pen, 5¼-inch Spring Blade.
Circular Steel Spring Bow Dividers, 3½-inch Metal Handle.
Circular Steel Spring Bow Pencil, 3½-inch Metal Handle.
Circular Steel Spring Bow Pen, 3½-inch Metal Handle.
Hairspring Dividers, 6 inches, with Handle Straightening Device, Compasses,
6 inches, with Handle Straightening Device, with Fixed Needle Point, Divider
Point, Pen, Pencil Point, and Lengthening Bar.
Box with 3 Needle Points, Metal Handle for Pen, Pencil and Needle Parts.
Combination Key and Lead Box.
- No. 1135 As above but in Pocket Case, folding flaps, each.... \$9.55

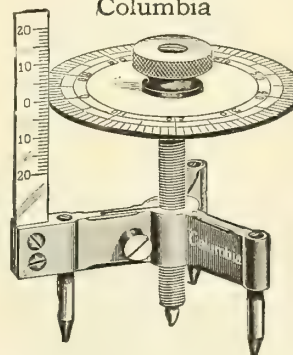
Highest Grade

Each Instrument is Stamped Exello
Made of Cold-Rolled German Silver with
Best English Tool Steel
Leather Cases Lined with Silk Velvet



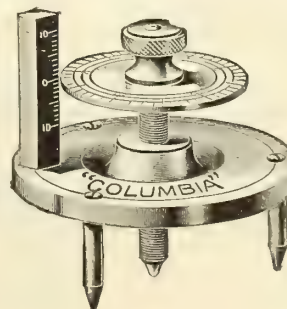
- No. 795 Pocket Case, folding flaps, containing—
Ruling Pen, 4½-inch Metal Handle.
Ruling Pen, 5½-inch Metal Handle.
Circular Steel Spring Bow Dividers, 3½-inch Metal Handle.
Circular Steel Spring Bow Pencil, 3½-inch Metal Handle.
Circular Steel Spring Bow Pen, 3½-inch Metal Handle.
Hairspring Dividers, 5¼-inch, with Handle Straightening Device, Replace-
able Steel Points.
Compasses, 6 inches, with Handle Straightening Device, Replaceable Needle
Points, Pen and Pencil Points, Lengthening Bar and Straightening Device
Combination Key and Lead Box.
Center Tack, ¾-inch Diameter.
Metal Handle, 3-inch, with Four Needle Points.
- Each..... \$23.50

Spherometers Columbia



Well finished, and the higher priced ones are very accurate.
The three feet stand over a two-inch circle, and the measuring screw takes in 40 millimeters.

- No. 55 Reading 100ths of millimeters, for students use..... \$5.00
No. 60 Reading 100ths of millimeters, very accurate..... 10.00
No. 65 Reading 1000ths of millimeters, very accurate 25.00

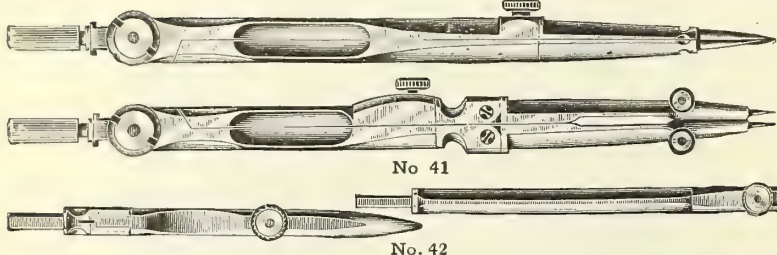


Is a very popular instrument, screw has two threads to each millimeter and disk is divided into 50 parts.

- No. 50..... \$6.00
For Drafting Protractors, see page 298

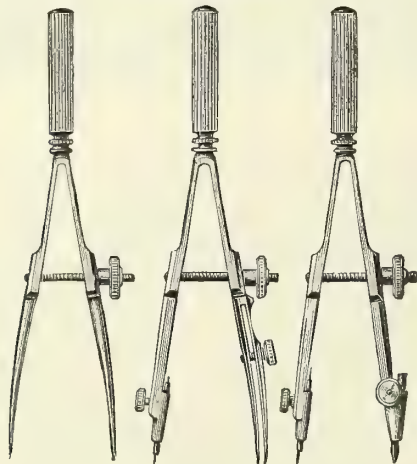
Drawing Instruments

German Silver Steel Points
Dividers and Compasses



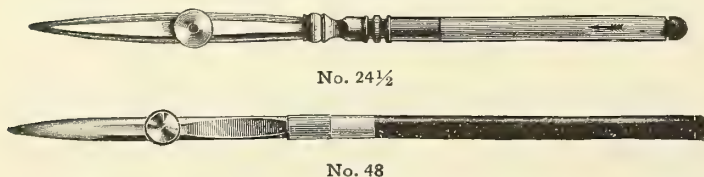
- No. 40 Divider, 6-inch, similar to No. 41, but without removable point. Each \$.75
No. 41 Hairspring Divider, 6-inch. 1.15
No. 42 Compasses, 6-inch, with fixed needle-point, pen-point, with spring-blade, pencil-point and lengthening bar, 2 shouldered needles. 1.90

Spring Bows



- No. 45 Steel Spring Dividers, 3½-inch, German silver handle. Each \$.60
No. 46 Steel Spring Bow Pen, with spring blade, 3½-inch, needle-point, German silver handle75
No. 47 Steel Spring Bow Pencil, 3½-inch, needle-point, German silver handle.75

Drawing or Ruling Pens



- No. 48 German silver, ebony handle, 4½-inch, with joint. \$.45
No. 24½ German silver, white handle, 5½-inch, with pin.50

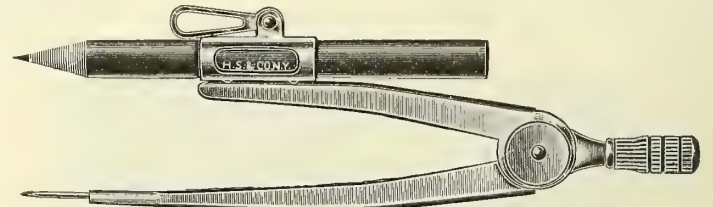
Proportional Dividers

German Silver



- No. 10 6¼-inch, in case. Each \$2.40
No. 11 7-inch, with rack movement, graduated for lines and circles, in case. 6.00

Compasses



- Eagle, No. 576 Nickel-plated, with pencil, dozen. \$1.50



- Eagle No. 569 Nickel-plated, with metal holder for lead and extra box of leads, dozen. \$3.60

Thumb Tacks

Solidhed



The finest Thumb Tack manufactured

- | | Gross |
|--|--------|
| No. 10 Steel, ⅜-inch diameter. | \$.50 |
| No. 12 Steel, ½-inch diameter. | .60 |
| No. 13 Brass, ⅜-inch diameter. | 1.00 |
| No. 14 Brass, ½-inch diameter. | 1.10 |

H. S. & Co.

Punched out of one piece sheet steel, 1000 in a package

- | | |
|--|--------|
| No. 1 ⅝-inch diameter head, thousand. | \$.70 |
| No. 2 ⅞-inch diameter head, thousand. | .80 |
| No. 3 1⅞-inch diameter head, thousand. | 1.00 |
| No. 4 2⅞-inch diameter head, thousand. | 1.50 |

Drawing Paper

Mechanical White

For Pen Work

- | | Ream |
|--|--------|
| Extra fine quality, 8½x11 inches. | \$1.75 |
| Extra fine quality, 11 x17 inches. | 3.25 |
| Extra fine quality, 17 x22 inches. | 6.00 |

Springfield White

For Pencil, Water Color or Crayon

- | | Ream |
|-------------------------------------|--------|
| Fine quality, 6x 9 inches. | \$.50 |
| Fine quality, 9x12 inches. | 1.00 |
| Fine quality, 12x18 inches. | 2.00 |

Springfield Gray

For Pencil, Water Color or Crayon

- | | Ream |
|-------------------------------------|--------|
| Fine quality, 6x 9 inches. | \$.50 |
| Fine quality, 9x12 inches. | 1.00 |
| Fine quality, 12x18 inches. | 2.00 |

Manila

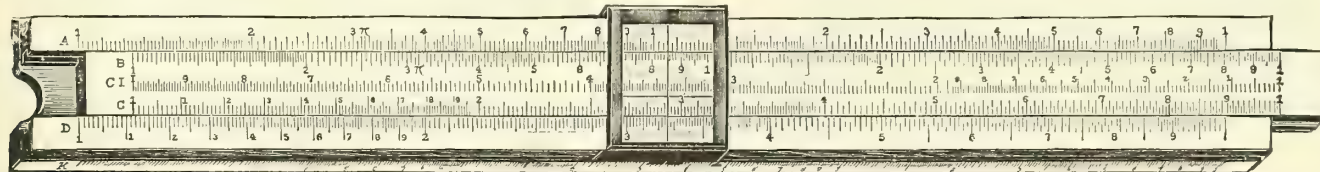
For Common Use

- | | Ream |
|--|--------|
| For common use, 6x9 inches. | \$.20 |
| For common use, 9x12 inches. | .40 |
| For common use, 12x18 inches. | .80 |
| Un glazed. In rolls 36 inches wide. Rolls contain about 125 to 150 pounds. | Pound |
| In full roll lots. | \$.09 |
| In 10 pound lots. | .10¼ |

For Drafting Protractors, see page 298

Slide Rules

The principle involved in the Slide Rule is the graphic representation of logarithmic values, but a knowledge of logarithms is not required for the successful manipulation of this rule. The principles are few and simple and can easily be mastered. Arithmetical, algebraic and trigonometrical problems can be solved more easily and rapidly and with much less chance of error than by ordinary calculation. It is useful to anybody who has any figuring to do. Complete plain directions are furnished with each rule.



No. 4053-3

Mannheim

No. 4041 10-inch, engine divided, divisions on white faces, glass indicator. In plain morocco case.
Each..... \$4.50

The Polyphase Slide Rule has in addition to the regular scales of the Mannheim, a scale of cubes on the vertical edge of the rule and an inverted scale (CI) on the face of the slide, which scales may readily be used in conjunction with the other scales by means of the indicator. This arrangement combines some of the features of the Duplex Rule with the regular Mannheim type.

The inverted scale enables taking three factors at one setting of the slide, and reading reciprocals by means of the indicator.

No. 4053-3 10-inch, in morocco case, with book of instructions.
Each..... \$5.00

Multiplex, with Mack Adjustment

No. 1762B 10-inch, with cube and reciprocal scales. 5-inch divisions on white ivory. Glass indicator and Mack improved automatic adjustment. In case, with book of instructions.
Each..... \$5.00



Shows Mack improved automatic adjustment, which makes it unnecessary to use a screw-driver each time atmospheric conditions change, as it automatically adjusts the rule.

The Roylance Electrical Slide Rule

Can be used for all the calculations made with the ordinary Slide Rule. In addition to the usual scales, it carries a series of scales or gauge marks by means of which the different properties of copper wire, such as size, conductivity, weight, etc., may be determined without the use of tables. The gauge marks, graduated on the square edge of the Rule, cover all sizes of the B. & S. standard wire gauge between No. 0000 and No. 40, and are brought into alignment with the graduations on the face of the Rule by means of the runner which is provided with an index.

Scales showing the (Underwriter's) carrying capacity for different kinds and sizes of wires are placed in the groove in the body of the Rule beneath the slide. The upper row of figures shows the ampere carrying capacity of rubber covered wire; the second row, weather-proof wire; third row, rubber covered cable; fourth row, weather-proof cable.

For the third and fourth rows, the gauge marks read hundred thousand circular mils. No. 8 reads 800,000 cm.; No. 14, 1,400,000 cm., etc. These scales are read in connection with the gauge marks by means of the runner.

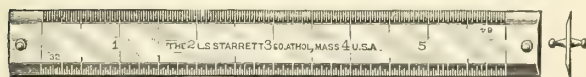
Other features embodied in the rule are the extra hair lines on the runner, the special gauge mark (746) for the conversion of horsepower and kilowatts, and a special set of figures giving the degree centigrade corresponding to resistance in ohms per 1,000 feet.

No. 4133 Roylance Electric Slide Rule, adjustable, 8-inch Mannheim style, engine divided on white facings, glass indicator, in leather case, with directions.

Each..... \$5.00

Drafting Scales

Steel Starrett



Has tilting studs, so placed that each of its four corners, with different graduations, will come in contact with the paper by its own weight when resting on the studs, with the back edge raised at an angle of about 30 degrees. Graduated on each corner in parts of inches as follows:

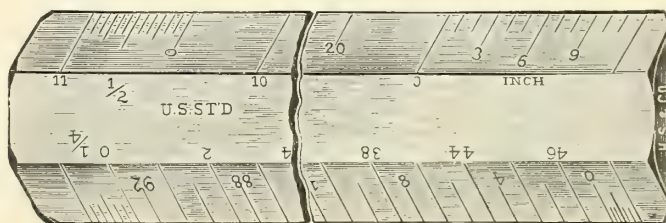
Inches.....	6	12
No. 405 10ths, 40ths, 50ths, 100ths, each.....	\$1.00	\$1.50
No. 405A 8ths, 16ths, 32ds, 64ths, each.....	1.00	1.50

Graduated in the Metric System, one edge of each side in millimeters, the other edge in $\frac{1}{2}$ millimeters.

Centimeters.....	15	30
No. 405M Each.....	\$1.00	\$1.50

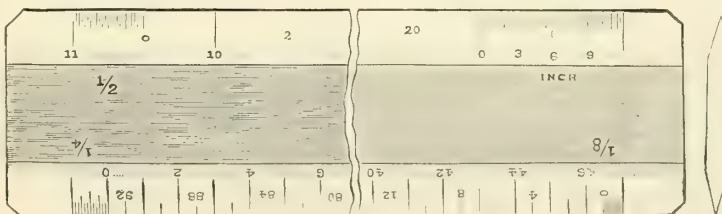
Prices for above rules of graduations different than listed, quoted on application.

Boxwood Flat



Graduated $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ and 1 inch to the foot.

No. 536 12 inches long.....	Dozen	\$5.00
No. 580 With white edge, 6 inches long.....		7.50
No. 581 With white edge, 12 inches long.....		10.00



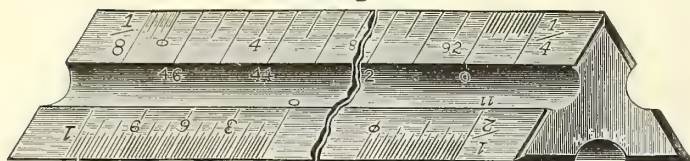
Beveled on both sides. Graduated into $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, 1 $\frac{1}{2}$ and 3 inches to the foot.

No. 546 12 inches long.....	Dozen	\$10.00
No. 591 White edge, 12 inches long.....		22.50

See next page for Triangular Boxwood Scales. For Drafting Protractors, see page 298

Drafting Scales

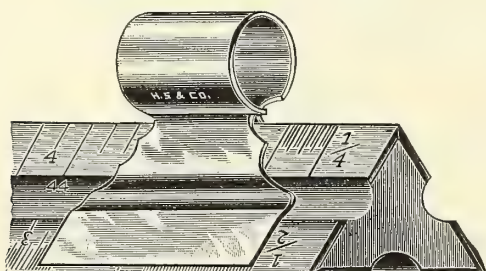
Boxwood
Triangular



Graduated $\frac{3}{32}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 3 inches to the foot, and one edge 16 to the inch.

No. 488	6 inches long	Dozen	\$6.25
No. 489	12 inches		7.50
No. 574	With white edge, 6 inches long		20.00
No. 575	With white edge, 12 inches long		27.50

Scale Guards



No. 495 Nickel-plated, for triangular scales, dozen..... \$3.00

Irregular Curves



No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
Shape No.	1	2	3	4	5	6	7
No. 174	Wood, dozen.	\$2.80	3.25	3.50	3.50	3.50	3.25
No. 176	Transparent						
	amber or celluloid, doz.	4.50	6.00	6.75	6.75	6.75	6.00

Shifting Parallel Rules

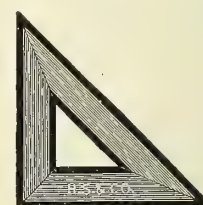


No. 200	6 inches long.	Ebony	Each	\$.70
No. 200	12 inches long.	Ebony		1.00
No. 200	18 inches long.	Ebony		1.75

Triangles



30 x 60 Degrees

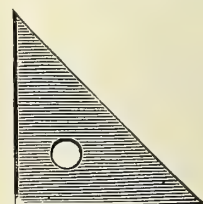


45 x 45 Degrees

		30x60 Degrees			
Inches		7	9	11	13
No. 124	Cherry, dozen	\$2.20	2.80	3.40	
No. 132	Mahogany, ebony lined, dozen	5.65	6.90	9.40	12.50
No. 145	Transparent amber or celluloid, dozen	5.93	7.68	10.80	
		45x45 Degrees			
Inches		5	6	8	10
No. 125	Cherry, dozen	\$2.00	2.20	2.80	3.50
No. 133	Mahogany, ebony lined, dozen	5.00	5.65	6.90	9.40
No. 146	Transparent amber or celluloid, dozen	5.93	6.75	9.90	12.00



30 x 60 Degrees



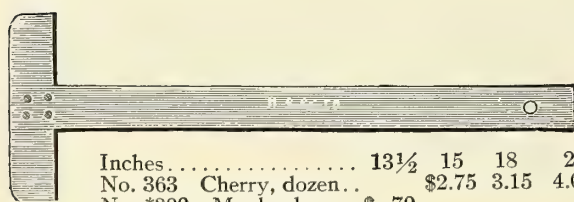
45 x 45 Degrees

These are especially adapted for manual training school work.

No.	Size	Material	Dozen
No. 100	30x60 Degrees	4 1/2-inch Maple	\$.72
No. 101	45x45 Degrees	3-inch Maple	.72

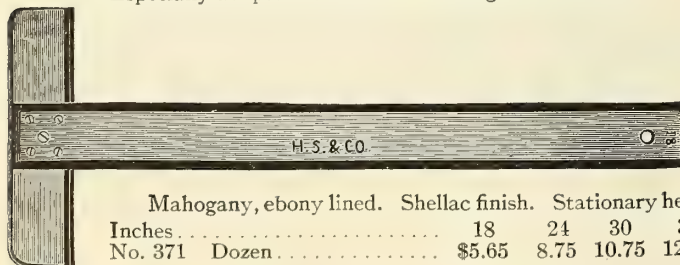
T-Squares

Stationary Head



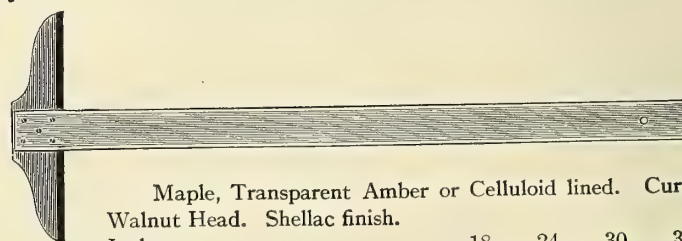
Inches	13 1/2	15	18	24	30	36
No. 363	Cherry, dozen	\$2.75	3.15	4.00	4.75	5.75
No. *300	Maple, dozen	\$.70				

*Especially adapted for manual training school work.



Mahogany, ebony lined. Shellac finish. Stationary head.

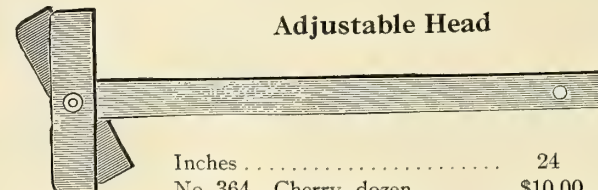
Inches	18	24	30	36	
No. 371	Dozen	\$5.65	8.75	10.75	12.50



Maple, Transparent Amber or Celluloid lined. Curved Walnut Head. Shellac finish.

Inches	18	24	30	36	
No. 373	Dozen	\$18.00	22.50	30.40	37.15

Adjustable Head



Inches	24	30	36	
No. 364	Cherry, dozen	\$10.00	11.25	12.40

For Drafting Protractors, see page 298

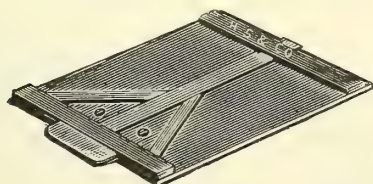
Drawing Boards



- No. 444 Has cleats on under side as illustration.
No. 442 Without cleats, flush on both sides.

		Each
No. 442	18x24 inches, 1/2-inch thick. Clear white pine.....	\$1.13
No. 442	20x26 inches, 7/8-inch thick. Clear white pine.....	1.50
No. 442	23x31 inches, 7/8-inch thick. Clear white pine.....	1.88
No. 442	31x42 inches, 7/8-inch thick. Clear white pine.....	2.75
No. 444	18x24 inches, 1/2-inch thick. Clear white pine.....	1.50
No. 444	20x26 inches, 7/8-inch thick. Clear white pine.....	2.00
No. 444	22x31 inches, 7/8-inch thick. Clear white pine.....	3.13
No. 444	31x42 inches, 7/8-inch thick. Clear white pine.....	5.00

Drawing Kits

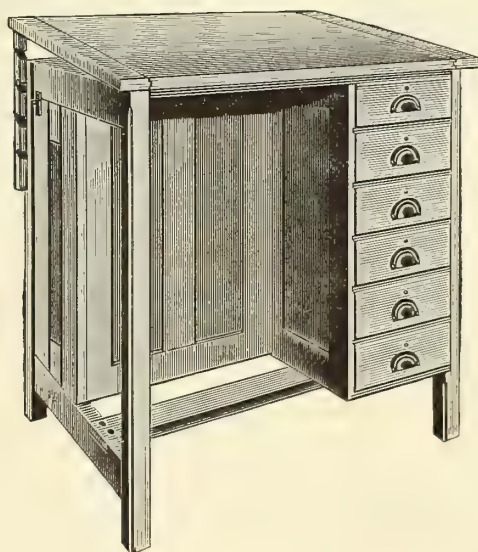


Each Kit consists of 1 Drawing Board, 1 T-Square and 2 Triangles.

	Each
No. 1 10x12-inch board.....	\$.35
No. 2 13x19-inch board.....	.60
No. 3 17x22-inch board.....	1.00

Drawing Table

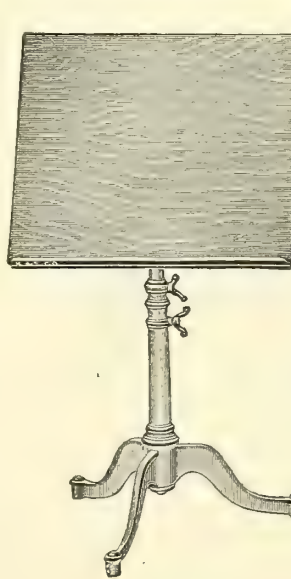
No. 3



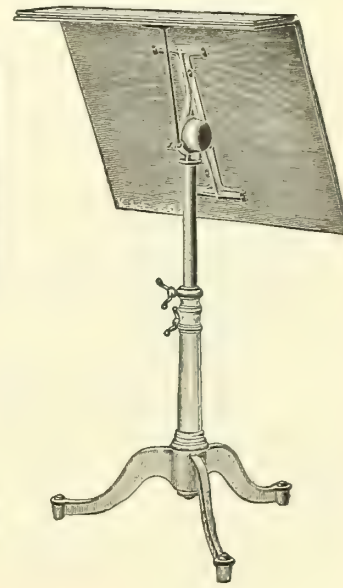
Each
With adjustable top, weight, 150 pounds..... \$23.00
With stationary top, weight, 140 pounds..... 21.00
Dimensions—Top, 28x36 inches. Height, 40 inches. Drawers, 4 inches high, 9 inches long, 22 inches deep. Drawing Board Cabinet, 9 inches wide, 24 1/2 inches high, 20 inches deep. Provides either a stationary or an adjustable top, ample foot rails and foot room underneath and a compact arrangement of private lockers and drawing board cabinet. The design will appeal to those who want a compact and artistic table representing exceptional efficiency for space it occupies.

For Drafting Protractors, see page 298

College Drawing Tables



No. 2560



No. 2561

Our College Drawing Tables possess all the features of an efficient and satisfactory drawing stand for the class room.

	Each
No. 2560 College Drawing Table, ash top, 21x24 inches.....	\$8.50
No. 2561 College Drawing Table, ash top, 22x26 inches.....	9.00
No. 2561 With Accessory T-Square.....	10.25

These Tables are crated for shipment without extra charge.

Accessories for College Drawing Tables

T. S. Top Shelf, 6 1/2 inches wide, remaining horizontal at any inclination of the table top, extra, each.....	\$1.25
D. S. Top Shelf, as above but with two drawers, extra, each...	2.50
Casters on College Drawing Tables (2 casters and 1 iron foot), extra, per table.....	.50

Books

Mechanical Drawing for Trade Schools

By Charles C. Leeds

Fully Illustrated, 10 3/4 x 7 7/8 inches

Machinery Trades Edition. 58 lessons, 150 pages.....	\$2.00
High School Edition. 40 lessons.....	1.25

(Author is assistant professor of mechanical drawing at the Carnegie Institute of Technology.)

This work on Mechanical Drawing has been prepared with the purpose in view of thoroughly grounding young draftsmen and others of the various machinery trades in the principles of mechanical drawing. Each lesson will guide the student by easy steps, illustrate some fundamental point in mechanical drawing, and work as a whole towards the development of a creative draftsman. The text of the two editions is identical as far as lesson 40. The larger edition containing 18 additional advance problems.

Mechanical Drafting

By H. W. Miller

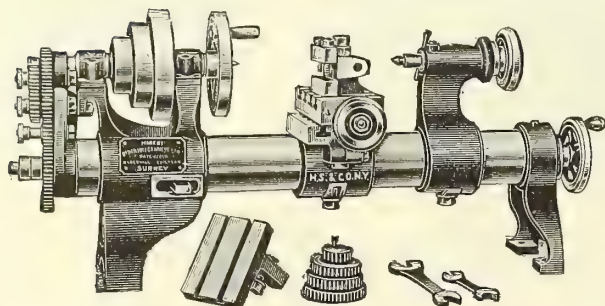
A new departure among text books on mechanical drawing. It is intended to supplement the work of the instructor in such a way as to reduce lecture work to a minimum. It is written about a flexible course but may be used equally well with any course. The book abounds in illustrations, both line drawings and half-tones. It shows a wise selection of material, a keen insight into the work of the draftsman and a thorough knowledge of the principles and method of teaching. Above all it is a practical treatment of subject matter and a student's text easily adaptable to varied schools and conditions. Contains 219 pages and 225 illustrations, and is bound in black flexible leather.
Pocket book size..... \$1.50

Light Precision Lathe

Drummond

4-inch with 30-inch Bed

Especially Adapted for Model Makers and Industrial School Work



Light Precision Lathe complete with Accessories

This self-acting, sliding, boring, screw-cutting and milling Lathe is of the finest precision workmanship throughout. The bed is of cast steel, very stiff and of circular form, and is ground accurately to a limit of error one ten-thousandth of an inch. The mandrel is steel, 1-inch diameter in bearings ground dead true after running. The nose of mandrel is tapped for $\frac{3}{4}$ -inch and bored No. 1 Morse taper. Centers are cast steel, hardened and interchangeable. The poppet head has set over adjustment for taper work and has steel barrel and polished hand wheel. The lead screw is fitted in centers of bed, completely out of the way of chips and dirt. The saddle is 1-slotted, and therefore suitable for milling and boring. The cross slide can be turned to any angle, and is graduated. A set of nine change wheels is included, and will cut 16 U. S. threads from 5 to 48 and many odd and finer threads can also be cut. A reversing wheel with secondary quadrant is provided, so that left or right-hand screws can be cut. All gear wheels are cut from solid blanks.

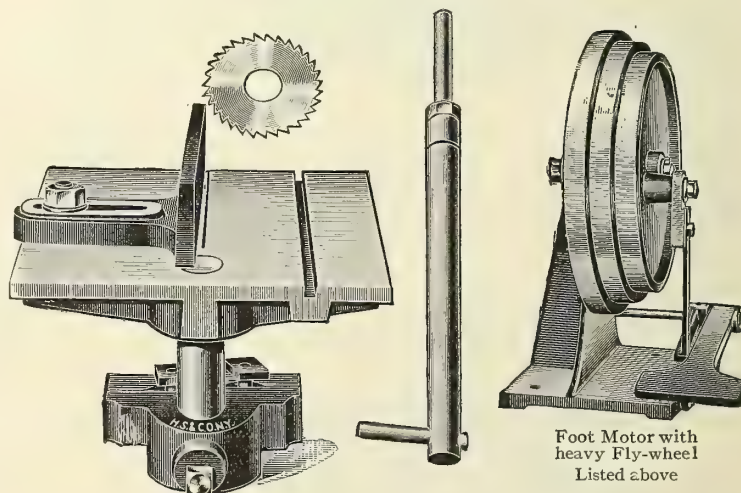
Complete Lathe, with accessories as shown.....	\$50.00
Extra for Countershaft for power.....	14.00
Extra for Foot Motor with heavy Fly-wheel.....	12.00
Extra for complete Stand with Treadle for foot power.....	25.00

Saw Table

Complete with best quality Circular Saw, suitable for metal or hard wood, and including Saw Spindle.

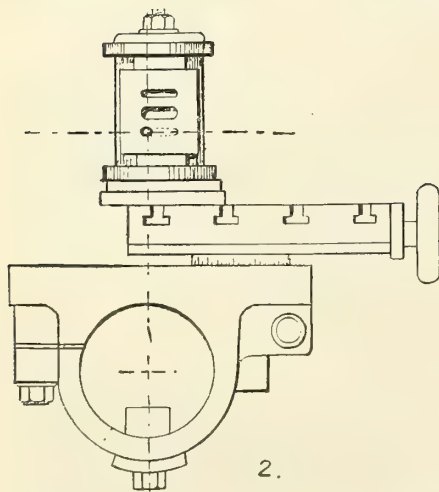
These Tables are surfaced true, are capable of being raised or lowered, are fitted with an adjustable fence, and are also provided with a slot milled from the solid in which any special temporary guide for odd shapes or angles can be guided across the Saw.

Each..... \$21.00



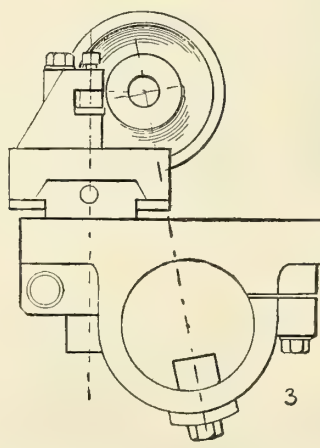
Foot Motor with heavy Fly-wheel
Listed above

Some Positions of Slide Rest When Turning and Milling



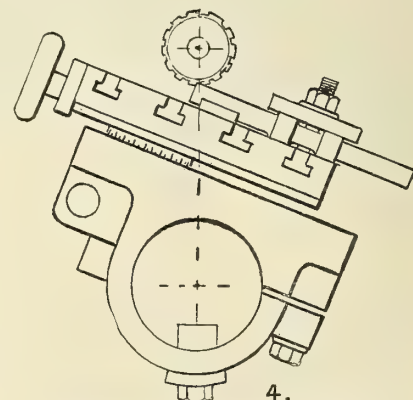
2.

Milling Steam and Exhaust Ports in Cylinder. Packing pieces can be put, as shown, under cylinder, these being as thick as the distance between ports and removed one by one as ports are cut.



3

Turning Hollow Radius in Face of Ring. Center of slide base being brought to coincide with center of radius.



4.

Milling Key-way in Small Crank Shaft

If interested, send for complete catalogue on above equipment. See next page for tools

Tools for Drummond 4-Inch Lathe

As listed on preceding page

Tools Numbers 1 to 12

For use with Slide Rest.

Cast Steel

Set of 12 \$6.75

Set of 3 Dogs

For holding work to Face Plate.

Set 2.10

Bolts and Nuts

For Face Plate or Angle Plate.

Up to 2½ inches long, each15

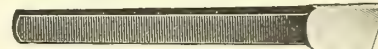
12-Inch Bolts

For fastening work to Boring Table.

Each45



No. 6



No. 7



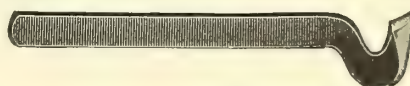
No. 8



No. 9



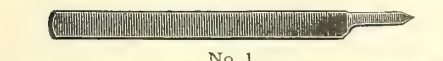
No. 10



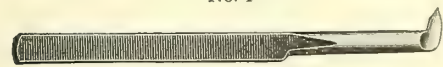
No. 11



No. 12



No. 1



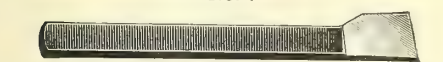
No. 2



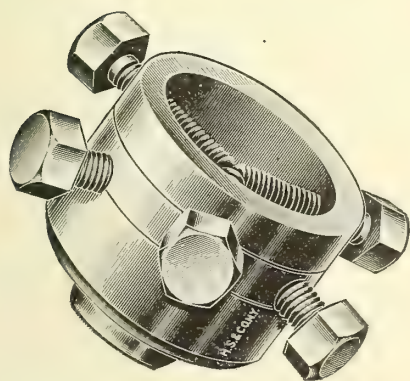
No. 3



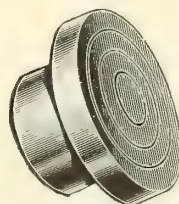
No. 4



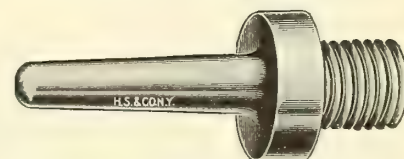
No. 5



8-screw Bell Chuck, 4-inch lathe, 3 inches diameter, holding 2½ inches.
Each \$7.50



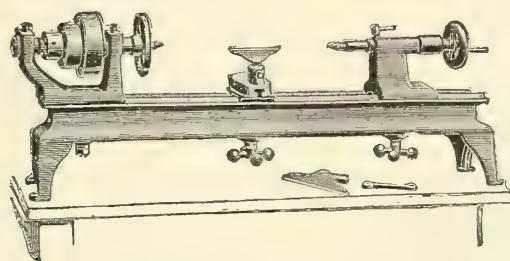
Drill Pad, each \$1.50



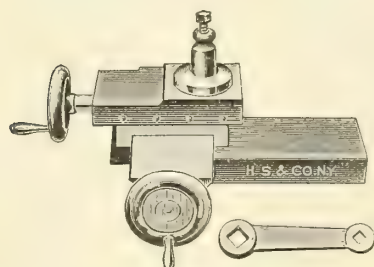
Adapter for Tailstock. With the same nose as headstock spindle.
Each \$1.80

Light Bench Speed Lathe

Oliver



8-Inch x 3-Foot Bench Speed Lathe



8-Inch Slide Rest

Attachments for 8-Inch x 3-Foot Speed Lathes

Cup Center, each \$1.00
Spur Center, each 1.00
Screw Chuck, each 2.00

Slide Rest

An exceedingly well-made tool, adapted to 8-inch swing hand or foot lathe. The longitudinal motion is 5 inches, and the transverse motion 2¾ inches.

Each \$15.00
Set of eight tools 2.00

Weight boxed, 13 pounds.

Countershafts

To be used in connection with above lathes.

No. 2 With 10x2-inch Flat Pulley \$7.00
No. 2 With 12x2-inch Flat Pulley 7.00
No. 2 With Cone Pulley 7.00

Drop, 8 inches. Tight and loose pulleys, 5 inches diameter for 1½-inch belt. Net weight, 35 pounds. Gross weight, domestic shipment, about 45 pounds.

No. 3 With 10x2-inch Flat Pulley \$8.00
No. 3 With 12x2-inch Flat Pulley 8.00
No. 3 With Cone Pulley 8.00

Drop, 7 inches. Tight and loose pulleys, 5 inches diameter for 1½ inch belt. Net weight, 42 pounds. Gross weight for shipment, about 52 pounds.

Equipped as follows for Foot Power

The driving wheel has ample weight, is well turned and balanced; the connecting shaft runs in our improved self-adjustable boxes, insuring perfect alignment.

The table is of finely finished hardwood, and each lathe has one face plate, two pointed centers, short and long T-rests, wrench and belt.

Net weight, 225 pounds. Weight for shipment, 285 pounds.
Complete, for foot power \$50.00

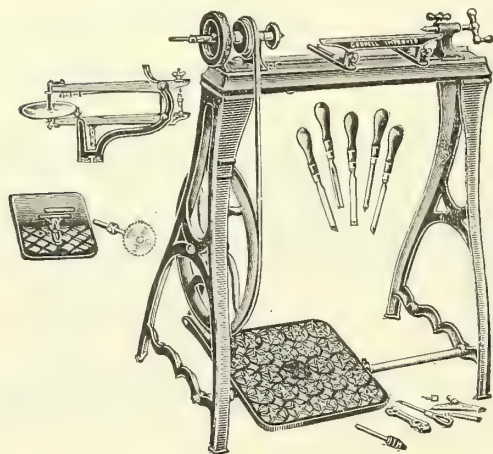
For the tool room or general machine shop use this lathe will be found very acceptable, being strong and accurate, with centers lining perfectly. The cone is turned inside as well as outside, and is for 1¼-inch belt. There is a ½-inch hole through spindle, and this as well as the tail spindle is of steel; the latter has a self-discharging center.

Swing, 8 inches. Length of bed, 3 feet. Between centers, 20 inches. Net weight, 73 pounds. Weight for shipment, 115 pounds.

Complete \$30.00

Amateur Lathes and Scroll Saws

Goodell Lathe and Saw

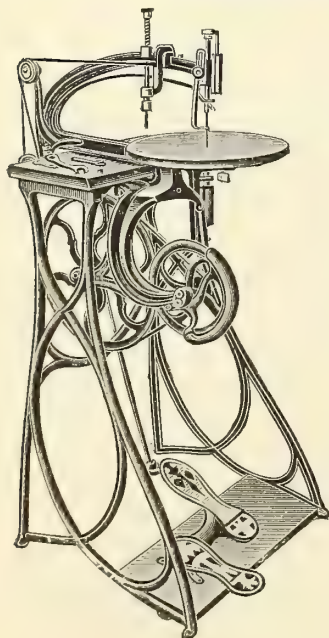


Drive Wheel and Cone Pulley with two grooves to permit change of speed.
Accurate Drill Chuck holding from 0 to 1/4-inch in diameter round shank drills for boring in metal or wood.
Long and Short Tool Rests.
Five Turning Tools, Wrench and Drill Points, etc.
Lathe Head with 2-inch Face Plate and Spur Center and Screw Center for turning cups.
Emery Wheel, 4 1/2 x 7/8 inches.
Drill Spindle with Chuck for drill points for wood boring.
Tail Stock with Screw Feed clamped at any point.
Swing of lathe, 5 inches; distance between centers, 13 1/2 inches; distance of bed from floor, 27 inches; length of bed, 24 inches.
Fret Sawing Attachment, quickly attachable or detachable, with nicked table, ash wood arms, dust blower, adjustable saw guide and lever, saw blades, designs, etc.
Circular Saw Attachment, with saw table 6x7 inches, saw arbor, saw blade 3 inches in diameter, and straight-edge guide.
The whole machine is thoroughly built and highly finished, polished parts being nicked.

	Weight Boxed Pounds	Weight Net Pounds	Each
Lathe and Lathe Tools	71	50	\$13.00
Lathe and Scroll Saw Attachment	78	57	15.00
Scroll Saw Attachment	16	7	2.00
Circular Saw Attachment .....	..	3	1.25

Knocked down and packed 1 machine in a wooden box.
In ordering state whether either or both of the saw attachments are wanted

Fleetwood Scroll Saw



This machine is not a toy, but is built along mechanical lines and is a first-class practical Scroll Saw, intended for the finest work.

Is very light and easy running and does accurate and clean-cut work.

Has a 15 3/4-inch swing, a tilting table and has drilling and blowing attachments.

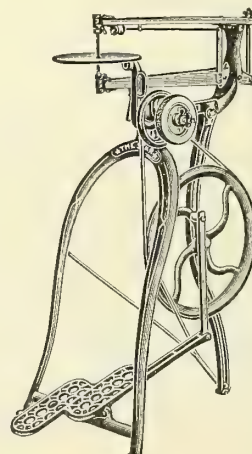
The stand is plain, nicely japanned and finished.

Belt Gear, Metal Arm, either foot or power.

	Each
No. 3 Complete, with blower, boring attachment and treadle mounted on plain stand, as illustrated.....	\$21.00
No. 3 Saw only, with treadle and blower.....	13.50
No. 3 Saw only, with blower and T. & L. pulley for power.....	13.50

For books of Scroll Saw Designs, Scroll Saw Woods and Hand Frames, see Index

The Star Fret Saw



A well-balanced, steady machine.
Iron castings japanned black and ornamented with red stripes; steel arbors.
Heavy Drive Wheel, giving power.
Arms hung in the middle of their supporting casting to give free and easy motion; adjustable, so may be kept parallel.
Two balance wheels, one each of iron and emery, adding steadiness to the motion.
Adjustable Clamps for the emery wheel, capable of embracing other sizes of emery and buffing wheels, grindstones, etc.
Nicked Tilting Saw Table.
Automatic Dust Blower.
Lever Saw Clamps and Adjustable Saw Guide.
Depth of arms, 18 inches.
Whole height of machine, 37 inches.
Weight, boxed, 60 pounds; net, 40 pounds.

Each \$6.50
Knocked down and packed 1 in a wooden box.

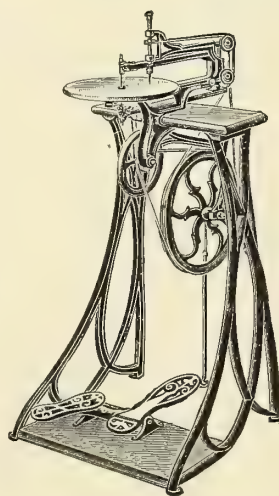
The New Rogers Fret Saw

Construction similar to above, but lighter.
Iron castings, japanned black, with red and gilt stripes; steel arbors; arms and pitman of best selected ash wood.
Bearings to the arms carefully adjusted.
Automatic Dust Blower.
Jointed Stretcher Rod, permitting free action of arms.
Adjustable Lever Saw Clamps with Hinged Jaw to overcome a disagreeable raking overthrow of the saw blades and to prevent breakage of blades.
Drilling Attachment on the right hand side of balance wheel.
Parts secured to each other by nicely fitting screws and bolts.
Each machine is set up and run and carefully inspected before leaving our works.
Also furnished with each machine: 12 Saw Blades, 1 Wrench, 3 Sheets of Designs, 1 Awl, Impression Paper, and 3 Drill Points.
Height, 35 inches.
Weight, boxed, 45 pounds; net, 28 pounds.

	Each
No. 1 With japanned tilting table and iron balance wheel.	\$4.50
No. 2 With nicked tilting table and emery balance wheel.	5.25

Knocked down and packed 1 in a wooden box

Dexter Scroll Saw



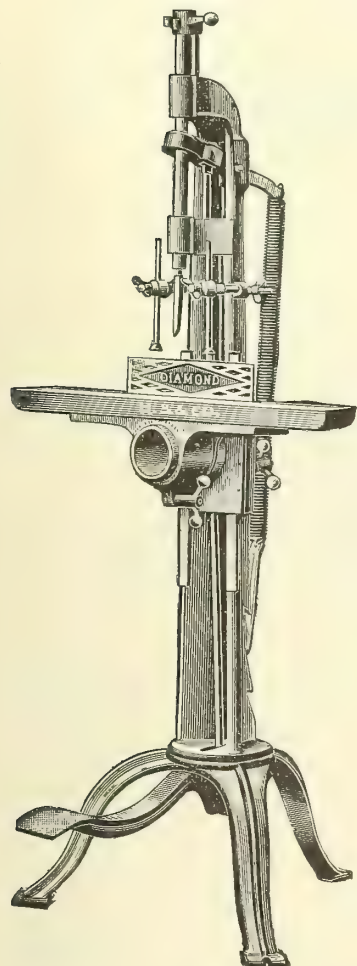
Swings 16 inches. Belt Gear. Tilting Table.
For Foot Power only.

Similar in construction to Fleetwood, but somewhat lighter in construction and has wooden arm.

	Each
Style "C" Saw complete, with boring attachment and blower mounted on stand.....	\$13.00
Saw complete, without boring attachment.....	11.50
Saw complete, without stand..	10.00

The Diamond Mortiser

For Foot Power



Strongly and substantially built, has a powerful motion, accurate action, is suited to a large range of work, and in all respects is the most perfect foot power mortising machine ever offered.

Built entirely of iron and steel, except the hardwood strip on top of table, and the novel construction of the frame renders it extremely strong and rigid.

The treadle motion is so arranged as to obtain great leverage and power on the chisel spindle without undue strain on the working parts.

The table has simple, accurate and positive, horizontal, vertical and angle adjustments. The angle adjustment is a specially valuable feature that will be appreciated by all mechanics. It is provided with a graduated scale by which the operator may tilt the table either to the right or left to mortise or cut work on any desired angle.

It has a heavy coiled wire spring of the best steel, oil tempered, which can easily be adjusted for any desired tension.

The chisel reverser is attached to the upper end of chisel spindle and is provided with a stop, to secure perfect accuracy in reversing the chisel.

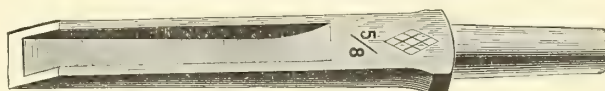
It will mortise $\frac{1}{4}$ to 1 inch wide, by 3 inches deep, from one side, or by reversing work a depth of 6 inches can be attained, and with the addition of the diamond tenoning tool, cut tenons $\frac{1}{8}$ to 1 inch thick, by 3 inches wide, or 6 inches wide by reversing the work.

Equipment

The Diamond Mortiser is provided with three mortising chisels, one each, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ -inch. Other sizes may be substituted if desired. Net weight, 145 pounds.

Complete..... \$25.00

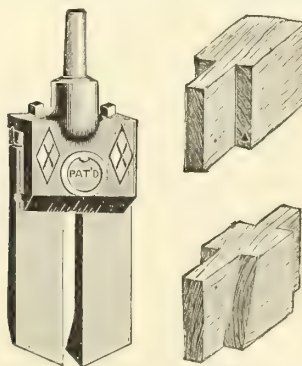
Diamond Mortising Chisels



With $1\frac{3}{4}$ -inch shank, tapering from $\frac{15}{16}$ to $\frac{1}{2}$ -inch.

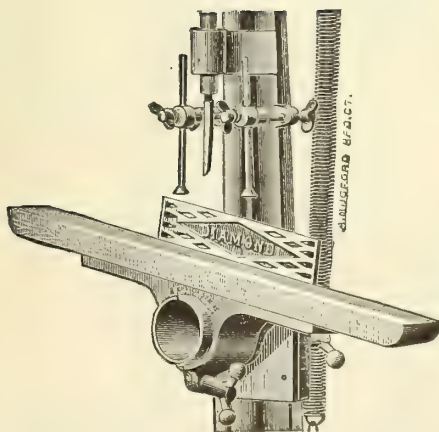
Inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Each.....	\$1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

No. 2 Diamond Tenoning Tool

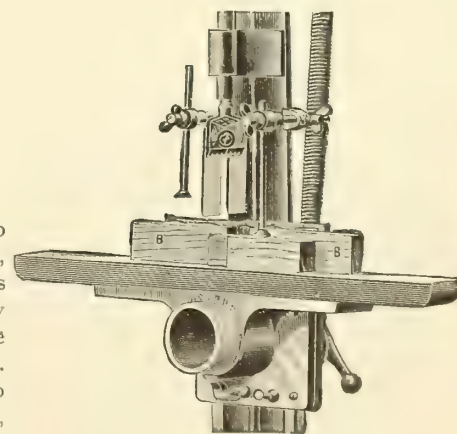


This tool will be found a valuable attachment to the "Diamond" Mortising Machine for making sash, screen doors, frames, and all light tenoning. It is provided with knives, which can be easily and quickly adjusted to cut tenons $\frac{1}{8}$ to 1 inch thick; 3 inches wide from one side, or six inches wide by reversing the work. The knives are constructed with side lips, and also have a draw or shear cut on both front and side edges, which leaves the shoulders and sides of tenon true and smooth.

Each..... \$5.00



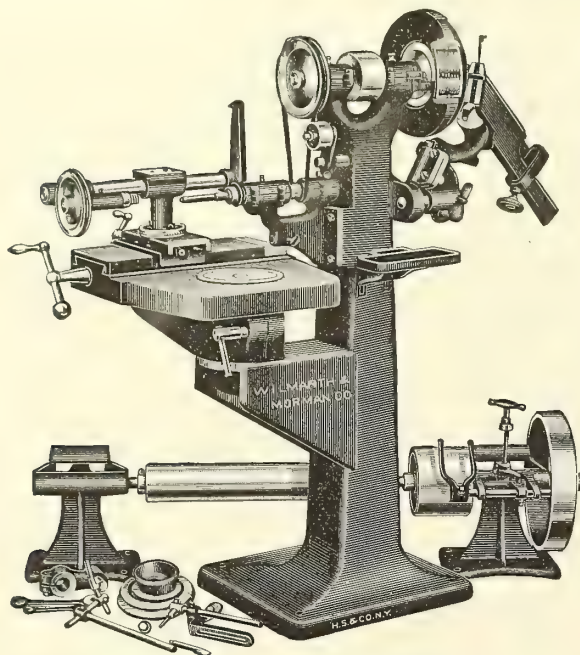
This cut shows the table tilted for cutting work on an angle. It can be tilted either way, to the right or left, and to any angle desired.



This cut shows the tenoning tool in position and table arranged for work. The pieces B B are $\frac{1}{8}$ -inch strips secured to back of table, leaving a small opening in the center for the passage of the tool.

Grinders for Drills, Reamers and Cutters

Wilmarth & Morman



Style BX New Yankee Grinder

Complete with Cylindrical and Internal Grinding Attachment for Cutters, Reamers, Drills, etc.

Specifications

Grinds Face and Side Milling Cutters up to 12 inches diameter.
Grinds Angle Milling Cutters (any angle) up to 8 inches diameter.
Grinds Plain Milling Cutters (any type) up to 8 inches diameter.
Grinds Gear Cutters up to 5½ inches diameter.
Grinds Hobbs up to 5½ inches diameter.
Grinds Forming Cutters (any length) up to 5½ inches diameter.
Grinds Flutes of Taps up to 11½ inches long.
Grinds Reamers (straight or taper) up to 17 inches long over all.
Grinds Cylindrical Work (straight or taper) up to 7¼ inches diameter and up to 11½ inches long.
Distance between Centers, 17 inches long.
Grinds Holes in Internal Work up to 4 inches deep.
Grinds Holes in Internal Work up to 10½ inches swing.
Main Spindle speed, 1600 R. P. M.
Small Spindle speeds, 4800 and 9600 R. P. M.
Speed of Countershaft, 530 R. P. M.
Pulley on Main Spindle, 4x2¼ inches.
Driving Pulley, 12x2¼ inches.
Tight and Loose Pulleys, 6x2¼ inches.
Floor space occupied, 21x46 inches.
Weight, net, 488 pounds; crated, 565 pounds.
Weight, boxed, 715 pounds.
Cubic feet, boxed, 33.

Style BX, grinds Drills from ⅛ inch up to 2¼ inches diameter.
Each.....\$185.00
Style JBX, grinds Drills from ⅜ inch up to 1¼ inches diameter,
Each.....182.50
Style LBX, grinds Drills from No. 60 up to ⅝ inch diameter,
Each.....180.00

Style N

Motor Driven
(Direct Current)

Capacity ¼ to 3½-inch Drills

Dimensions

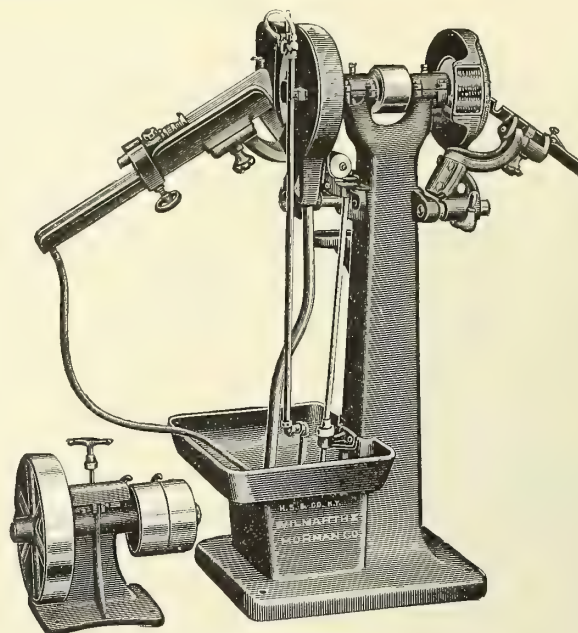
Diameter of Emery Wheel, 12 inches.
Speed of Emery Wheel, 1240 R. P. M.
Height to Center of Spindle, 43 inches.
Floor space occupied, 2x3 feet.
Weight, net, 565 pounds.
Weight, crated, 690 pounds.
Weight, boxed, 770 pounds.
Cubic feet, boxed, 22.
Specify whether 110 or 220 volts.

Each.....\$225.00

Style N Point

Same as Style "N," but with point thinning wheel. Dimensions same; weighs 20 pounds more.

Each.....\$235.00



Style WPL

Capacity No. 60 to 2¼-inch Drills

Dimensions

Diameter of Emery Wheel, 9½ inches.
Speed of Countershaft, 530 R. P. M.
Driving Pulley, 12x2¼ inches.
Height to Center of Spindle, 43 inches.
Weight, net, 390 pounds; crated, 455 pounds.
Cubic feet, boxed, 17.

Speed of Emery Wheel, 1600 R. P. M.
Pulley on Wheel Spindle, 4x2½ inches.
Tight and Loose Pulleys, 6x2¼ inches.
Floor space occupied, 1½x4 feet.
Weight, boxed, 530 pounds.
Code, Weipel.

This is the most desirable machine for cases in which the present need and probable future requirements do not call for greater capacity than 2¼ inch drills.

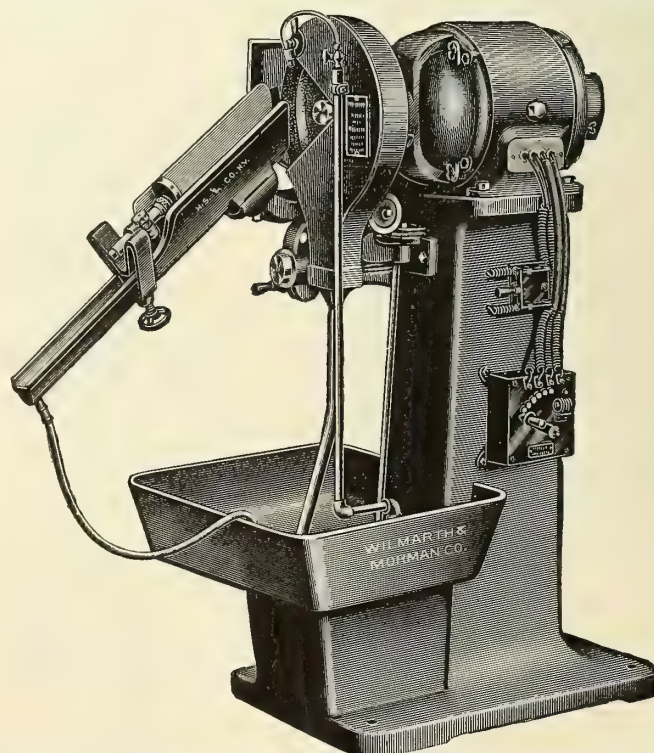
Each.....\$130.00

Style WPJ

Capacity ⅜ to 2¼-inch Drills

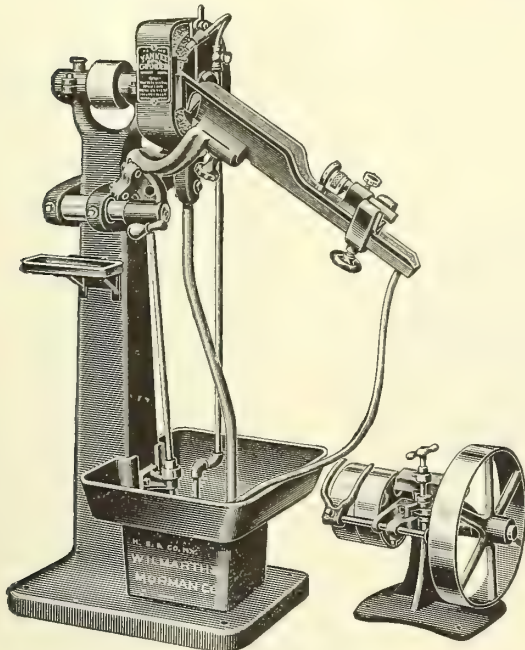
Same as WPL but with the smaller drill holder of larger size, such as used on Style J. Dimensions the same; weight 10 pounds more.

Each.....\$132.50



Grinders for Drills and Surfaces

Wilmarth & Morman



Style P O Drill

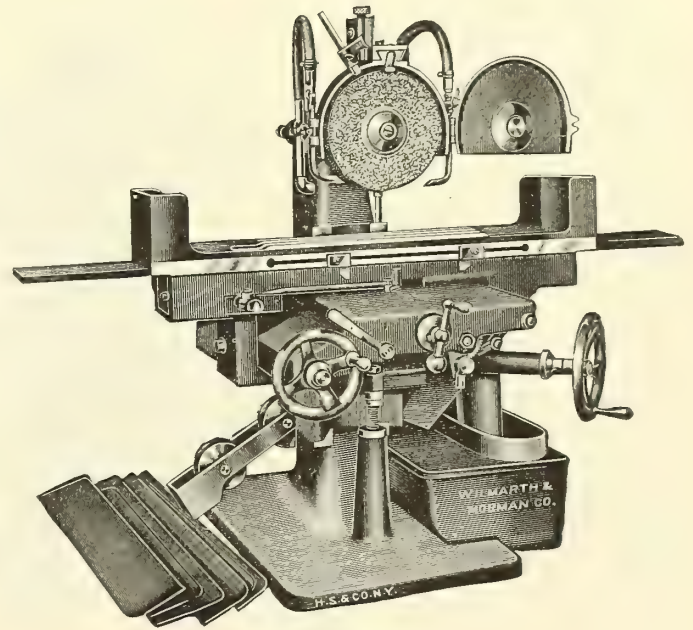
Capacity $\frac{1}{8}$ to $2\frac{1}{4}$ -inch Drills
Dimensions

Diameter of Emery Wheel, $9\frac{1}{2}$ inches.
Speed of Emery Wheel, 1600 R. P. M.
Speed of Countershaft, 530 R. P. M.
Pulley on Wheel Spindle, $4x2\frac{1}{4}$ inches.
Driving Pulley, $12x2\frac{1}{4}$ inches.
Tight and loose pulleys, $6x2\frac{1}{4}$ inches.
Height to Center of Spindle, 43 inches.
Floor space occupied, $1\frac{1}{2}x3$ feet.
Weight, net, 350 pounds.
Weight, crated, 415 pounds.
Weight, boxed, 490 pounds.

Note that this machine has separate counter shaft.

Besides enabling the machine to be placed at a distance from the line shaft. This has the advantage that in the combination machines the tight and loose pulleys or the belts are not in the way when the rear end of the machine is being used.

Each \$90.00



No. 3 Surface

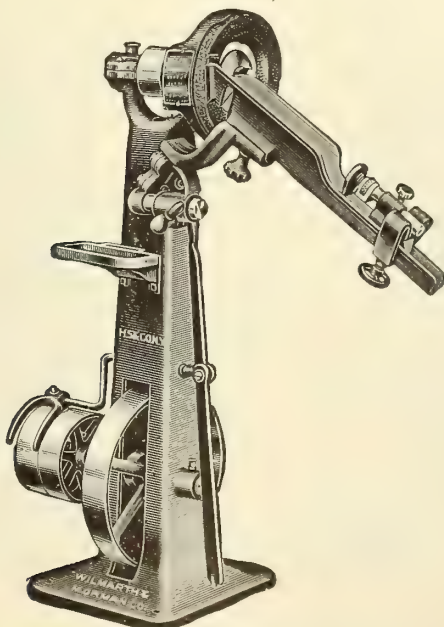
View showing machine with table water guards removed and wheel hood cover opened
 $3\frac{1}{2}$ inches

Capacity 8 x 24 inches surfaces
Dimensions

Grinding Wheel, $12x1x1\frac{3}{4}$ inches.
Working Surface of Table, $8x24$ inches.
Longitudinal movement, 25 inches.
Transverse movement, 9 inches.
Vertical movement under 12-inch Wheel, $9\frac{1}{2}$ inches.
Maximum distance Spindle to Table, $15\frac{1}{2}$ inches.
Spindle speed, 1600 R. P. M.
Countershaft speed, 550 R. P. M.
Spindle Pulley, $6x5\frac{1}{2}$ inches.
Driving Pulley, $18x5\frac{1}{2}$ inches.
Tight and Loose Pulleys, $10x4\frac{3}{4}$ inches.
Height to Center of Spindle, 49 inches.
Floor space occupied, $58x96$ inches.
Weight, net, 2,215 pounds.
Weight, crated, 2,360 pounds.

Each \$575.00

Style A Drill



Capacity $\frac{1}{8}$ to $2\frac{1}{4}$ inch Drills
Dimensions

Diameter of Emery Wheel, $9\frac{1}{2}$ inches.
Speed of Emery Wheel, 1600 R. P. M.
Speed of Countershaft, 425 R. P. M.
Pulley on Wheel Spindle, $4x2\frac{1}{4}$ inches.
Driving Pulley, $15x2\frac{1}{4}$ inches.
Tight and Loose Pulleys, $7\frac{1}{2}x2\frac{1}{4}$ inches.
Height to Center of Spindle, 42 inches.
Floor space occupied, $1\frac{1}{2}x3$ feet.
Weight, net, 215 pounds; crated, 250 pounds.
Weight, boxed, 305 pounds.

Each \$65.00

Style A Point

Same as Style A, but with point thinning wheel. Dimensions same, weight 20 pounds more.

Each \$69.00

Style JA
Capacity $\frac{1}{8}$ to $1\frac{1}{4}$ -inch Drills

Same as Style A, but with smaller capacity drill holder. Other dimensions same, weight 10 pounds less.

Each \$62.50

Style JA Point

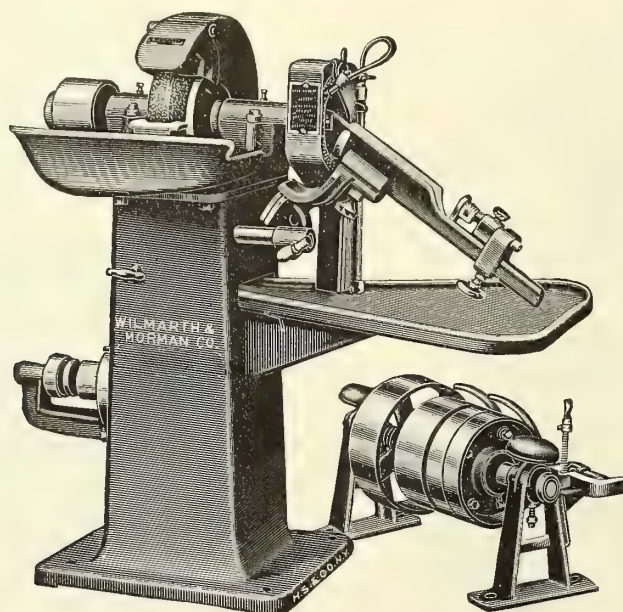
Capacity $\frac{1}{8}$ to $1\frac{1}{4}$ -inch Drills

Same as Style A Point, but with smaller capacity drill holder. Weight 10 pounds less.

Each \$66.50

Grinders for Drills and Tools

Wilmarth & Morman



Combination Tool and Drill Grinder

Two machines for one price, one floor space, and one power bill. Each capable of individual and simultaneous use. This machine is an ideal one, as every shop needs a wet tool grinder and every shop uses twist drills. Combination machines usable for only one thing at a time are unsatisfactory. This machine handles both classes of work simultaneously, the same as two separate machines. The drill grinding attachment never interferes with the tool grinding. One floor space, one countershaft, one set of belts, one power bill and one price are advantages gained without the slightest compensating disadvantage.

This machine has many advantages. While modest in first cost, it nevertheless avoids the defects which exist in those machines where price is the only recommendation.

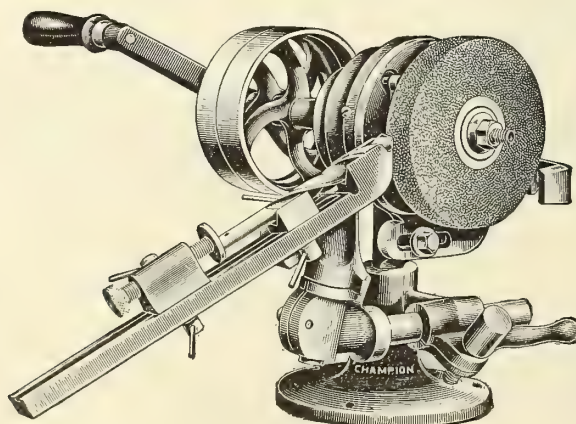
The spindle bearings are $1\frac{3}{4}$ inches in diameter by 8 inches and 6 inches in length. The split box bearings carry interchangeable bushings lined with high grade babbitt which are securely clamped in place by the box cap.

Drill Capacity $\frac{1}{8}$ — $2\frac{1}{4}$ -inch or $\frac{3}{32}$ — $1\frac{1}{4}$ -inch

Diameter of Drill Wheel, $9\frac{1}{2}$ inches
Tool Grinding Wheel, 16x2 inches
Spindle Speed, 1000 R. P. M.
Countershaft Speed, 500 R. P. M.
Tight and Loose Pulleys, 10x4 inches
Driving Pulley, 12x4 inches
Spindle Pulley, 6x4 inches
Height to Spindle, 40 inches
Floor space occupied, 3x4 feet
Weight, net, 840 pounds; crated, 930 pounds
Weight, boxed, 1100 pounds
Furnished with $\frac{1}{8}$ to $2\frac{1}{4}$ -inch capacity if not otherwise ordered

Each\$138.50

Champion



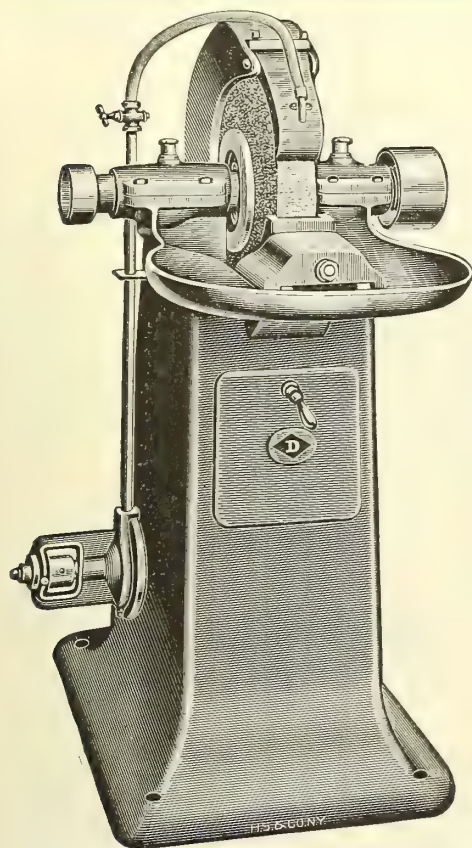
Universal Twist Drill Grinder No. 10. Is full universal and in every respect equal to the higher priced machines.

The holder is perfectly true, which insures the drills being ground sharp and true. Has double speed in cutting which means double

life to the drill. Suitable for all machine shops, garages, blacksmith shops, etc. Weight 35 pounds.

For hand and power drive.

Each\$15.00



Improved Tool Grinding Machines

The accompanying cut of the No. 2 Tool Grinding Machine shows the general features of the improved Nos. 1, 2 and 3 Machines. Particular attention is called to the pump, which is of new design, mechanically simple and powerful, with the least possible number of "wearing parts." These may be easily replaced, if necessary, at a trifling cost.

The machines are furnished with or without truing device, but we recommend the machines with truing device as being more economical, for the device is always ready for immediate use. The wheel may easily be kept in perfect condition, and the life of both machines and wheel is materially lengthened.

Grinding Machines, Nos. 1, 2, 3, 4 and 5 can be furnished motor driven. They are usually furnished driven by sprockets and chain which are entirely enclosed in a sheet iron guard, but belt connection can be supplied instead if desired.

The motor is fully enclosed to protect it from dust and dirt and is easily accessible, a great advantage if repairs are necessary. The machines are usually equipped with direct current motors for 110 volts or 220 volts as desired. But alternating current motors can be supplied. These grinders can also be supplied arranged for motor drive with sprocket on the wheel arbor but without a motor.

Prices quoted on receipt of specifications.

There is a single pulley on the spindle. The diameter of the spindle and the size of the bearings are larger than in earlier machines. The bearings are babbitted, and on the No. 2 Machine are provided with ring oilers.

In ordering, please state plainly whether the machine is wanted with or without truing device, as machine complete with truing device will be sent unless otherwise specified.

Specifications, numbers	1	2	3	4	5
Size of base, inches.....	18x25	22x32	24x35	28x45	28x51
Height from floor to center of spindle, inches.....	35	36	37	37	37
Length of bearings, each, inches.....	5	7	7		
Diameter of spindle in bearing, inches.....	1 1/4	1 3/4	1 3/4		
Size of pulley on spindle, inches.....	5x3 1/2	6x3 1/2	10x5	14x6	14x6
Weight with countershaft, pounds.....	435	760	1,000	1,900	2,100
Will take an emery wheel, inches.....	14x2x1 1/2	20x2 1/2x7	24x3 1/2x10	30x4x16	36x4x21
Size of tight and loose pulleys on countershaft, inches.....	6x2 3/4	7x3 1/4	10x5 1/4	10x6	10x6
Size of driving wheel on countershaft, inches.....	12x2 3/4	14x3 1/4	16x5 1/4	18x6	18x6
Drop of hanger on countershaft, inches.....	8	10	10	12	12
Countershaft should run, revolutions.....	400	325	350	350	300
Complete with wheel, countershaft and truing device, each.....	\$87.50	\$137.50	\$225.00	\$275.00	\$325.00
Complete with wheel and countershaft without truing device, each.....	80.00	120.00	212.50		

Bench Tool Grinding Machines

These machines are designed for sharpening machinists tools of all kinds, running emery wheels in water. They take up bench room of only 22x12 inches.

Set the grinder on bench or stand, slightly sloping to the front, the front edge of the base projecting over the bench so the water will run to the front (where a hole is drilled) into a bucket furnished with these machines.

No. 1 Bench Tool Grinding Machine takes an emery wheel 10x1x1 inch.

No. 2 Bench Tool Grinding Machine takes an emery wheel 10x2x1 inch.

These machines are furnished with tight and loose or single pulleys. In ordering please state which is desired.

The Adjustable Angle Rest with Traverse Table is made for use with this machine. It is convenient for grinding tools or any work where it is desired to produce a beveled surface. It will grind true and straight any length up to 9 inches. The work is moved to the wheel by a screw shown in front of the machine; any angle can be obtained that is desired. The traverse across the face of the emery wheel is by hand movement. The upper table, on which the work is held, slides on V-ways.

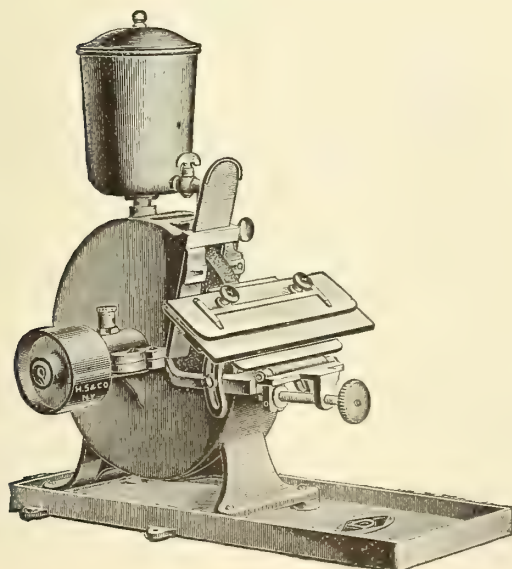
Adjustable Angle Rest with Traverse Table only	\$15.00
Adjustable Angle Rest only	3.50

Price (including wheel)

No. 1 Bench Tool Grinding Machine, with column and countershaft.....	\$49.00
No. 2 Bench Tool Grinding Machine, with column and countershaft.....	54.00
No. 1 Bench Tool Grinding Machine, only.....	25.00
No. 2 Bench Tool Grinding Machine, only.....	30.00
Column only.....	12.00
Countershaft only	12.00

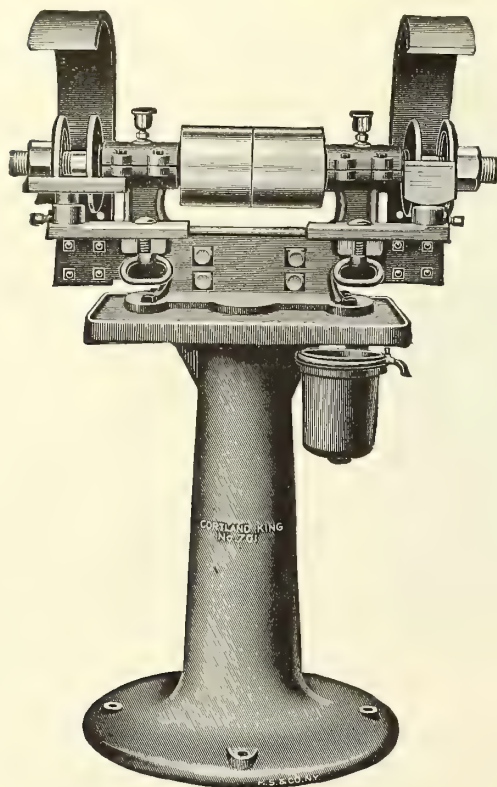
Weights

	Pounds
No. 1 Bench Tool Grinding Machine, with column and countershaft.....	247
No. 2 Bench Tool Grinding Machine, with column and countershaft.....	245
No. 1 Bench Tool Grinding Machine, only.....	70
No. 2 Bench Tool Grinding Machine, only.....	75



Grinding Machines

Cortland King



No. 701

Will carry two wheels 18x2 inches or smaller. Regularly equipped with cone pulley (single tight pulley or tight and loose pulleys if desired), two adjustable rests, babbitted bearings, brass oil cups, tool shelf, water pot and hot rolled-steel wheel-guards.

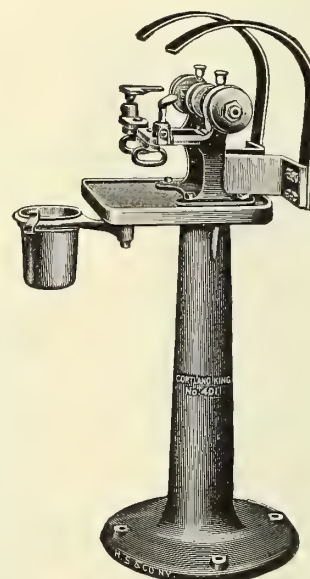
Height from Base to Center of Arbor, inches	10
Distance between Wheels, inches	21
Length of Bearings, inches	4¾
Length of Arbor, inches	31
Diameter of Arbor in Bearings, inches	1⅞
Diameter of Arbor between Flanges, inches	1½
Size of Cone Pulley, inches	8½x4½x5½
Size of Wheel Guards, inches	½x4
Height of Column, inches	25
Diameter of Column Base, inches	21
Weight of Column, pounds	125
Size of Tool-Shelf, inches	16x20
Total Weight of Machine, pounds	365
Each	\$47.00

No. 601

Same general design as No. 701, but lighter in construction.

Including Column, Tool Shelf, Water Pot, and Wheel Guards. Will carry two wheels 14x2 inches or smaller. Equipped with adjustable babbitted bearings, two adjustable rests, brass oil cups, and cone pulley. Single tight pulley if desired.

Wheel Guards, inches	3½x½
Weight, complete, pounds	290
Height from Floor to Center of Arbor, inches	38
Length of Bearings, inches	4½
Distance between Wheels, inches	18
Length of Arbor, inches	27
Diameter of Arbor in Bearings, inches	1⅞
Diameter of Arbor between Flanges, inches	1¼
Size of Cone Pulley, inches	4½x3½x4
Tool Shelf, inches	14x18
Height of Column, 28 inches, weight, pounds	100
Base of Column, diameter, inches	17
Each	\$38.00



No. 401

Will carry two wheels 10x1½ inches or smaller. Regularly equipped with tight and loose pulleys (single tight pulley if desired), two adjustable rests, babbitted bearings. (Note the four set screws to each bearing), brass oil cups, tool shelf, water pot and hot rolled steel wheel-guards.

Height from Base to Center of Arbor, inches	7¼
Distance between Wheels, inches	12
Length of Bearings, inches	3
Length of Arbor, inches	18½
Diameter of Arbor in Bearings, inches	⅞
Diameter of Arbor between Flanges, inches	¾
Size of Pulleys, inches	2¾x2½
Size of Wheel Guards, inches	¾x3
Height of Column, inches	29
Diameter of Column Base, inches	16
Weight of Column, pounds	70
Size of Tool Shelf, inches	12x14
Total Weight of Machine, pounds	145
Each	\$26.00

No. 501

Is the same general design as No. 401, but somewhat heavier in construction.

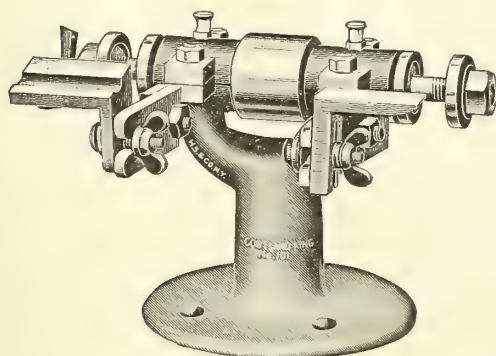
Will carry two wheels, 12x2 inches or smaller. Regularly equipped with tight and loose pulleys (single tight pulley if desired), two adjustable rests, babbitted bearings, brass oil cups, tool shelf, water pot and hot rolled-steel wheel-guards.

Height from Base to Center of Arbor, inches	8½
Distance between Wheels, inches	15
Length of Bearings, inches	4
Length of Arbor, inches	23
Diameter of Arbor in Bearings, inches	1⅞
Diameter of Arbor between Flanges, inches	1
Size of Pulleys, inches	3½x2⅞
Size of Wheel Guards, inches	½x3
Height of Column, inches	29
Diameter of Column Base, inches	15½
Weight of Column, pounds	70
Size of Tool Shelf, inches	12x14
Total Weight of Machine, pounds	165
Each	\$29.00

The prices quoted on these machines are exclusive of wheels. For prices on wheels see page 354

Grinding Machines

Cortland King

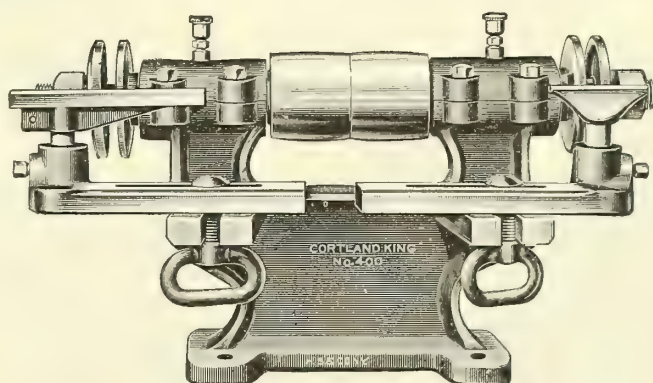


No. 101

Is furnished with Tool Rests, with Chisel Holder, Drill and Shear Grinding Guides.

For Jewelers, Dentists, Repair Shops, or any other light grinding. Will carry two wheels 6x1-inch or smaller. A Taper Spindle can be instantly attached for buffing and polishing work. Equipped with adjustable babbitted bearings, and nickel-plated spring cap oil cups.

Height from Base to Center of Arbor, inches.....	5½
Distance between Wheels, inches.....	6
Length of Bearings, inches.....	1⅞
Length of Arbor, inches.....	9½
Diameter of Arbor in Bearings, inch.....	⅞
Diameter of Arbor between Flanges, inch.....	½
Size of Pulley, inches.....	1⅜x1½
Weight, pounds.....	10
Each.....	\$6.25
No. 100 Same as 101, except without Tool Rests.....	5.00

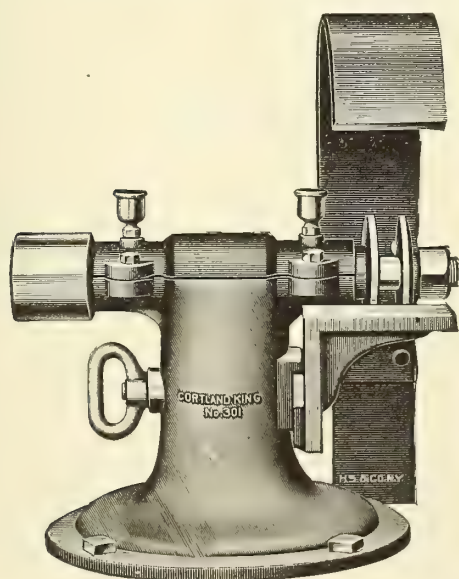


No. 400

The above cut shows the style of our Nos. 400, 500, 600 and 700 bench type Cortland King Grinders. The variation in size may be seen by referring to the following:

	No. 400	No. 500	No. 600 With cone pulley	No. 700
Distance between Wheels, inches..	12	15	18	21
Length of Bearings, inches.....	3	4	4½	4¾
Length of Arbor, inches.....	18½	23	27	31
Diameter of Arbor in Bearings, inches.....	⅞	1⅞	1⅞	1⅞
Diameter of Arbor between Flanges, inches.....	¾	1	1¼	1½
Size of Tight and Loose Pulleys, inches.....	2¾x2½	3½x2⅝	3⅞x3½	5x4½
Will carry two Wheels, inches....	10x1½	12x2	14x2	18x2
Weight, pounds.....	26	55	103	130
Each.....	\$10.00	\$12.50	\$17.00	\$21.00

No. 301



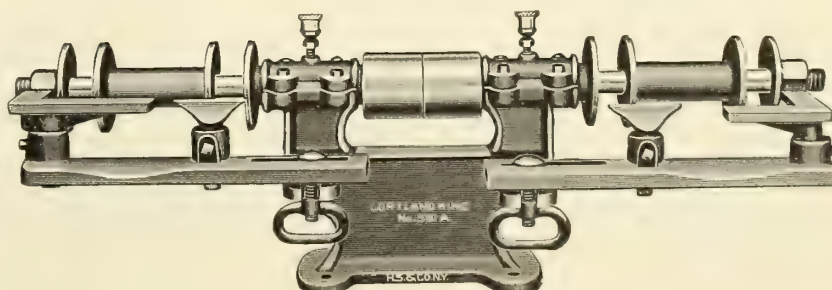
For Blacksmiths, Carpenters, Pattern Shops, Saw-gumming and Wood-working plants. An exceptionally rigid, substantial machine. Adjustable rest, babbitted bearings, brass oil cups.

Height from Base to Center of Arbor, inches.....	9
Length of Bearings, inches.....	3
Length of Arbor, inches.....	14¾
Diameter of Arbor in Bearings, inch.....	⅞
Diameter of Arbor between Flanges, inch.....	1
Size of Pulley, inches.....	3x2½
Size of Guards, inches.....	⅞x2½
Diameter of Base, inches.....	12
Weight, pounds.....	54
Each.....	\$11.50

No. 300

Same as 301, without Wheel Guards, weight 44 pounds..... 8.00

No. 501A



Carries four wheels 10x1½ inches. Length of shaft, 35 inches. Distance between inner wheels, 15 inches. Distance between inner and outer wheels, 5 inches. Weight, 72 pounds.

Each..... \$15.50

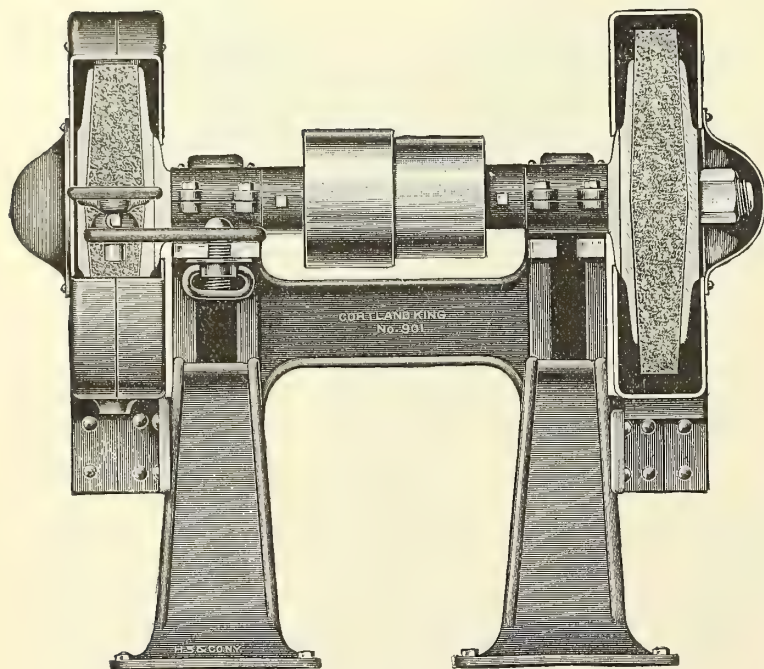
With column, tool shelf, water pot and wheel guards.

Each..... \$32.00

The prices quoted on these machines are exclusive of wheels. For prices on wheels see pages 354

Grinding Machines

Cortland King



No. 901

Designed and built with special attention to strength and safety, and for heavy and fast work. Will carry two wheels 24x4 inches or smaller. Equipped with cone pulley, adjustable frictionless metal bearings (chain oiled), extra heavy universal tool rests, malleable iron safety wheel coverings, and two sets safety flanges.

Entire side of safety hood removed by taking off six nuts when wheel can be dismounted.

Height from Floor to Center of Arbor, inches	33
Distance between Wheels, inches	34
Length of Bearings, inches	9½
Length of Arbor, inches	50
Diameter of Arbor in Bearings, inches	2¼
Diameter of Arbor between Flanges, inches	2
Size of Cone Pulley, inches	8x9x6½
Size of Stationary Flanges, inches	10x1
Size of Safety Flanges, inches	20x1, 14x1
Floor Space, inches	54x32
Weight, pounds	1,750
Each	\$260.00

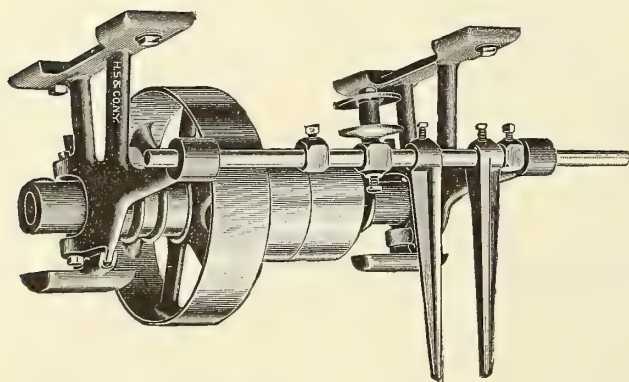
No. 900

Same general design as No. 901, but lighter in construction. Will carry two wheels 24x4 inches or smaller. Equipped with cone pulley, adjustable babbitted bearings (chain oiled) extra heavy universal tool rests.

Height from Floor to Center of Arbor, inches	33
Distance between Wheels, inches	34
Length of Bearings, inches	9½
Length of Arbor, inches	50
Diameter of Arbor in Bearings, inches	2¼
Diameter of Arbor between Flanges, inches	2
Size of Cone Pulley, inches	8x9x6½
Size of Flanges, inches	10x1
Floor Space, inches	50x30
Weight, pounds	1,100
Each	\$160.00

Countershafts for Grinding Machines

Cortland King



Dimensions, Style 1 for Nos. 100, 101, 300, 301

Tight and Loose Pulleys, inches	4x2¾
Driving Pulleys, inches	8x1¾
Drop of Hangers, inches	5
Diameter of Shaft, inch	7/8
Weight, pounds	56
Each	\$12.00

Dimensions, Style 2 for Nos. 400, 401, 500, 501, 501 A

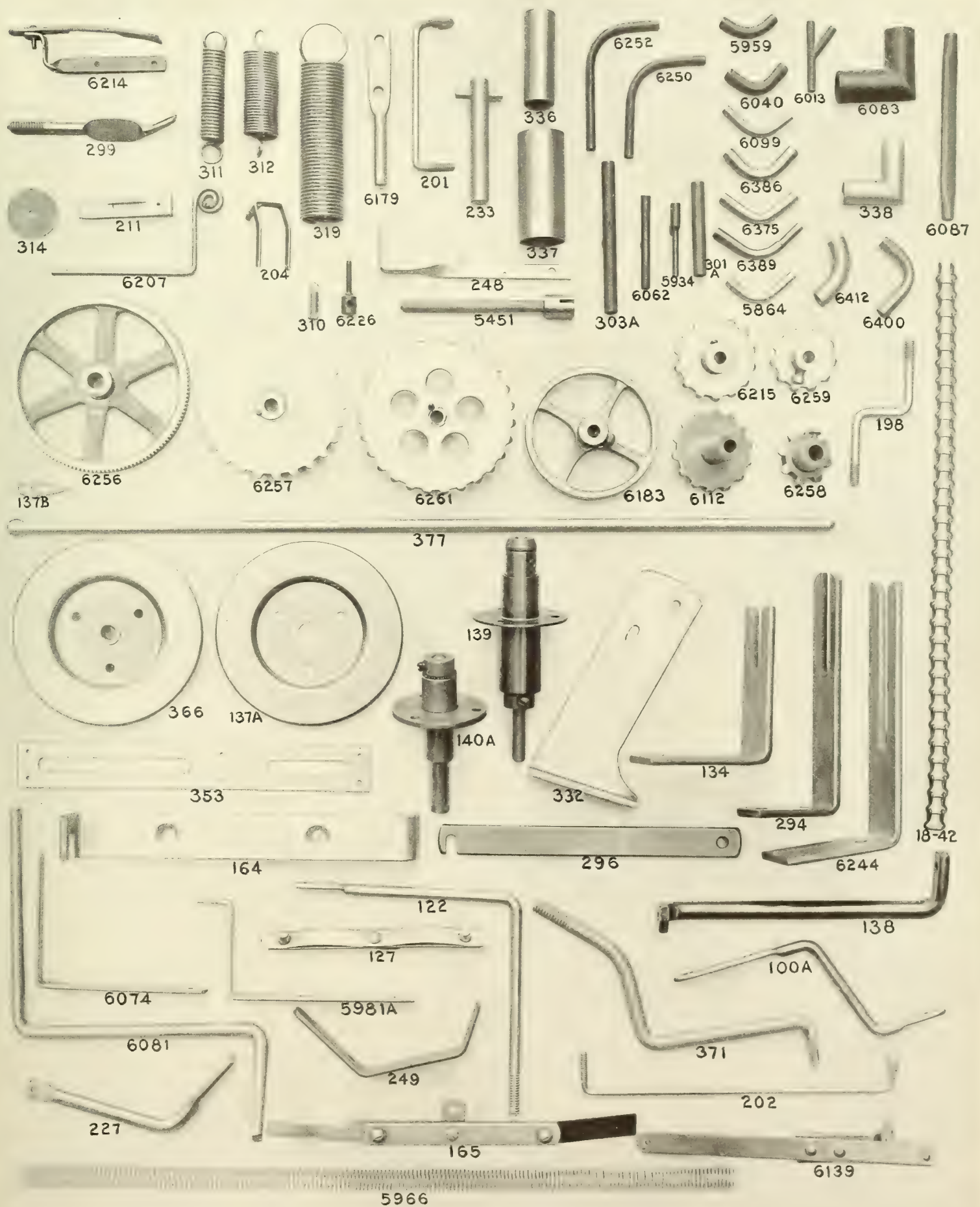
Tight and Loose Pulleys, inches	5x3¾
Driving Pulley, inches	10x2¾
Drop of Hangers, inches	7
Diameter of Shaft, inches	1¼
Weight, pounds	86
Each	\$13.50

Dimensions, Style 4 for No. 900

Tight and Loose Pulleys, inches	8x7¼
Driving Pulleys, inches	17x18x6¼
Drop of Hangers, inches	11
Diameter of Shaft, inches	1¾
Weight, pounds	317
Each	\$48.00

Dimensions, Style 3 for Nos. 600, 601, 700, 701

Tight and Loose Pulleys, inches	6x5¼
Driving Pulleys, inches	13x14x4¼
Drop of Hangers, inches	9
Diameter of Shaft, inches	1½
Weight, pounds	118
Each	\$28.00



See following page.

Also facing pages 313, 857 and 888

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

*Let us quote you
on Supplies and
Special Parts*

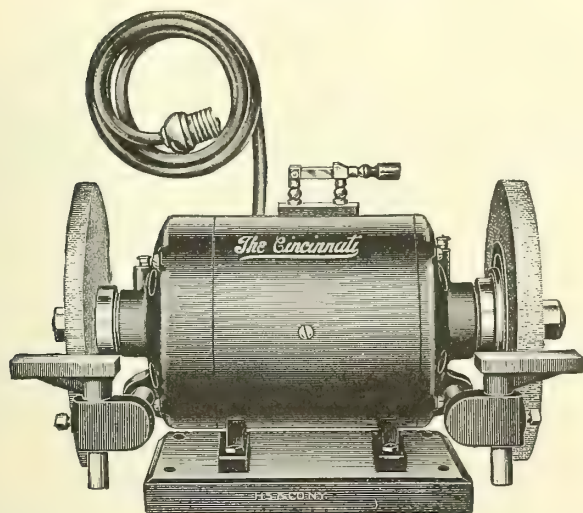
See preceding page.

Also pages facing 313, 857 and 888

Electric Grinding Machines

The Cincinnati

Two-Wheel Bench



Direct and Alternating Current

This Portable Bench Grinder is arranged to carry one wheel at each end of the spindle.

It may be used for grinding, buffing or polishing, as any kind of wheel can be used. Under immediate control of the operator by means of a switch on the motor. Sent out as above illustrated, including two emery wheels, one medium and one hard grade.

Adjustable cone bearings to take up the wear.

Fully enclosed and dirt and dust proof.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

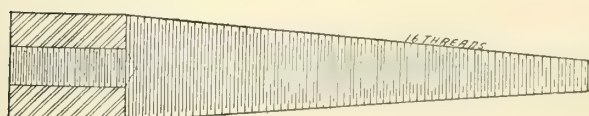
Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
BB	\$35.00	1/4	18	4 3/8x10	4200	4 1/2x3 7/8x1 1/2	\$40.00	BBA
BH	48.00	1/2	45	6x13 1/2	2500	8 x 3/4x5/8	62.00	BHA

Single Wheel Bench Grinder

Is the same in general design as above two-wheel grinder.

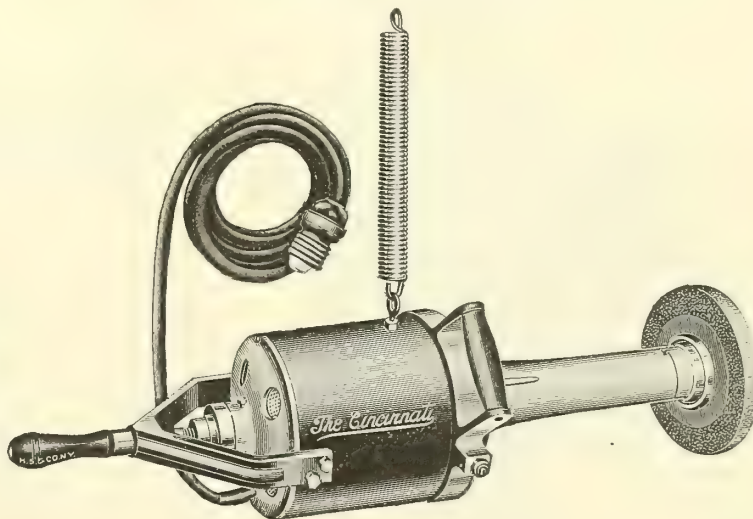
Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
BW	\$30.00	1/4	15	4 3/8x10	4200	4 1/2x3 7/8x1 1/2	\$36.00	BWA

Extension Tapered Buffing Spindles



	Each
4 inches long for 1/4 H. P., type BB or BW	\$3.00
6 to 8 inches long for 1/2 H. P., type BH	5.00
Twist Drill Grinding Attachment, each	5.00

Aerial with Extension



Direct and Alternating Current

Above Aerial Grinder has shaft extended 12 inches for internal and external work. Longer or shorter shaft can be furnished as required. The extension is detachable, permitting use for shallow work as well as deep grinding. Different size wheels can be used.

The Grinder can be carried to the work or suspended anywhere as any length cord can be used. Furnished complete as illustrated. Power from any incandescent lamp socket.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
AE	\$64.00	1/2	40	6 x21	2500	4x3 1/4x5/8	\$77.00	AEA
AS	80.00	1	75	7 1/2x22	2000	5x1 x3/4	98.00	ASA

General Description of Motors Supplied with the Cincinnati Grinders

The Motor Windings are of the highest grade material and fully enclosed and protected. Dust Hoods are fitted on the spindle to protect the bearings and windings from emery, dust and dirt.

The Bearings are of special bronze, cone-shaped and adjustable to wear by means of a threaded nut in the motor caps. No part of the motor housing is used as a bearing. The end play is taken up by adjusting the round nut on rear end of spindle.

Air-Cooled by means of a fan on the Armature Shaft, which forces a continuous circulation of air through the holes of the end cap.

The Wheel can be run in either direction by reversing the two leads on the body of the motor.

The Shank is of steel and is fitted to the V-slide. It has a round end permitting the motor to be set at any angle. Different size shanks can be used.

The Motor has a 3-inch horizontal travel through the V-slide by means of a worm, and is fitted with a gib to take up the wear.

The Feed is obtained through our specially designed handle, the latter being placed at an angle, giving the operator free-hand room.

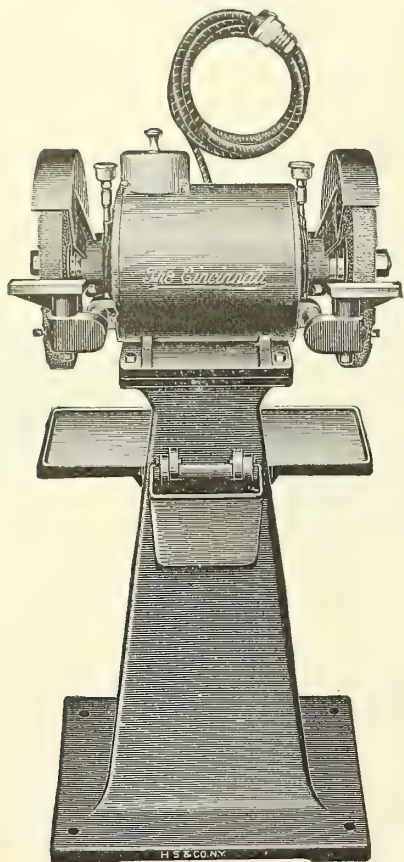
The Brush-Holders are enclosed and fully protected. They are easily accessible and brushes can be readily renewed when necessary.

Oil-Cups are provided for the spindle bearings.

Electric Grinding Machines

The Cincinnati

Two-Wheel Floor



Direct and Alternating Current

Heavy Duty Bench Grinder mounted on a pedestal and used as a Floor Grinder. The pedestal is fitted with water pot and tool pans. Especially built for constant use it is rapidly taking the place of belted machines. It is dirt and dust proof.

Can be furnished equipped with wet grinding attachment at one or both ends of the spindle.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type	Direct	Current	Each	H. P.	Weight	Pounds	Motor	Dimen-	Speed	Wheels	Type
								sions	R. P. M.	Included	Alternating
FO	\$85.00	1	175	7½	19½	2000	10x1	x ¾	\$105.00	FOA	
FT	118.00	2	290	11x21	1600	12x1½	x1		143.00	*FTA	
FC	148.00	3	390	11x22	1400	14x2	x1		170.00	*FCA	

*Made in two or three phase only.

Heavy Duty Bench

Direct and Alternating Current

This is the Portable Heavy Duty Bench Grinder illustrated above, but without pedestal, and which we can safely recommend for heavy grinding of all kinds; also for buffing and polishing. The motor is fully enclosed and equipped with two detachable tool rests and wheel guard. The bearings are adjustable to wear.

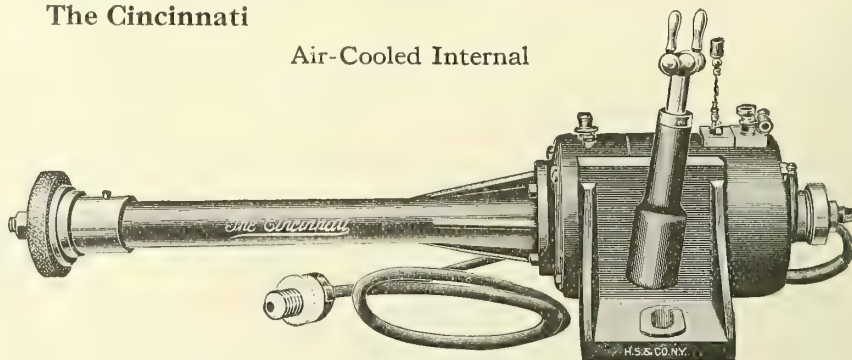
We can furnish this Grinder with wet grinding attachment at one or both ends of the spindle.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimen- sions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
BO	\$70.00	1	80	7½x19½	2000	10x1 x ¾	\$95.00	BOA
BT	100.00	2	175	11x21	1600	12x1½x1	125.00	*BTA
BL	128.00	3	225	11x22	1400	14x2 x1	148.00	*BLA

*Made in two and three phase only.

Air-Cooled Internal



Type of Internal Grinder for finishing Air, Steam or Gas Engine Cylinders. Also for dies and cylindrical work of all kinds. This Tool is of the same general design as Type T Grinder, shown below, having a vertical adjustment of about 4 inches and is used in the same manner.

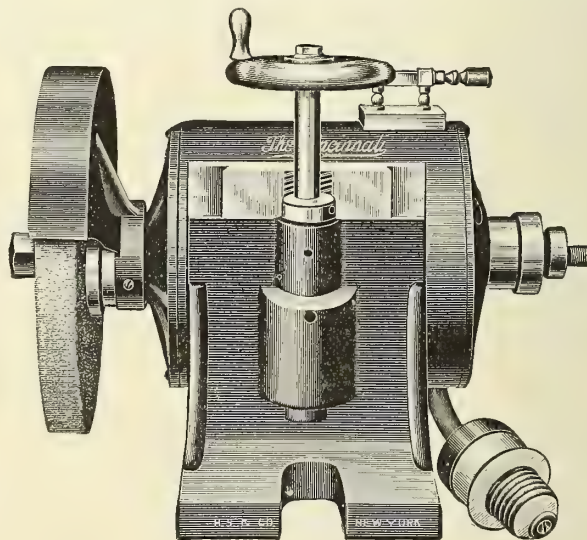
The standard size of extension spindle is 12 inches, but shorter or longer may be furnished if required. This extension is detachable at the body of the motor and the Grinder can be used for external work. Larger size wheels can be attached to standard spindle if desired.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Type Alternating Current
V	\$84.00	1/2	59	6 x21	{ 2 Speeds 2600-3600	8x 3/4 x 5/8 4x 3/4 x 5/8	\$98.00 VA
VV	90.00	1	95	7 1/2 x22	2000	5x1 x 3/4	104.00 VVA

Two-speed machines furnished in ½ H. P., Direct Current only.

Air-Cooled Parallel



Direct and Alternating Current

This Portable Heavy Duty Parallel Grinder is especially adapted for grinding spindles, rolls, journals, bushings, crank shafts, connecting rods and parallel work of all kinds.

The angle plate of Grinder tool bolted on a lathe, or can be used in a planer, boring mill or other machine tool. It has a vertical adjustment of 4 inches to 6 inches, according to size. The motor is fully enclosed and dust-proof. Bearings are adjustable to wear. One H. P. and over furnished with wheel-guard.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

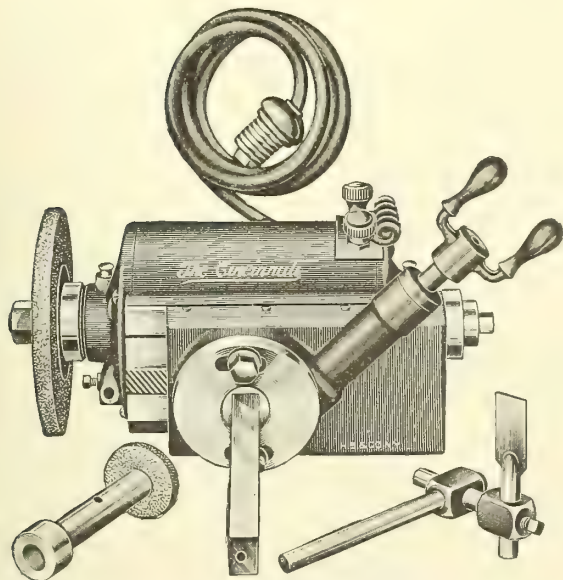
Type	Direct	Current	Each	H. P.	Weight	Pounds	Motor	Dimen-	Speed	Wheels	Type
								sions	R.P.M.	Included	Alternating
T	\$65.00	1/2	45	6	x12 1/2	2600	8x 3/4	x 5/8	\$77.00	TA	
TT	80.00	1	80	7 1/2	x16	2000	10x1	x 3/4	102.00	TTA	
TV	126.00	2	175	11	x19	1600	12x1 1/2	x1	135.00	*TVA	
TF	150.00	3	220	11	x21	1400	14x2	x1	165.00	*TFA	

*Made in two and three phase only.

For General Description of Motors, see preceding page

Electric Portable Tool Post Grinders

The Cincinnati
With Feed



Direct and Alternating Current

This Portable Electrical Tool Post Grinder has horizontal free hand feed.

Especially adapted for grinding Lathe Centers, Cutters, Reamers, Dies, Rolls, etc., and for Surface, Parallel and Internal Grinding jobs of all kinds. Used on Lathe, Planer, Boring Mill, Milling Machine and Shaper.

They are sent out with all attachments as illustrated.

Order by Type, Current and Volts
If Alternating, Give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Type Alternating Current
S	\$37.00	1/4	20	4 1/2 x 10 1/2	4200	6 x 3/8 x 1 1/2	SA
SS	60.00	1/2	45	6 x 13	2800	8 x 1 1/2 x 5/8	SSA

Type S: Size extension mandrel 4 1/2 inches long. Wheel included, 1 1/2 x 3/8 x 3/8 inches bore.

Type SS: Size extension mandrel 5 1/2 inches long. Wheel included, 2 x 1/2 x 1/2 inches bore.

Made in larger sizes on order. Prices on application.

Without Feed

Direct and Alternating Current

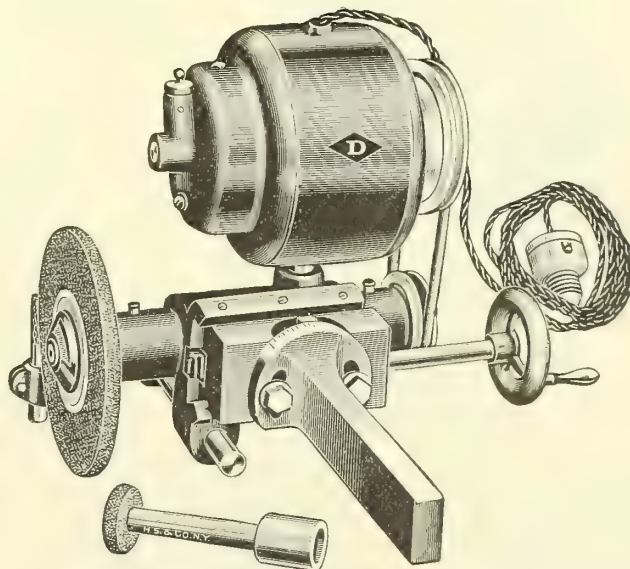
Type P Tool Post Grinder is practically the same as type S except that it has no horizontal feed. The latter is not necessary on work where no feed is required, or if the Grinder is used on a lathe with compound rest or machine tool with feed.

This type Grinder is extremely rigid and particularly adapted for use on work where absolute rigidity is required. Adjustable bearings to take up the wear. Tool Rest and Extension Mandrel included with Types P and PH only.

Order by Type, Current and Volts
If Alternating, Give Cycles and Phase

Type Direct Current	Each	Weight Pounds	Motor Dimensions	H. P.	Speed R. P. M.	Wheels Included	Type Alternating Current
P	\$30.00	16	4 1/2 x 10 1/2	1/4	4200	6 x 3/8 x 1 1/2	PA
PH	52.00	35	6 x 13	1/2	2800	8 x 1 1/2 x 5/8	PHA
PO	70.00	75	7 1/2 x 15	1	2000	10 x 1 x 3/4	POA
PT	110.00	110	11 x 18	2	1600	12 x 1 1/2 x 1	PTA

Diamond
With Feed



No. 10 and No. 12 Grinding Attachments are for use in the tool post of a lathe, planer, shaper, or milling machine. They will grind cutters, reamers, dies, rolls, lathe centers, etc., and will do surface or internal grinding. Each machine has an independent feed of over 3 inches by worm and hand wheel, making it convenient for use in lathes without a compound rest. The attachment can be set at any angle for grinding either straight or taper work. The tool post shank is graduated to show different angles of inclination of the spindle and wheel. The bronze bearings of the grinding spindle are adjustable for wear and protected from dust or grit. Each machine has a universal work rest adjustable in all directions and an extension spindle for internal grinding.

One of the best features of these machines is the mounting of the motor above the grinding wheel instead of on the same spindle. This arrangement makes it possible to run the motor and the emery wheel at separate speeds. Moreover, two grooved pulleys of different sizes are provided for the motor, and a substitution of one for the other changes the speed of the wheel. Thus, small wheels for internal grinding can be run fast, and large wheels at a slower rate. These advantages are lost when the wheel is mounted directly on the motor shaft.

We are able to furnish these attachments for use with alternating current as well as with direct current. As an alternating current motor must be run at a moderate speed, it is not practical to mount the grinding wheel directly on the motor shaft, and our design becomes especially valuable.

We use a standard type of motor which is easy to repair if it should become necessary.

Style	Weight	Code Word	Price
No. 10 American Grinding Attachment, with Direct Current Motor, 110 volts..	30	Paragon	\$50.00
Alternating Current Motor, 110 volts. .	35	Paragona	60.00
No. 12 American Grinding Attachment, with Direct Current Motor, 110 volts..	35	Patron	62.00
Alternating Current Motor, 110 volts. .	45	Patrona	75.00

Prices with 220-volt motor, \$2.00 extra.

We must always be advised as to the voltage and the frequency of the current if alternating.

A special price will be charged if the alternating current motor is not for a 60-cycle, single-phase current.

Iron Frame Grindstones

Hoppen

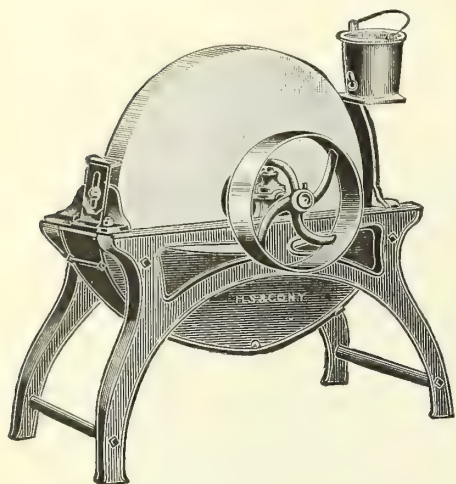
The frame of the Hoppen Grindstone is designed like a pyramid with all the weight hung central and low—no material overhanging floor bearing. This insures safe transportation as there is no chance of the stone tipping under the roughest handling.

All drippings drain into trough.

The stone is firmly held by powerful flanges and nuts on a shaft that is turned from a steel bar and hung true.

It spins lightly on self-oiling, self-aligning journals; thus little power is required.

The foot-power frame has swivel treadle for right or left foot.



Number		With Stone Each	Without Stone Each
10A	Frame with Pulley. Stone, 24x2½ inches.....	\$18.25	\$15.00
10B	Frame with Treadle. Stone 24x2½ inches.....	18.25	15.00
10C	Frame with Treadle and Pulley. Stone, 24x2½ inches.....	20.45	17.20
11	Frame with Pulley. Stone, 24x3 inches.....	19.60	15.00
12	Frame with Pulley. Stone, 27x3½ inches.....	31.25	24.60
13	Frame with Pulley. Stone, 30x4 inches.....	34.60	26.96
14	Frame with Pulley. Stone, 36x5 inches.....	59.25	45.60
			Each
	Shield, Pan and Bucket with Faucet, for Nos. 10 and 11.....		\$1.70
	Shield, Pan and Bucket with Faucet, for No. 12.....		2.75
	Shield, Pan and Bucket with Faucet, for No. 13.....		2.80
	Shield, Pan and Bucket with Faucet, for No. 14.....		3.75
	Hand Crank, for No. 10 or No. 11.....		.75

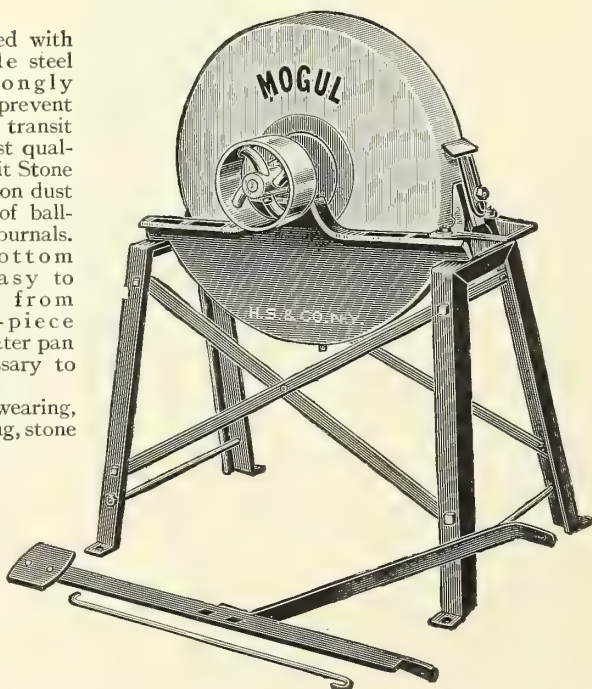
Mogul No. 07

Equipped with heavy angle steel frame strongly braced to prevent breakage in transit or use. Best quality Berea Grit Stone is mounted on dust and grit proof ball-bearing journals. Plug at bottom makes it easy to drain water from heavy one-piece gray iron water pan—not necessary to remove pan.

Long wearing, quick cutting, stone runs from 22 to 24 inches in diameter, 3 to 3½ inches thick. Pulley 6 inches in diameter, with 3-inch face.

Tool rests are adjustable with deep tray draining into water pan—a feature not found in other power stones.

Without foot power attachment.....	Each \$12.00
With foot power attachment.....	13.50



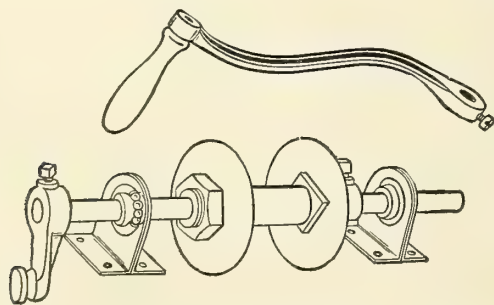
Cycle, Ball-bearing



Stones 19 to 22 inches, 2 to 2¼ inches thick. Best quality Berea grit. Front and rear legs, each formed of one piece heavy steel angle. Upper frame is constructed to form a brace for legs, making a most rigid frame. Weight 85 pounds.

No. 300 Each.....	\$6.00
Fixtures only, per set.....	1.00

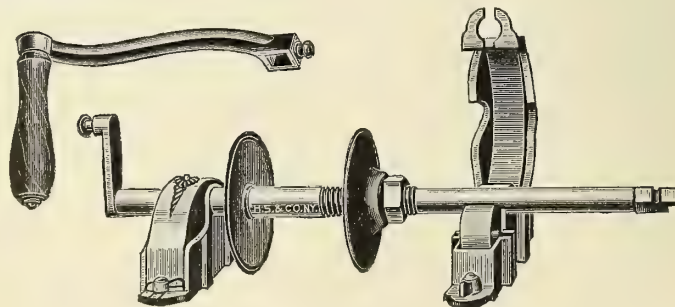
Grindstone Fixtures



No. 01 Ball Bearing

Can be applied to all ordinary frames. Ball-bearing journals adjustable on shaft. Suitable for stones 2 to 3 inches thick.

Each.....	\$1.50
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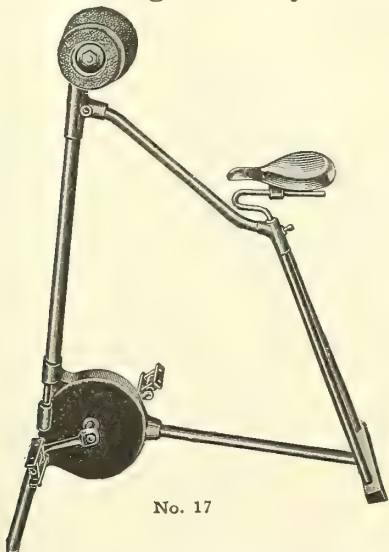


Wheel Bearing

No. 41	Shaft, 19 inches long.....	Set \$.80
No. 42	Shaft, 17 inches long.....	.75

Foot Power Grinders

Niagara Utility

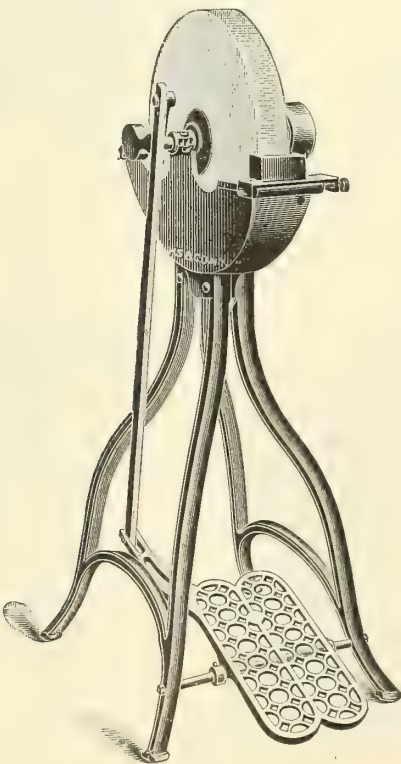


No. 17

One of the most serviceable and practical foot-power machines ever developed is the new No. 17 Niagara Utility Grinder as illustrated herewith. In its construction several important features have been embodied, which places this grinder in a class by itself. Strength, durability and simplicity are the main points which have been taken into consideration, the aim being to give the maximum amount of power for the least energy. The frame is made of strong and durable tubing, which insures rigidity under all conditions. The pedal drive is easy running and practically noiseless, while the gears are accurately machined and all parts are carefully assembled. The machine is equipped with two Carborundum grinding wheels, 7 inches in diameter, one in coarse grit and the other in fine grit. Both wheels can be used for general grinding.

Weight, packed 100 pounds, each..... \$20.00

H. S. & Co.

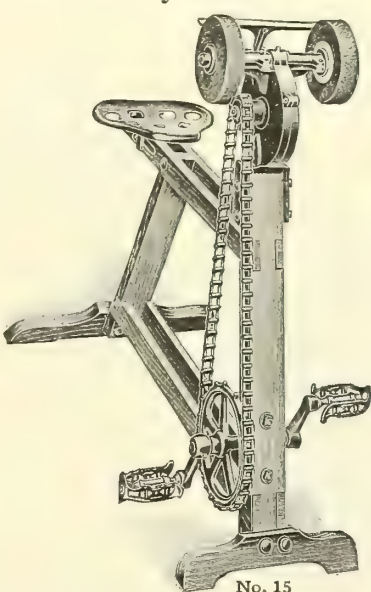


No. 4

The stone is 14 inches in diameter and 1¾ inches wide. It is a well built machine, and will be found very useful for general sharpening. Height over all, 39 inches.

No. 4 Each..... \$8.00
 No. 4 4x2-inch Pulley, for power attachment, each..... .65

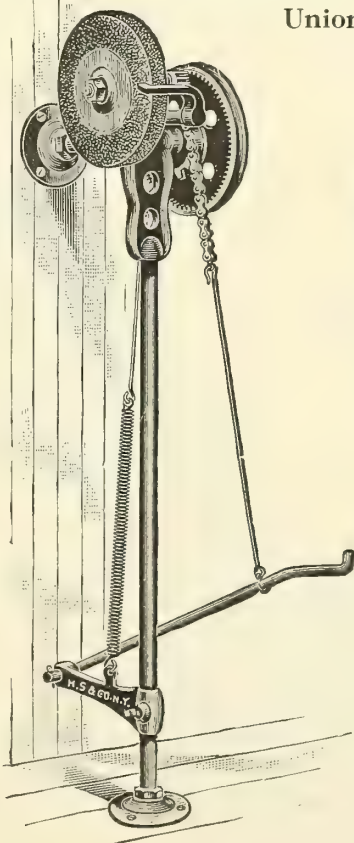
Greyhound



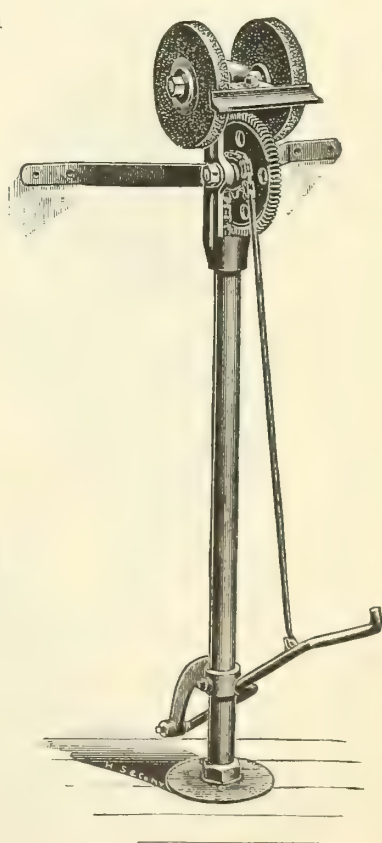
No. 15

	Each
With coarse and fine wheels, 6½x1x1	\$15.00
Saw Gumming Wheel with collar attachment .....	.60
Beveled wheel for mower knives on special arbor	1.25
Extra corundum wheels, coarse or fine	1.50

Union



No. 1



No. 2

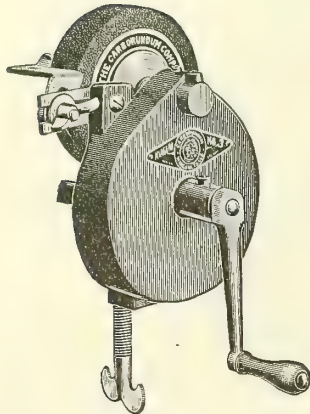
	No. 1		No. 2	
	Gear driven. Milled pinion. New positive ball clutch. Cone bearings. Machine cut gears. 3000 to 4000 R. P. M.			
Number	1	1 A	2	2 A
Number of wheels	1	1	2	2
Diameter of wheels, inches	6	8	6	8
Thickness of wheels, inches	¾	1¼	¾	1¼
Height from floor, inches	42	42	41½	42½
Weight, boxed, pounds	23	26	30	35
Each	\$4.50	5.00	6.50	7.50

Tool Grinders

Carborundum Niagara

Every part from castings to nuts is accurately made, perfectly fitted. The gear case is made of the best grade of grey iron, the two sections being ground to a fit, making the case absolutely oil tight. The gears are accurately cut, they run smoothly and practically noiseless. The handle and thumb-screw clamp are made of malleable iron to withstand strains, and all small parts are heavily nickel-plated.

Every machine is fitted with a Carborundum wheel, the fastest, coolest cutting of all wheels for general grinding purposes.



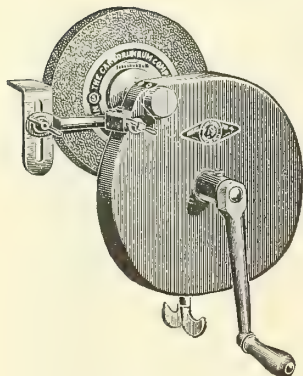
Nos. 1, 2 and 3

Number	Wheel		Weight Packed Pounds	Each
	Diameter	Thickness		
1	4	1	10	\$3.00
2	5	1	11½	4.00
3	6	1	14½	6.00
4	7½	1¼	26	8.00
10	5	1½	13	7.00
28	7	1¼	36	12.50

No. 19	Tool grinding guide	\$.50
No. 20	Foot power attachment for No. 3 Grinder	1.50
No. 21	Foot power attachment for No. 4 Grinder	1.50
No. 23	Twist drill attachment	2.00

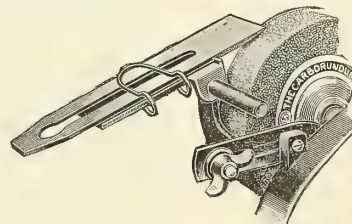


Nos. 20 and 21 Foot power attachment, fitted for Grinders Nos. 3 and 4, readily adjustable to several heights



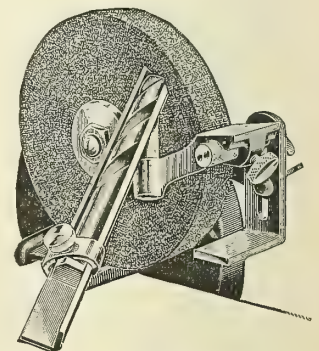
No. 4

Listed above

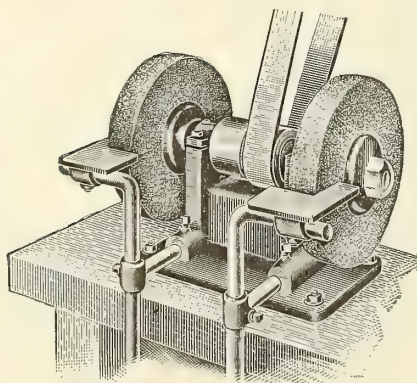


No. 19 Tool Grinding Guide

Listed above

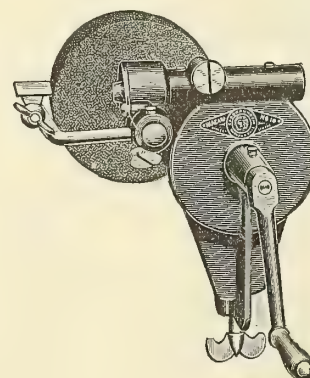


No. 23 Twist Drill Attachment, made for Grinders Nos. 3 and 4
Listed above

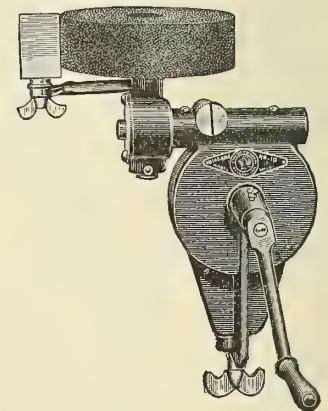


No. 28 Grinder Head

Splendid for the small shop where power is available. It is sturdy and every part is accurately machined and assembled. The idle pulley is one of the features of this compact grinder head. Bearings are lined with genuine babbitt and are adjustable so as to take up any possible wear. Shaft is made from the best quality of crucible steel. Each grinder head is furnished with two carborundum wheels, one fine and one coarse for general grinding purposes. Listed above.



Wheel Vertical



Wheel Horizontal

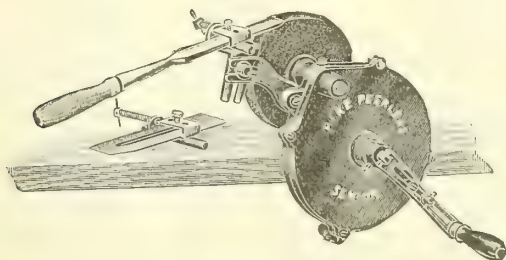
No. 10

Shaft can be reversed so as to run wheel in either position.

Listed above

Tool Grinders

Pike



No. 9 Peerless Senior Hand Power

Equipment

Pike Patented Tool Rest combining chisel holder, twist-drill guide and scissors guide.

Extension crank handle, adjustable to any length, making easy work of the most awkward grinding job.

One medium grit corundum wheel 6x1¼ inches.

Polishing outfit and foot power when ordered.

Crystolon wheels can be supplied if desired.

Size

Height 13 inches, length 12½ inches, diameter of gear case 9 inches, net weight 15 pounds, gross weight 20 pounds, cases 14x11x7 inches.

Green enamel finish.....	Each	\$7.00
Polishing outfit, extra		1.00
Extra corundum wheel.....		1.50
Extra crystolon wheel.....		1.50

No. 8 Peerless Junior Hand Power

An exact duplicate of the Senior model but smaller in size.

Equipment

Same as Senior except grinding wheel which is 5x1 inches.

Size

Height 10½ inches, length 7 inches, diameter of gear case 6 inches, net weight 7 pounds, gross weight 11 pounds, cases 11x9x7 inches.

Green enamel finish.....	Each	\$5.00
Polishing outfit, extra		1.00
Extra corundum wheel.....		1.00
Extra crystolon wheel.....		1.00

Foot-Power Attachment

For either Nos. 8, 9, 12, each \$1.50

In ordering, state for which machine attachment is desired.

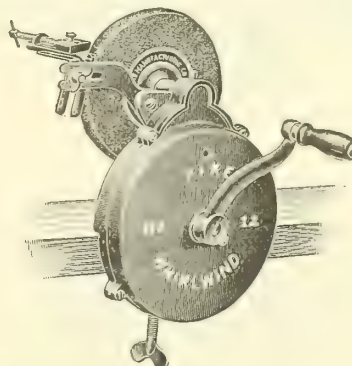
Polishing or Buffing Outfit



For attachment to No. 8 or No. 9 grinder, each \$1.00

In ordering, state for which machine attachment is desired.

Pike



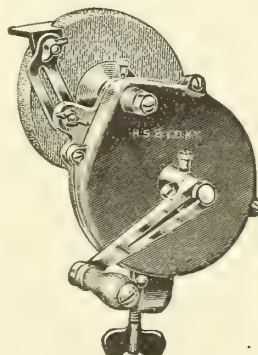
No. 12 Whirlwind Hand Power

This Grinder will do heavy, hard, accurate and quick grinding on railway construction work, quarrying, mining, contracting, building and kindred trades.

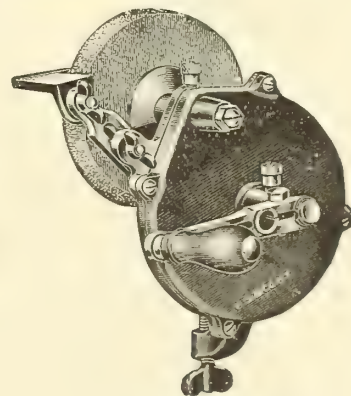
Each.....	\$13.00
Extra corundum wheel 8x1¼ inches.....	1.50

Height 13½ inches, diameter of gear case 9 inches, net weight 24 pounds, gross weight 28 pounds. Size of box 16 x 10¾ x 7¼ inches.

Milwisus



Nos. 1A and 2A



Nos. 3A and 4A

Nickel-plated

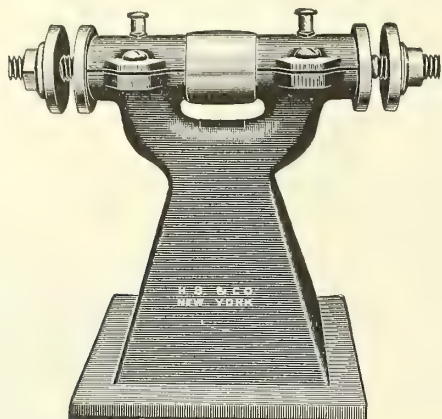
Equipped with adjustable tool grinding guide and milwisus wheel.

	Each	
1A Wheel 4x¾ inches, net weight 4 pounds.....	\$3.00	
2A Wheel 5x1 inches, net weight 6½ pounds.....	5.00	
3A Wheel 6x1 inches, net weight 11½ pounds	6.50	
4A Wheel 7x1 inches, net weight 16 pounds.....	8.00	

Foot-power Attachment "C" for Nos. 3A and 4A fitted with turn-buckle to adjust stroke to various height benches or tables. Net weight 4½ pounds.

Each.....	\$1.50
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Grinding Heads

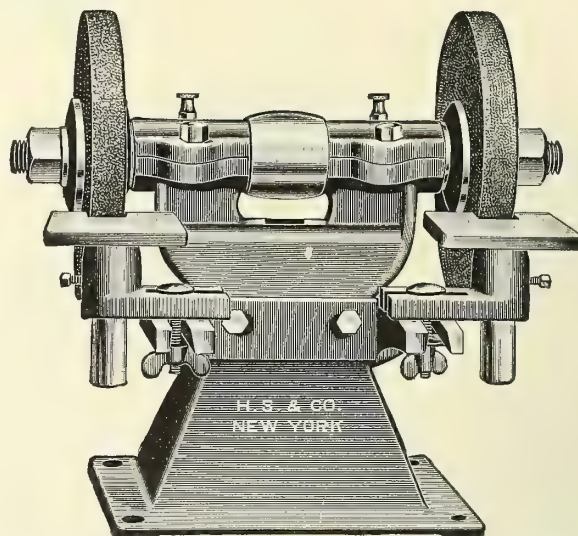


No. 26 7 inches high, has spindle 9 inches long; the diameter of the spindle in the bearing is $\frac{3}{4}$ -inch and between the flanges where the wheel runs is $\frac{1}{2}$ inch. It will take wheels up to 8 inches in diameter and $\frac{3}{4}$ inch thick, although $\frac{1}{2}$ x6-inch wheels are recommended. Is equipped with patent oil cups and the nuts are finished and case-hardened. Width of pulley 1-inch.

Each \$6.00

No. 25. Same as No. 26 except lighter in construction. Japanned iron frame, brass screws and caps, 6 inches in height, has $\frac{1}{2}$ -inch spindle and will take wheels $\frac{7}{8}$ inch thick. Boxes are adjustable. The pulley is grooved for $\frac{1}{4}$ inch round belt.

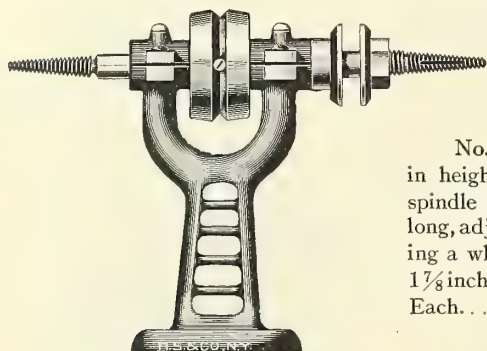
Each \$3.50



No. 40 This machine is 8 inches high and has a spindle $12\frac{1}{2}$ inches long. The diameter of the spindle is 1 inch in the bearing and $\frac{3}{4}$ -inch between flanges where the wheel runs. It takes wheels 8 inches in diameter and 1 inch thick. The pulley is 2 inches in diameter and has a $1\frac{1}{2}$ -inch face. It includes an equipment of adjustable and detachable work rests as shown in cut, but it does not include emery wheels.

Each \$10.00

Polishing Heads



No. 21

No. 21 Japanned iron frame, 6 inches in height, brass screws and caps, steel spindle $\frac{3}{8}$ -inch diameter and 8 inches long, adjustable boxes, flanges admit holding a wheel $\frac{3}{4}$ inch thick, grooved pulley $1\frac{7}{8}$ inches diameter, for $\frac{1}{4}$ -inch round belt.

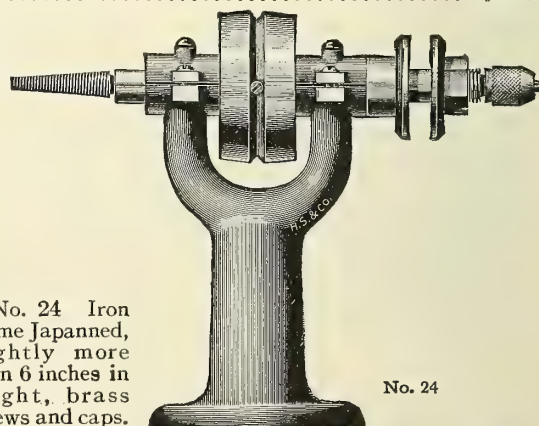
Each \$1.50

No. 23 In all respects as No. 21, except that it is fitted with a three-jawed chuck, holding No. 0 to $\frac{5}{32}$ -inch.

Each \$2.50

No. 22 In all respects as No. 24 except that it is fitted with steel spindle $\frac{1}{2}$ inch diameter and 10 inches long in place of chuck.

Each \$2.50



No. 24

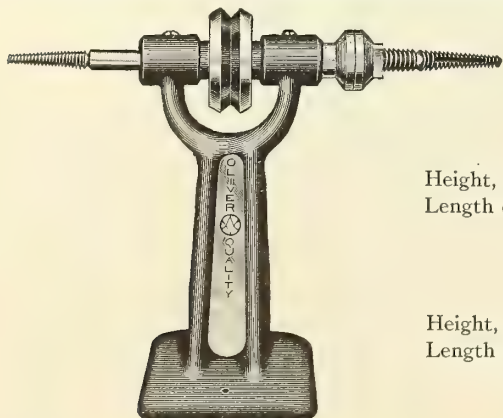
No. 24 Iron frame Japanned, slightly more than 6 inches in height, brass screws and caps.

Fitted with a three-jawed chuck, holding No. 0 to $\frac{1}{4}$ -inch, adjustable boxes, flanges admit holding a wheel $\frac{7}{8}$ -inch thick, grooved pulley $2\frac{1}{4}$ inches in diameter for $\frac{1}{4}$ -inch round belt.

Each \$4.00

Blue Brand

The ideal feature of the Blue Brand Polishing Heads consists of the oilless bearings—which means the elimination of the oil can. It is not necessary to give the lubrication a thought. There can be no splashing of oil if too much is applied, as often happens with the old style polishing heads. The bearings are of specially treated material, and act as cushions for the spindle, making the operation practically noiseless.



No. O

No. O

Height, 6 inches.

Length of Spindle, 8 inches.

Each \$1.25

Diameter, $\frac{3}{8}$ inch.

Weight, $2\frac{1}{2}$ pounds.

No. OC

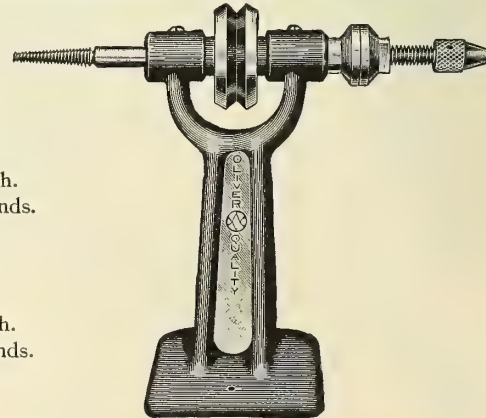
Height, 6 inches.

Length of Spindle, 8 inches.

Each \$1.50

Diameter, $\frac{3}{8}$ inch.

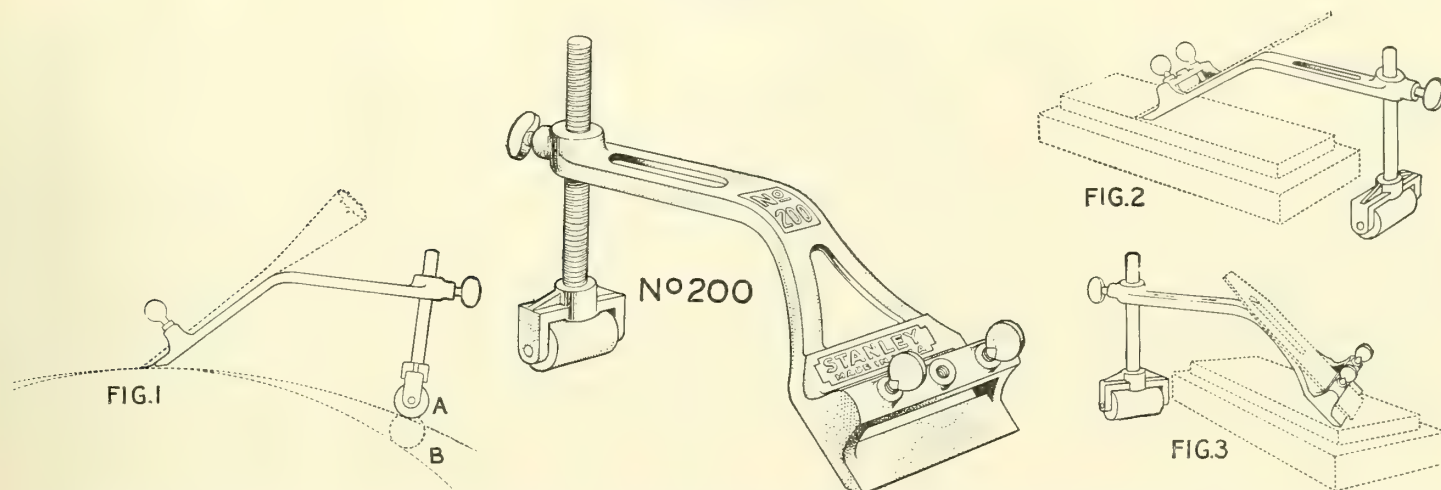
Weight, $2\frac{1}{2}$ pounds.



No. OC

Grinders for Plane Cutters and Chisels

Stanley



The Stanley Cutter and Chisel Grinder is a device for holding Plane Irons, Chisels and other similar cutting tools that they may be ground or honed to any desired angle or bevel, insuring an accuracy that is very difficult to obtain when the tool is held in the hand.

The tool to be sharpened is rigidly held in the Grinder by thumb-screws, and may be given any desired angle by means of the large screw attached to the roller frame, which raises or lowers the main body.

As shown in the cut the Grinder is fitted with two thumb-screws and three thumb-screw holes. By the use of two thumb screws, the tool to be ground is held much more firmly than is possible with the use of a single screw.

The thumb screws are placed in the two outer holes when wide cutters are to be held. For narrow cutters the middle hole and one of the outer holes may be used.

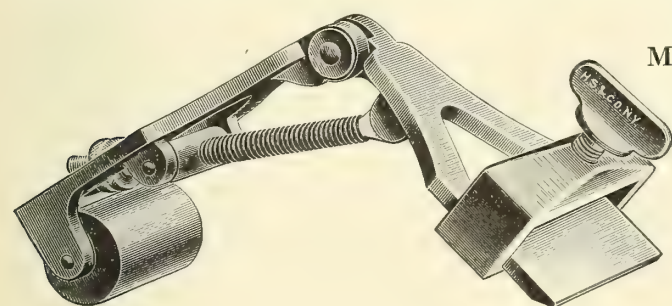
In grinding, the Roller, and beveled edge of the tool to be sharpened, are held against the face of the grindstone as in Fig. 1, "A" indicating the position of the Roller. "B" indicates the position of the roller on a stone of smaller diameter, both positions giving the same bevel to the tool being sharpened.

In honing, the Roller does not come in contact with the oil stone but acts as a rear support. (See Fig. 2.)

By turning the Roller at an angle to the main body, see (Fig. 3), the user will be able to obtain the slanting stroke so commonly used when tools are sharpened without a holder.

The Sharpener is made entirely of metal, all parts being nickel-plated.

No. 200 Each..... \$.90



M. F. Co.

Cast-iron, rough nickeled.

Adjustable to hold chisels, plane irons, etc., against grindstone at different bevels and enabling the user to obtain the same bevel the full width of the tool being ground.

Roller bearing against grindstone. Will take plane cutters or chisels up to 2¾ inches.

Each..... \$1.00

Automatic Rubber Respirator

Cover

Is designed for the use of persons who are exposed to the danger of inhaling poisonous dust and gases.

It is provided with a closed and protected Automatic Ventilating Valve, which operates under all conditions, thus securing proper ventilation of the Respirator and preventing breathing over and over again of the inhaled air.

The filtering material and its arrangement in the Respirator should be such that the air will be purified while passing through it. A fine, damp sponge or a wet silk cloth are reckoned among the best known filtering materials for separating impurities from the air, and when these two valuable filtering materials are combined in their action, as they are in the Cover "Combination" Filter, the protection is complete, and it is a very difficult matter for smoke, fumes and gases to pass the silk cloth in contact with the wet sponge.

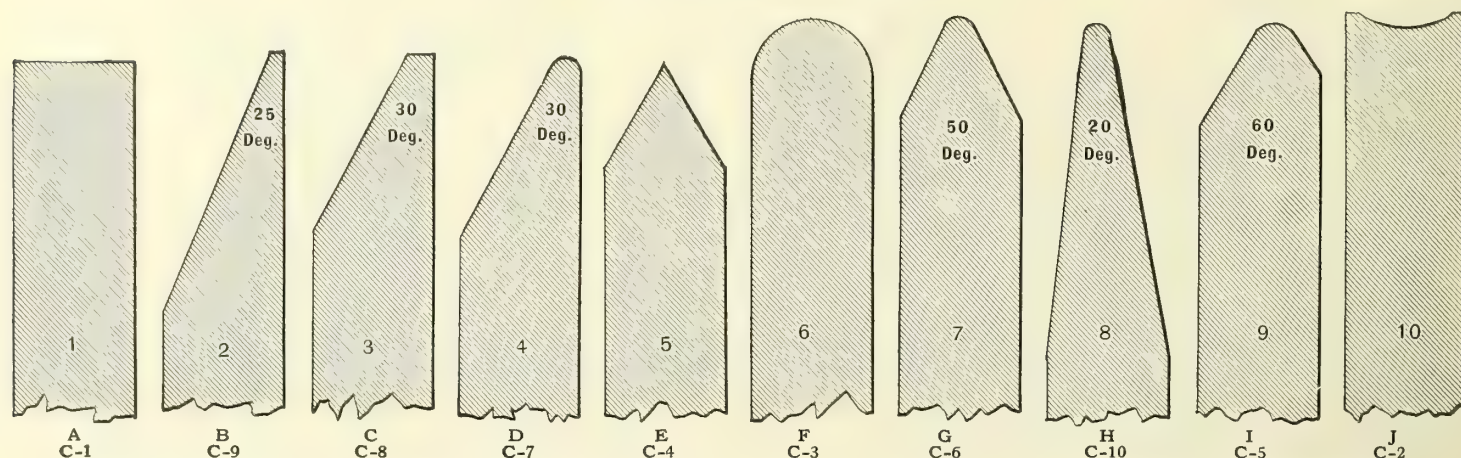
Both the sponge and the silk disc can be removed, washed clean and replaced in a few minutes.

No fireman or workman cares to carry around on his face a cumbersome apparatus that is always getting out of order and is often not at hand when most needed, but wants a simple and effective device that can be placed in any ordinary pocket without fear of crushing, and be quickly adjusted to the face.

Each..... \$2.00



Shapes of Grinding Wheel Faces



In ordering emery, carborundum or aloxite wheels specify shapes by number within shape. In ordering alundum wheels, specify shapes by letter under shape.

In ordering corundum wheels, specify shapes by C-number under shape.

We supply wheels of any desired shape. When special shapes are required a diagram should accompany the order.

All wheels furnished with square face unless otherwise ordered. All wheels thinner than one-quarter inch are subject to the same list price as wheels of that thickness. All wheels less than one inch in diameter are subject to the same list price of wheels of that diameter. In ordering, please be careful to state diameter and thickness of wheel, size of arbor hole or diameter of shaft on which wheel will be mounted.

It is more satisfactory, in the majority of cases, to leave the selection of grain and grit to the experienced dealer after giving as complete detailed description as possible of the requirements. Following list applies to all grinding wheels.

Thickness of Wheels in Inches

Diam. in Inches	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	4
1	.25	.30	.30	.35	.35	.40	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	\$1.00
1 1/2	.30	.35	.40	.45	.45	.50	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10
2	.35	.45	.50	.55	.55	.60	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.20
2 1/2	.40	.55	.65	.70	.75	.80	.85	.95	1.05	1.15	1.25	1.35	1.45	1.55	1.65	1.75	1.85	2.05
3	.50	.65	.80	.90	.95	1.05	1.10	1.25	1.40	1.55	1.70	1.85	2.00	2.15	2.30	2.45	2.60	2.90
3 1/2	.60	.80	.95	1.05	1.15	1.25	1.35	1.55	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35	3.75
4	.75	.95	1.10	1.25	1.35	1.50	1.60	1.85	2.10	2.35	2.60	2.85	3.10	3.35	3.60	3.85	4.10	4.60
4 1/2	.90	1.10	1.25	1.40	1.55	1.70	1.85	2.15	2.45	2.75	3.05	3.35	3.65	3.95	4.25	4.55	4.85	5.45
5	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.60	3.00	3.40	3.80	4.20	4.60	5.00	5.40	5.80	6.20	7.00
6	1.40	1.60	1.75	2.10	2.40	2.75	3.05	3.70	4.35	5.00	5.65	6.30	6.95	7.60	8.25	8.90	9.55	10.85
7	1.85	2.00	2.15	2.60	3.00	3.45	3.85	4.70	5.55	6.40	7.25	8.10	8.95	9.80	10.65	11.50	12.35	14.05
8	2.10	2.35	2.60	3.10	3.60	4.10	4.60	5.60	6.60	7.60	8.60	9.60	10.60	11.60	12.60	13.60	14.60	16.60
9	2.50	2.80	3.10	3.70	4.25	4.85	5.40	6.55	7.70	8.85	10.00	11.15	12.30	13.45	14.60	15.75	16.90	19.20
10	3.00	3.35	3.65	4.35	5.00	5.70	6.35	7.70	9.05	10.40	11.75	13.10	14.45	15.80	17.15	18.50	19.85	22.55
12	3.60	3.80	4.00	5.00	6.00	6.70	7.40	9.00	10.70	12.75	14.00	15.70	17.40	19.00	20.75	22.50	24.25	27.50
14	4.05	5.15	6.25	7.35	8.45	9.55	10.65	12.85	15.05	17.25	19.45	21.65	23.85	26.05	28.25	30.45	32.65	37.05
16	5.75	7.00	8.50	9.50	10.85	12.30	13.70	16.55	19.40	22.25	25.00	27.95	30.80	33.65	36.50	39.35	42.20	47.90
18	7.50	9.00	10.50	11.75	13.25	15.15	17.00	20.75	24.50	28.25	32.00	35.75	39.50	43.25	47.00	50.75	54.50	62.00
20	9.50	11.25	13.00	14.50	16.25	18.25	20.25	24.75	29.25	33.75	38.25	42.75	47.25	51.75	56.25	60.75	65.25	74.25
22	11.50	13.50	15.25	17.25	19.00	22.00	25.00	31.00	37.00	43.00	49.00	55.00	61.00	67.00	73.00	79.00	85.00	97.00
24	14.00	16.00	18.00	20.00	22.00	26.00	29.00	36.00	43.00	50.00	57.00	64.00	71.00	78.00	85.00	92.00	99.00	113.00
26	.....	.....	.....	.....	.....	.....	35.00	43.00	51.00	59.00	67.00	75.00	83.00	91.00	99.00	107.00	115.00	131.00
28	.....	.....	.....	.....	.....	.....	.....	.....	56.00	65.50	75.00	84.50	94.00	103.50	113.00	122.50	132.00	151.00
30	.....	.....	.....	.....	.....	.....	.....	.....	61.00	72.00	83.00	94.00	105.00	116.00	127.00	138.00	149.00	171.00
32	.....	.....	.....	.....	.....	.....	.....	.....	72.50	81.50	97.50	110.00	122.50	135.00	147.50	160.00	172.50	197.50
34	.....	.....	.....	.....	.....	.....	.....	.....	83.00	91.00	112.00	126.00	140.00	154.00	168.00	182.00	196.00	224.00
36	.....	.....	.....	.....	.....	.....	.....	.....	95.00	110.50	126.00	141.50	157.00	172.50	188.00	203.50	219.00	250.00

Thickness of Wheels in Inches

Diam. in Inches	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8
38	\$170.00	\$204.00	\$238.00	\$272.00	\$306.00	\$340.00	\$374.00	\$408.00	\$442.00	\$476.00	\$510.00	\$544.00
40	189.00	226.00	264.00	302.00	339.00	377.00	415.00	452.00	490.00	528.00	566.00	603.00
42	208.00	250.00	291.00	333.00	374.00	416.00	458.00	499.00	541.00	582.00	624.00	666.00
44	228.00	274.00	319.00	365.00	411.00	456.00	502.00	547.00	593.00	639.00	684.00	730.00
46	250.00	299.00	349.00	399.00	449.00	499.00	549.00	599.00	649.00	699.00	749.00	798.00
48	272.00	326.00	380.00	434.00	488.00	543.00	597.00	651.00	705.00	759.00	814.00	868.00
50	.....	354.00	412.00	471.00	530.00	589.00	648.00	707.00	766.00	825.00	884.00	943.00
52	.....	383.00	446.00	510.00	574.00	637.00	701.00	765.00	828.00	892.00	956.00	1,020.00
54	.....	412.00	481.00	550.00	619.00	688.00	756.00	825.00	894.00	963.00	1,032.00	1,100.00
56	.....	444.00	517.00	591.00	665.00	739.00	813.00	887.00	961.00	1,035.00	1,109.00	1,183.00
58	.....	476.00	555.00	634.00	714.00	793.00	872.00	951.00	1,031.00	1,110.00	1,189.00	1,268.00
60	.....	509.00	594.00	679.00	764.00	848.00	933.00	1,018.00	1,103.00	1,188.00	1,272.00	1,357.00

For grinding wheel data, see pages 355, 356 and 357. For emery and corundum data, see page 357. For carborundum and aloxite data, see page 358.
For alundum data, see page 359.

Grinding Wheel Data

General Suggestions

Use protection hoods wherever possible.

Do not continue to use a wheel that does not give entire satisfaction but immediately advise us of the difficulty, giving full particulars.

Keep surface speed constant so far as it is practicable.

Complaint is sometimes made that wheels appear to be softer toward the center. Usually this is because the same surface rate of speed is not maintained as the wheel is reduced in diameter, and causes it to wear away faster and appear softer. It is also true that while the grade of the wheel may be uniform throughout, yet the smaller line of contact due to the smaller diameter will cause the wheel to appear softer. Another reason is because each particle or grain of abrasive is called upon to do more work as the wheel reduces in diameter and naturally wears faster.

The increase of the speed as the wheels wear down can be accomplished by different methods, i. e., variable speed countershafts or cone pulleys on the spindle of the grinding machine, or by transferring from the first or larger machine to a smaller one.

Grinding machines should be of heavy, rigid design, set on firm foundations.

Vibration, due to frail spindles or machines, is wasteful both of wheel and power. The heavier the machine the softer the wheel can be. To use wheels on frail machines they must be made harder. Harder wheels require more power to produce the same work and consequently more pressure against the wheel by the operator.

In grinding, avoid excessive pressure on wheel, as it causes it to glaze and fill up much more rapidly than a light pressure.

Keep all rests adjusted close to the wheel, otherwise work is liable to be caught and injury result.

Keep boxes well oiled and adjusted.

Indicate on each machine the revolutions of spindle and size of wheel to be run upon it.

Keep tickets or tags which are sent on the wheels in a record book so that if a wheel is not satisfactory reference can be made to order number when making complaint. It is equally valuable as a reference when ordering duplicate wheels.

Wheels should be run toward the operator, and constant care taken so that the rests are kept close to wheels, as they are sometimes broken by castings getting caught between the wheel and the rests.

The working strain of the wheel compares as to the square of their velocity, i. e., if the revolutions of the mandrel be doubled the working strain on the wheel will be increased four times.

Never hack wheels, as they are liable to be broken or else cracked so that they will break in use.

Grinding Wheel Dressers

Keep wheels true.

Tools for truing and dressing grinding wheels should be kept constantly at hand ready for use, as it is of the utmost importance that wheels should be kept perfectly true.

A variety of styles, both in size and shape of cutters, are desirable for wheels of different coarseness, hardness and size.

We recommend a large corrugated and twisted cutter dresser for the larger and coarser wheels; and a small twisted cutter dresser, or the Huntington, for smaller and finer wheels.

The small twisted cutter dresser is about one-half the size of the large ones.

For truing wheels used on Plain Cylindrical and Universal Grinding Machines, Cutter and Reamer Grinding Machines, etc., we recommend the diamond tool.

If too much dressing is necessary, it is an indication that the wheel is too hard for the work, or that it is speeded too high.

Never hack wheels, as they are liable to be broken or else cracked so that they will break in use.

For Listing of Dressers, see page 360. For Price List of Grinding Wheels, see page 354

Selection of Grains and Grades for Different Work

Conditions under which grinding wheels are used vary to such an extent that no absolute rule can be given for selecting the right grain and grade for the work.

The kind of grinding machine, wheel speed, work speed, character of material to be ground, whether to be ground wet or dry, contact of wheel and work—whether broad or narrow—must be taken into consideration.

Different shapes of work, different kinds of metal, require different cutting edges as well when grinding, as when turning; therefore, different grades and grains of wheels are required for different kinds of work.

There are no wheels so constructed that all materials can be ground equally well with one wheel.

It is more satisfactory in the majority of cases to leave this selection to the experienced dealer, after giving as complete detailed description as possible of the requirements.

Testing for Safety

In transit wheels are sometimes broken or cracked so slightly as not to be noticeable, therefore we would advise the operator to tap the wheel lightly with a hammer—if it rings it has not suffered any ill-usage and may be run with safety.

All wheels are tested by the factory at approximately fifty per cent. in excess of their maximum requirements—thus insuring a very high factor of safety.

Methods of Mounting

The grinding machine should be of rigid construction, with large spindles, well fitted bearings and securely fastened on firm foundations. A protection hood should surround the wheel. The following sizes of spindles are recommended except where the grinding wheels are extra thick.

Wheel Diameter	Spindle	Wheel Diameter	Spindle
6 inches and less	$\frac{1}{2}$ inch	14 inches and less	$1\frac{1}{4}$ inches
8 inches and less	$\frac{3}{8}$ inch	16 inches and less	$1\frac{1}{2}$ inches
10 inches and less	$\frac{3}{4}$ inch	18 to 20 inches and less	$1\frac{3}{4}$ inches
12 inches and less	1 inch	22 to 24 inches and less	2 inches
Larger than 24 inches diameter, spindle $2\frac{1}{4}$ inches to 3 inches.			

Flanges

Flanges at least one-half the diameter of the wheel should be used; never less than one-third. They should be relieved with true bearing at the outer edge.

Inside flange should always be fixed or pinned on the spindle, never left loose.

Flanges on both sides of the wheel should be of the same diameter.

When used without a protection hood not over 2 inches of radius of the wheel should project outside of the flange.

Protection flanges and wheels of beveled shoulder and ring types are furnished whenever desired; also wheels any other shape for any style of flange.

Washers

Compressible washers of pulp or rubber, slightly larger than flanges, should be used between the wheel and flanges. They distribute the pressure evenly when the flanges are tightened by taking up any imperfections in the wheel or flange.

The holes in the wheels should be bushed .005 inch large over standard size spindles. This permits the wheels to slide on the spindle without cramping and insures a good fit not only on the spindle but against the inside flange which is essential.

Tighten flanges only enough to hold wheels firmly, avoiding any unnecessary strain. The importance of this statement is emphasized by the fact that on a $1\frac{1}{2}$ -inch floor grinding machine equipped with 8-inch standard relieved flanges a man with a 2-foot wrench can easily exert a crushing pressure between the wheel and flanges of 3,600 pounds or over one and one-half tons.

Grinding Wheel Data

Rules for Calculating Speeds and Diameters of Pulleys

Proposed speed of grinding spindle being given, to find proper speed of countershaft.

Rule: Multiply the number of revolutions per minute of the grinding spindle by the diameter of its pulley, and divide the product by the diameter of the driving pulley on the countershaft.

Example: The driving pulley on the countershaft is 16 inches in diameter, the pulley on the grinding spindle is $8\frac{1}{2}$ inches in diameter and makes 1,000 R. P. M. How many R. P. M. does the countershaft make?

$$\frac{1,000 \times 8\frac{1}{2}}{16} \text{ equals } 530 \text{ R. P. M.}$$

Speed of countershaft given, to find diameter of pulley to drive grinding spindle.

Rule: Multiply the number of revolutions per minute of the grinding spindle by the diameter of its pulley, and divide the product by the number of revolutions per minute of the countershaft.

Example: The pulley on the wheel spindle is $7\frac{1}{2}$ inches in diameter and should make 1,200 R. P. M. The countershaft runs at a speed of 530 R. P. M. How large should the driving pulley on the countershaft be?

$$\frac{1,200 \times 7\frac{1}{2}}{530} \text{ equals } 17 \text{ inches, diameter of driving pulley on countershaft.}$$

Proposed speed of countershaft given, to find the diameter of pulley for the lineshaft.

Rule: Multiply the number of revolutions per minute of the countershaft by the diameter of the tight and loose pulleys and divide the product by the number of revolutions per minute of the lineshaft.

Example: A lineshaft running 150 R. P. M. is to drive a countershaft 530 R. P. M. The driven pulley on the countershaft is 8 inches in diameter. What diameter should the driving pulley on the lineshaft be?

$$\frac{8 \times 530}{150} \text{ equals } 28 \text{ inches, diameter of pulley on lineshaft.}$$

General Principle Used to Determine Speeds and Diameters

The diameter of any driven pulley multiplied by its speed per minute always equals the diameter of the driving pulley multiplied by its speed per minute.

Weight of Wheels

To obtain the weight of Vitrified Wheels: square the diameter, multiply by the thickness and divide by 15.

To obtain the weight of Silicate Wheels: square the diameter, multiply by the thickness and divide by 13.

Rules for Obtaining Surface Speeds

To find surface speed in feet, per minute, of a wheel:

Rule: Multiply the circumference (see table below) by its revolutions per minute.

Example: A wheel 24 inches in diameter makes 796 R. P. M. What is the surface speed, in feet, per minute?

$$6.283 \times 796 \text{ equals } 5,000 \text{ feet surface speed.}$$

Surface speed and diameter of wheel being given to find number of revolutions of wheel spindle.

Rule: Divide surface speed in feet, per minute, by the circumference. (See table below.)

Example: A wheel 20 inches in diameter is to be run 6,000 feet surface speed, per minute. How many revolutions should the wheel make?

$$6,000 \div 5.236 \text{ equals } 1,146, \text{ number of R. P. M. wheel should make.}$$

Table of Grinding Wheel Speeds

Diameter Wheel Inches	Millimeters About	Rev. per Minute for Surface Speed of 4,000 Feet or 1,200 Meters	Rev. per Minute for Surface Speed of 5,000 Feet or 1,500 Meters	Rev. per Minute for Surface Speed of 6,000 Feet or 1,800 Meters
1	25	15,279	19,099	22,918
2	50	7,639	9,549	11,459
3	75	5,093	6,366	7,639
4	100	3,820	4,775	5,730
5	125	3,056	3,820	4,584
6	150	2,546	3,183	3,820
7	175	2,183	2,728	3,274
8	200	1,910	2,387	2,865
10	250	1,528	1,910	2,292
12	305	1,273	1,592	1,910
14	355	1,091	1,364	1,637
16	405	955	1,194	1,432
18	455	849	1,061	1,273
20	505	764	955	1,146
22	515	694	868	1,042
24	610	637	796	955
26	660	586	733	879
28	710	546	683	819
30	760	509	637	764
32	810	477	596	716
34	860	449	561	674
36	910	424	531	637
38	965	402	503	603
40	1,015	382	478	573
42	1,065	364	455	546
44	1,115	347	434	521
46	1,165	332	415	498
48	1,220	318	397	477
50	1,270	306	383	459
52	1,320	294	369	441
54	1,370	283	354	425
56	1,420	273	341	410
58	1,470	264	330	396
60	1,520	255	319	383

The R. P. M. at which wheels are run is dependent on conditions and style of machine and the work to be ground.

Wheels are run in actual practice from 4,000 to 6,000 feet per minute; in some instances as high as 7,500 feet. We recommend for most grinding operations 6,000 feet, but special conditions cause changes and the surface speed per minute may run as high as 7500 feet.

For Price List of Grinding Wheels, see page 354

Grinding Wheel Data

Table Showing Maximum Horse-Power Required to Drive Wheels of Different Sizes

Grinding Machine	Number of Wheels	Max. Diameter and Thickness of Wheel Inches	Maximum Horse-power
Bench Type for Tools	1	12 x 2	2
Bench Saw Gummer	1	12 x 1½	3
Single Wheel Type	1	30 x 4	9.5
½-Inch Bench Type	2	6 x 1	1.5
⅝-Inch Bench Type	2	8 x 1	2
¾-Inch Bench Type	2	10 x 1½	3
1-Inch Bench Type	2	12 x 2	4
1¼-Inch Bench Type	2	14 x 2½	5.5
1½-Inch Floor Type	2	14 x 2½	5.5
1½-Inch Floor Type	2	16 x 3	8
1¾-Inch Floor Type	2	20 x 3½	8.5
2-Inch Floor Type	2	24 x 4	9.5
2¼-Inch Floor Type	2	30 x 4	9.5
3-Inch Floor Type	2	36 x 4	11

The above figures are based on belt speeds and diameter and width of pulleys of Norton Standard Grinding Machines, and represent what single belts on these machines will transmit. The absolute power varies according to size of work and the pressure at which it is applied.

No fixed rule can be given, but from long experience we find that the above figures cover the power required to do the heaviest work that can be performed on the respective sizes of machines.

Table of Circumferences

Diameter of Wheel Inches	Circumference of Wheel Feet	Diameter of Wheel Inches	Circumference of Wheel Feet	Diameter of Wheel Inches	Circumference of Wheel Feet
1	.262	25	6.546	49	12.828
2	.524	26	6.807	50	13.090
3	.785	27	7.069	51	13.352
4	1.047	28	7.330	52	13.613
5	1.309	29	7.592	53	13.875
6	1.571	30	7.854	54	14.137
7	1.833	31	8.116	55	14.499
8	2.094	32	8.377	56	14.661
9	2.356	33	8.639	57	14.923
10	2.618	34	8.901	58	15.184
11	2.880	35	9.163	59	15.446
12	3.142	36	9.425	60	15.708
13	3.403	37	9.687	61	15.970
14	3.665	38	9.948	62	16.232
15	3.927	39	10.210	63	16.493
16	4.189	40	10.472	64	16.755
17	4.451	41	10.734	65	17.017
18	4.712	42	10.996	66	17.279
19	4.974	43	11.257	67	17.541
20	5.236	44	11.519	68	17.802
21	5.498	45	11.781	69	18.064
22	5.760	46	12.043	70	18.326
23	6.021	47	12.305	71	18.588
24	6.283	48	12.566	72	18.850

Grinding Wheels

Emery and Corundum

Emery is merely an impure corundum. It is an iron ore containing a varying amount of very small corundum crystals, the two minerals so intimately mixed that they cannot be commercially separated. Corundum is the hardest and sharpest mineral known except the Diamond. The precious gems, Ruby, Sapphire and Oriental Emerald, are perfectly crystalized highly colored varieties of Corundum.

Corundum is not only harder than any other mineral available for abrasive purposes, but it is possessed of great toughness and breaks with sharp, jagged edges, thus giving it great durability and wonderful cutting power.

One corundum wheel properly made and graded for its work will do more work than two emery wheels, and do it faster and better. It is necessary to state, however, that since the superiority of corundum has become better known, many wheels have been put out as "Corundum Wheels" which in reality contained but little, if any, real corundum. The user of abrasive wheels should be on his guard against forming a wrong opinion of corundum wheels from this cause. Our Corundum Wheels are made only of pure Corundum, the best obtainable, cleaned and graded with especial care for our use.

Three processes of manufacture, viz: Vitriified (the one generally used), Silicate and Elastic are described on the following page.

Explanation of Grain and Grade

The coarseness of a wheel is determined by the size of grains used. These are numbered according to the number of meshes per inch of the sieve through which they will pass. For example, No. 16 is a grain that will pass through a sieve having 16 meshes to the inch, but will not pass through a sieve having 20 meshes. The regular numbers are 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 40, 46, 54, 60, 70, 80, 90, 100, 120, 150, 180 and F.

The hardness of a wheel is denoted by the grade, the different grades being obtained by changes in the bond which cements the grains together. To avoid confusion, we have adopted the method of designating these grades by numbers for emery and letters of the alphabet for corundum as shown in opposite table

Grade	Emery Number	Corundum Letter
Extremely soft		D
		E
		F
Soft	1	G
	2	H
	2½	I
Medium soft		J
		K
		L
Medium	3	M
	3¼	N
	3¾	O
Medium hard	4	P
	4¼	Q
		R
Hard	4½	S
	5	T
		U
Extremely hard	6	V

For Price List of Grinding Wheels, see page 354

Grinding Wheels

Carborundum

Carborundum is a manufactured abrasive. It is not found in nature. It is not even an imitation of nature, but is an absolutely unique and distinct creation.

Carborundum is a chemical combination of the two elements, carbon and silicon. It is the trade name given to carbide of silicon—a substance not discovered but actually created by Edward G. Acheson in 1891.

It is very much harder than any other known abrasive, which gives it great durability. It is made up of small, sharp crystals that are just brittle enough to break slightly in use. The sharp edges of the crystals cut clean and fast; while the brittleness, by constantly presenting fresh cutting edges, prevents glazing. The combination of these qualities—durability, rapidity and uniform efficiency—gives to Carborundum its unquestioned title of being one of the best of all known abrasives.

The characteristic property of brittleness makes it highly efficient for grinding and polishing on such metals as cast-iron, chilled-iron, brass and bronze; also marble, granite and pearl—in general, materials of low tensile strength.

Aloxite

The abrasive material for successfully grinding steel must be not only hard and sharp but tough. These characteristics are found in Aloxite, a new aluminous abrasive recently developed by the Carborundum Company.

Aloxite is the purest form of aluminum oxide. It is the product of the electric furnace and differs materially from other aluminous abrasives in several of its characteristics, the principal one of which is its temper, which gives it just the proper quality to make it the ideal steel cutting material.

In its crude form Aloxite is taken from the electric furnace in the form of an immense compact pig weighing several tons. This pig, by means of special, powerful machinery, is crushed or reduced to grain form. The Aloxite grain then undergoes a thorough refining until every possible atom of impure matter is removed. The grains are then dried out, graded by sifting through a series of screens, and are then ready to be made into grinding wheels, etc.

Aloxite, because of its positive purity, its hardness, sharpness, toughness and proper temper, has been extensively successful in all classes of steel grinding. It not only cuts fast, cool and clean, but it shows wonderful durability, standing up to the work with remarkable tenacity. It is in these features that Aloxite is proving far superior to any other steel cutting abrasive.

Three Processes of Manufacture

Vitrified

This process consists of bonding the grain with certain clays and vitrifying or baking at high temperature, thus changing the clays to a substance similar to porcelain. The vitrified wheels are most generally used owing to the possibility of securing by this process a wider range of grades, and because they can be made more open and porous, thereby assuring a cool cutting wheel and because they stand up to the work with decided durability. However, owing to their rigidity, vitrified wheels are not used on work where a very thin wheel subject to side strains is required.

Silicate

In which process silicate of soda is employed as the bonding agent. They cut less harshly than the vitrified and are widely used for knife grinding, and for sharpening saws and woodworking tools in furniture, sash, door and blind factories and planing mills. The silicate wheels can be supplied with a wire web if desired.

Elastic

The thin wheels are generally made by this process, which consists of bonding the grain with a more or less elastic material such as shellac or rubber. These wheels are extremely tough, fast cutting and can be run at decidedly high speeds and under moderately heavy side strains without danger of breaking.

Explanation of Grain and Grade

Wheels used for abrasive purposes have two distinguishing characteristics, either or both of which may be varied according to the class of work to be done. These are the fineness and the hardness of the wheel. Fineness is dependent upon the size of the grains of the grinding material, and is produced by crushing and grinding the crude, treating with acids and separating by sieves into various sized grains. These are numbered, the same as emery, in accordance with the number of threads per lineal inch of the sieve through which they have passed. Thus, No. 50 is a grain which has passed through a sieve having fifty threads to the inch, but which would not pass through one having sixty threads. The factory prepare regularly the following numbers: 6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 40, 50, 60, 70, 80, 90, 100, 120, 150, 180, 220.

Powders are the particles of grains too fine to size by ordinary sieving. They are graded by floating in water or other liquid.

F, FF, FFF powders are graded in a stream of flowing water. They include in their numbers all grades of fineness from F, the next finest after No. 220 to FFF, which contains the very finest dust.

The selection of the proper grain for any work depends upon the smoothness of finish required and the amount of material to be removed in a given time, when finish is not important.

Hardness, as the term is understood by makers of grinding wheels, is the quality of resistance to crumbling away which such wheels possess. The degree of hardness, called the "grade," is indicated by a letter, chosen arbitrarily with reference to certain standards. The different grades are produced by varying the binding material used to hold the grains together. The selection of grade depends upon the character of the material to be ground. A wheel which is too hard heats the work, glazes, and will not cut. If it is too soft it cuts rapidly, but at the same time wears away fast.

To successfully meet all the conditions to which Vitrified and Silicate Wheels are subjected, they are made in 25 degrees of hardness. Letters arranged in a scale are used to designate these degrees, from "D," very hard, to "Z," very very soft, as shown in the following:

Very Hard.....	D
	E
	F
	Gx
Hard.....	G
	Hx
	H
	Ix
Medium Hard.....	I
	J
	K
Medium...M	L
	N
	O
Medium Soft.....	P
	R
	S
Soft.....	T
	U
	V
Very Soft.....	W
	X
	Y
Very Very Soft.....	Z

Elastic Wheels are graded as follows: $\frac{1}{2}$, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11. Grade $\frac{1}{2}$ is the hardest, 11 the softest grade.

For Price List of Grinding Wheels, see page 354

Grinding Wheels

Alundum

Alundum is a highly efficient cutting agent on materials of high tensile strength, particularly all kinds of steel. It is adapted for grinding many kinds of metal under a wide range of conditions.

Alundum is oxide of alumina (Al₂O₃) in crystalline formation.

The raw material used in its production is Bauxite, the purest form of aluminum oxide found in nature.

In chemical composition, Alundum is similar to the ruby and sapphire—the hardest natural minerals, except the diamond.

Until the invention of the Alundum electric furnace process, Bauxite was considered infusible. The transformation of this soft clay-like substance into Alundum, a hard, sharp product with remarkable cutting qualities, is equal to similar transformations which are believed to have occurred in nature, forming some of the most beautiful and valuable gems.

The physical formation of the grain of Alundum is such that when it is broken or fractured it leaves sharp cutting corners or edges.

Besides possessing that peculiar combination of hardness, sharpness and temper or character of fracture which makes it a highly efficient cutting material, Alundum has a high melting point, high thermal conductivity, a low co-efficient of expansion and is a non-conductor of electricity. These properties make Alundum valuable in the manufacture of all kinds of refractories for general laboratory use, electric furnace parts, etc.

Each ingot of Alundum formed in the electric furnace weighs about two and one-half tons. Its rate of cooling and crystallization is under control which results in a superior temper or structure or physical formation of grain.

The equipment for preparing it for commercial use consists of powerful crushing and grinding machinery, rolls, washers and sieves for crushing and grading into grains of standard sizes.

Three Processes of Manufacture

Vitrified

In this process the materials constituting the formula—grit, bonding clays, water—are mixed in power mixing kettles. The mixture is drawn from the kettles into forming rings or molds of the required sizes. After dry enough to handle they are shaped and then subjected to a high temperature in large ovens or kilns at which the bond vitrifies. The time required in the kilns is from six to twenty days, depending on their size.

The majority of Alundum Grinding Wheels are made by this process. They are considered superior for most grinding operations.

Silicate

In the manufacture of these Wheels, the bond and grain are mixed by special machinery and while in a plastic state tamped in iron moulds. They are then baked at low temperature.

On some classes of work, such as tool and knife sharpening, Silicate Wheels give very satisfactory results.

Most Alundum Wheels over 30 inches in diameter are made by this process.

Silicate Wheels can be furnished with or without wire web.

Elastic

These Wheels are also made in molds and baked at low temperature. Elasticity is an important property. Wheels made by this process possess a high degree of safety, making them particularly valuable for operations requiring thin wheels. They are made as thin as 1/32-inch up to 4 inches in diameter, 1/16-inch up to 8 inches, and 1/8-inch up to 12 inches in diameter. Very fine wheels of small diameter have been made as thin as 1/64-inch.

They are used to a great extent for saw gumming, grinding between the teeth of gears, sharpening molding cutters, woodworking tools, etc. For cutting off small stock, such as thin strips, tubing and wire, and for slotting they are very successful.

Elastic Wheels are also especially adapted for roll grinding.

Explanation of Grain and Grade

Grinding Wheels are made in many combinations of coarseness and hardness to meet the variety of conditions under which they are used.

Grain. The size, or number, of the abrasive grain used determines the wheels degree of coarseness.

The cutting material must be crushed and graded to many sizes. The numbers employed to designate the sizes of grain in Alundum Wheels are 10, 12, 14, 16, 20, 24, 30, 36, 46, 50, 60, 70, 80, 90, 100, 120, 150, 180 and 200.

Finer grades known as Flours and designated as F, FF, FFF and XF are also used, although not so much in the manufacture of wheels as for rubbing and sharpening stones.

By No. 10 grain is meant a size that will pass through a grading sieve having ten meshes to the linear inch; No. 30 grain, thirty meshes; No. 46 grain, forty-six meshes, etc.

Grade. Means degree of hardness of the wheel, or resistance of the cutting particles under grinding pressure.

A wheel from which the cutting particles are easily broken, causing it to wear away rapidly, is called soft; one which retains its particles longer is called hard. Wheels are graded from soft to hard, the grade being denoted by the letters of the alphabet.

Example: A 20-M Grinding Wheel is one in which No. 20 grain cutting material is used, and its degree of hardness is "M."

Grades of Vitrified and Silicate Wheels are designated as follows:

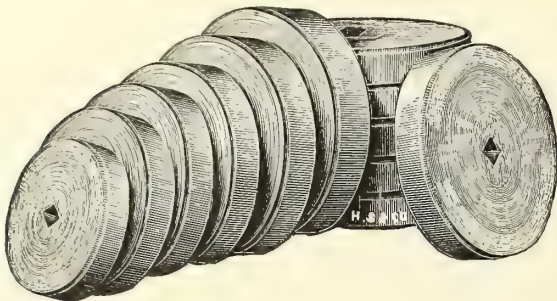
E.....	Soft
F.....	
G.....	
H.....	
I.....	Medium Soft
J.....	
K.....	
L.....	
MEDIUM.....M.....	MEDIUM
N.....	
O.....	
P.....	
Medium Hard.....Q.....	
R.....	
S.....	
T.....	
Hard.....U.....	
V.....	
W.....	
X.....	
Extremely Hard.....Y.....	
Z.....	

The intermediate letters between those designated as soft, medium soft, etc., indicate so many degrees harder or softer: e. g., L is one grade or degree softer than medium; O, two degrees harder than medium, but not quite medium hard.

Elastic Wheels are graded as follows: 1, 1½, 2, 2½, 3, 4, 5 and 6. Grade 1 is the softest and grade 6 the hardest.

For Price List of Grinding Wheels, see page 354

Grindstones

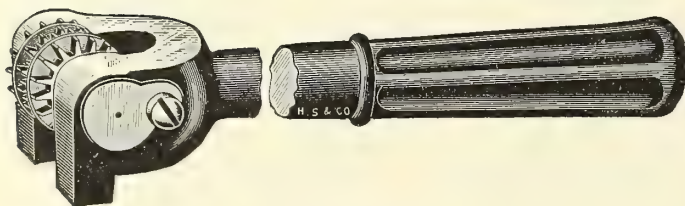


Without Frame

Per pound.....\$.03¼

Rule for ascertaining approximate weight of grindstones. Square the diameter in inches, multiply by thickness in inches, and multiply by .06363. For instance. A wheel 12 inches in diameter by 3 inches in thickness:—12 x 12 = 144 x 3 = 432. 432 x .06363 = 27.48816 pounds. Practically 27½ pounds.

Grinding Wheel Dressers



H. S. & Co. Huntington Pattern

Users of Grinding Wheels will find this Dresser a great help in shaping wheels, and in many instances a practical substitute for the more expensive and delicate diamond tool.

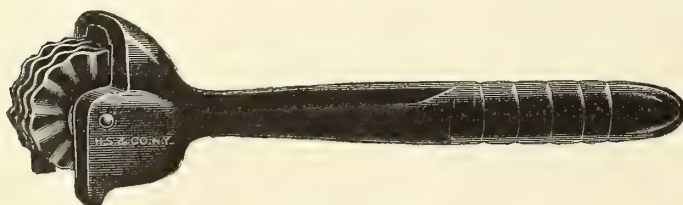
Including two sets of Cutters, 1⅜ inches in diameter, each \$1.30

Extra Cutters



In the manufacture of these Cutters, they undergo a special tempering process which renders them capable of resisting great wear and insures safety when used on emery wheels at full speed.

Huntington (not bushed), per dozen sets..... \$2.40
Paragon (bushed), per dozen sets..... 2.40



Sherman

Each Cutter having a different corrugation which prevents them from nesting and gives it a different cutting edge. The cutters always remain sharp, as the corrugated face remains the same until worn down almost to the spindle, thus giving far greater cutting surface to the dresser than is possibly obtainable with the notched cutter such as the Huntington type. The washers between which these cutters revolve prevent the sides of the handle from wearing.

No. 1.....	Each
Cutters, 3 in set, 1½ inches in diameter.....	\$1.50
No. 2.....	.15
Cutters, 4 in set, 2⅜ inches in diameter.....	2.00
	.25



Solid Set Diamond Hand Tools

Set with best quality, carefully selected black diamonds.

Diamond tools are not guaranteed and only experienced mechanics should use them.

Take light cuts, and allow only the diamond to touch wheel.

Deep cuts will grind away the steel, and destroy the setting.

Small stones will not last for heavy work. A large stone is cheaper in the end.

Keep the tool cool by dipping in water.

Avoid shock or blows on the tool.

Tools must be held firmly and fed gradually to the wheel. Each

No. 1.....	\$ 5.00
No. 2.....	7.50
No. 3.....	10.00
No. 4.....	15.00
No. 5.....	20.00

Diamond lathe grinding tools of all kinds will be furnished in accordance with sketch or sample. Prices quoted promptly on receipt of necessary information.



Diamo-Carbo

Is a steel tube filled its entire length with an abrasive mixture hard enough to dress grinding wheels. An adjustable brass collar is so placed as to form a back stop over the tool rest.

The dresser is extremely hard, wears away slowly, and with proper care will last indefinitely.

Delicate wheels can be formed in any shape desired without breaking the edges.

No. 3 Dresser, 10 inches long, ⅝ inch diameter..... \$3.50
No. 5 Dresser, 12 inches long, ⅝ inch diameter..... 4.00

Can be supplied with the Huntington or Sherman Dresser on the handle end, thus supplying the Diamo-Carbo and Roughing Dresser on the same tool. The price of this combination tool is 50 cents additional to the regular dresser.



Carborundum

Consists of a steel tube enclosing or holding a stick of Carborundum one-half inch in diameter and six inches long. The stick can be adjusted or fed out as desired by simply turning the collet nut which contracts the split end of the tube.

Recommended for dressing and truing grinding wheels of all makes in fine and medium grits and grades generally used in the tool room for grinding reamers, cutters, drills, and also for universal and cylindrical grinding wheels.

Complete with one Carborundum Stick 6 inches long, ½ inch diameter, each \$2.50
Extra sticks, each30

Polishing Wheels

Felt

Are made from 6 to 18 inches in diameter, and $\frac{1}{2}$ to $2\frac{1}{2}$ inches in thickness, and are used with emery glued on as a substitute for solid Emery Wheels; also with oil and emery, crocus, rouge, whiting, etc. The edges can be turned to any shape, and the wheel will stand high speed with perfect safety to the workman. When ordering, state size of hole, or the wheels will be sent with solid center; also whether hard or soft is required.

Spanish White Felt, per pound. \$2.00
Mexican Gray Felt, per pound. 1.80

Approximate Weights of Felt Wheels

These weights vary to such an extent that they cannot be greatly depended upon. For illustration, 12x2-inch wheels vary from $3\frac{3}{4}$ to 5 pounds each, according to the hardness of felt.

Thickness Inches	Diameter, Inches									
	6	7	8	9	10	12	14	15	18	
$\frac{1}{2}$	4 ounces	6 ounces	8 ounces	10 ounces	14 ounces	1 pound				
$\frac{3}{4}$	6 ounces	9 ounces	11 ounces	14 ounces	1 pound	$1\frac{1}{2}$ pounds				
1	8 ounces	12 ounces	14 ounces	$1\frac{1}{8}$ pounds	$1\frac{3}{8}$ pounds	$2\frac{1}{8}$ pounds	$2\frac{3}{4}$ pounds	$3\frac{5}{8}$ pounds	$4\frac{3}{4}$ pounds	
$1\frac{1}{4}$	10 ounces	14 ounces	$1\frac{1}{8}$ pounds	$1\frac{3}{8}$ pounds	$1\frac{7}{8}$ pounds	$2\frac{5}{8}$ pounds	$3\frac{5}{8}$ pounds	$4\frac{1}{2}$ pounds	6 pounds	
$1\frac{1}{2}$	12 ounces	1 pound	$1\frac{3}{8}$ pounds	$1\frac{5}{8}$ pounds	$2\frac{1}{8}$ pounds	$3\frac{1}{8}$ pounds	$4\frac{1}{2}$ pounds	5 pounds	$7\frac{1}{4}$ pounds	
$1\frac{3}{4}$	14 ounces	$1\frac{1}{4}$ pounds	$1\frac{1}{2}$ pounds	$1\frac{7}{8}$ pounds	$2\frac{1}{2}$ pounds	$3\frac{3}{8}$ pounds	5 pounds	$5\frac{3}{4}$ pounds	$8\frac{3}{8}$ pounds	
2	1 pound	$1\frac{1}{2}$ pounds	$1\frac{3}{4}$ pounds	$2\frac{1}{8}$ pounds	$2\frac{7}{8}$ pounds	$4\frac{1}{8}$ pounds	$5\frac{1}{2}$ pounds	$6\frac{3}{4}$ pounds	10 pounds	
$2\frac{1}{2}$	$1\frac{1}{4}$ pounds	$1\frac{7}{8}$ pounds	$2\frac{1}{8}$ pounds	$2\frac{5}{8}$ pounds	$3\frac{3}{8}$ pounds	$4\frac{3}{4}$ pounds	$6\frac{3}{4}$ pounds	8 pounds	12 pounds	

Unbleached Muslin Buffs. (Hand Sewed)

Diameter, inches.	2	$2\frac{1}{2}$	3	4	5	6	7	8	9	10	12	14
Ply.	30	30	35	42	45	50	50	55	60	65	70	75
Dozen.	\$1.25	1.50	2.00	2.25	3.60	4.25	5.50	7.50	9.50	13.50	19.00	31.00

Canton Flannel Buffs. (Hand Sewed)

Diameter, inches.	2	$2\frac{1}{2}$	3	4	5	6	7	8	9	10	12	14
Ply.	25	30	30	30	30	30	30	30	30	35	40	45
Dozen.	\$1.25	1.50	2.00	2.25	3.60	4.25	5.50	7.50	9.50	13.50	19.00	31.00

Cloth Buffs. (Hand Sewed)

Diameter, inches.	2	3	4	5	6	7	8	9	10	12
Thickness, inches.	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	1	1	1	1	$1\frac{1}{4}$	$1\frac{1}{4}$
Dozen.	\$1.25	2.00	2.25	3.60	4.50	6.50	8.50	11.50	16.00	24.00

Unbleached Muslin Section Buffs

18 Ply

Diameter, inches.	4	5	6	7	8	9	10
100 Sections.	\$3.15	4.45	5.35	7.00	9.00	11.00	13.50
Section. . . . .	.03 $\frac{1}{2}$	.05	.06	.08	.10	.12	.15
Diameter, inches.	12	13	14	15	16	18	
100 Sections.	\$20.00	22.75	25.50	29.25	33.25	41.75	
Section. . . . .	.22	.25	.28	.32	.37	.45	

20 Ply

Diameter, inches.	4	5	6	7	8	9	10
100 Sections.	\$3.50	5.00	6.00	7.75	10.00	12.25	15.00
Section. . . . .	.04	.06	.07	.09	.11	.13	.16
Diameter, inches.	12	13	14	15	16	18	
100 Sections.	\$21.00	25.25	28.50	32.50	36.80	45.25	
Section. . . . .	.24	.27	.30	.34	.40	.48	

Canton Flannel Section Buffs

18 Ply

Diameter, inches.	6	7	8	9	10	11	12
100 Sections.	\$10.50	14.85	17.85	22.00	27.85	33.15	37.25
Section. . . . .	.12	.16	.19	.24	.30	.35	.40
Diameter, inches.	13	14	15	16	18		
100 Sections.	\$40.65	49.40	60.65	68.75	82.50		
Section. . . . .	.44	.53	.65	.73	.87		

Printers Ink Section Buffs

20 Ply

Diameter, inches.	4	5	6	7	8	9	10	12	13	14	15	16	18
100 Sections.	\$2.00	3.50	4.50	6.50	8.50	10.50	13.50	19.00	23.50	26.00	30.00	34.50	43.50
Section. . . . .	.03	.05	.06	.08	.10	.12	.15	.22	.26	.28	.32	.38	.46

Piece Sewed Buffs

Diameter, inches.	8	9	10	12	14	15	16
100 Sections.	\$6.10	7.90	10.00	14.50	19.50	22.50	25.75
Section. . . . .	.07	.09	.11	.16	.22	.25	.27

Sheepskin Buffs

Diameter Inches	Thickness, Inches, Each				Diameter Inches	Thickness, Inches, Each			
	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$		1	$1\frac{1}{2}$	2	$2\frac{1}{2}$
4	\$1.15	\$1.60	\$2.25	\$2.75	9	\$2.50	\$3.75	\$5.00	\$6.25
5	1.35	2.00	2.60	3.10	10	3.00	4.50	6.00	7.50
6	1.50	2.30	3.10	3.80	12	4.00	6.00	8.00	10.00
7	1.75	2.60	3.50	4.50	14	5.00	7.50	10.00	12.50
8	2.00	3.00	4.00	5.00	16	6.50	9.75	13.00	16.25

Oil Stones

Artificial

Carborundum

Carborundum stones are made from Carborundum, the manufacture and characteristics of which are fully explained on page 358.

They are superior to any other stones for rapid cutting qualities, may be used dry, or with water or oil; are quite porous, and may be tempered in their cutting by filling with wax or vaseline.

They are always sharp, clean and bright, never fill or glaze, and are made in three grades as follows:

Fine (FF) For procuring a very smooth, keen edge on tools of hard steel, etc.

Medium (180) For sharpening tools quickly, where an extremely keen edge is not necessary.

Coarse (120) To sharpen very dull and large tools, which may later be finished with a fine stone, or in cases where a fine finish is not required.

India

India Sharpening Stones are made from Alundum, the manufacture of which is fully explained on page 359.

They possess the characteristics of hardness, sharpness and toughness, as well as absolute uniformity. They cut rapidly, and are especially adaptable to the quick sharpening of all kinds of machinists tools, made of modern tool steels, such as scrapers, taps, reamers, milling cutters, lathe and planer tools.

On account of its ability to hold its shape, the India Stone is almost indispensable in shoe shops for sharpening channel knives, heel and various other special machine and hand tools. It is also most efficient and economical for use in engraving plants and for die workers and instrument makers.

All India Stones are oil filled by a patented process. This feature insures a moist, oily sharpening surface with the use of only a small quantity of oil. It also insures a good cutting surface by preventing the stone from filling with particles of steel.

India Stones are made in three grades or grits as follows:

Coarse: For sharpening large and very dull or nicked tools, machine knives, and for general use where fast cutting is required without regard to fine finish.

Medium: For ordinary sharpening of mechanics tools not requiring finishing edge. Especially recommended for tools used in working soft woods, cloth, leather, and rubber.

Fine: For machinists and engravers, die workers, instrument workers, cabinet makers and all users of tools requiring a very fine, keen edge.

Natural

Washita

Washita stone is found in the Ozark Mountains in Arkansas, and is composed of nearly pure silica, very similar to the Arkansas, but much more porous. It is known throughout the world as the best natural stone for sharpening carpenters and general woodworkers tools.

Its sharpening qualities are due to small, sharp pointed grains or crystals, hexagonal in shape and much harder than steel. It is found in various grades, from perfectly crystallized and porous grit to vitreous flint and hard sandstone. The sharpness of grit depends entirely upon its crystallization. The best oilstones are made from very porous crystals.

Those listed on the succeeding pages were correctly quarried and carefully graded and are fully warranted.

Lily White Washita is the best selection or grading of natural Washita, perfectly white in color, uniform in texture and nicely finished.

Rosy Red Washita has an even porous grit somewhat coarser than the Lily White grading and is therefore, faster cutting.

No 1 Washita is a good oilstone for general use, where a medium-priced stone is wanted. It is far superior to the many cheap so-called "oil stones" on the market that are only sandstones with a polished face, but it is not as uniform as the Lily White.

Arkansas

Due to its capacity of imparting the highest perfection to the cutting edge, the Arkansas Oilstone is the abrasive used for sharpening instruments of surgeons, histologists, vivisectionists, students of anatomy and biology, and all others who perform the most delicate operations or prepare minute specimens for microscopic work.

The skilled engraver of gold, silver, copper and other metals, the watchmaker, the dentist, the cutler, and all other users and makers of fine tools, use this natural stone, exclusively for sharpening.

Genuine Arkansas Stone is composed of pure silica crystals, microscopic in size, and silica is among the hardest of known minerals. So hard and perfectly crystallized is the Arkansas Stone that it is nearly sixteen times harder to cut than marble, as the hardest of steel tools with the finest points or blades may be sharpened on the Arkansas Stone without grooving.

Arkansas Stone is prepared for commercial purposes in two grades, hard and soft.

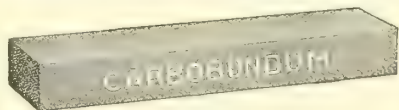
Hard Arkansas is much harder than steel and will therefore cut away and sharpen steel tools. The extreme fineness of texture makes it a slow cutter, but a perfect sharpener.

Soft Arkansas is not quite so fine grained and hard as the Hard Arkansas, but it cuts faster and is better for carvers, file makers, pattern makers and of all workers in hard wood.

Oil Stones and Boxes

Carborundum Stones

Superior to any other stones for rapid-cutting qualities. Used dry or with water or oil. Are quite porous, and may be tempered in their cutting by filling with vaseline.



Regular

Number	Length Inches	Width	Thickness	Number of Carborundum	Each
115	8	2	1	FF (fine)	\$1.00
116	8	2	1	180 (medium)	1.00
117	8	2	1	120 (coarse)	1.00
118	8	2	3/4	FF (fine)	.80
119	8	2	3/4	180 (medium)	.80
120	8	2	3/4	120 (coarse)	.80
121	6	2	1	FF (fine)	.75
122	6	2	1	180 (medium)	.75
123	6	2	1	120 (coarse)	.75
124	6	2	5/8	FF (fine)	.60
125	6	2	5/8	180 (medium)	.60
126	6	2	5/8	120 (coarse)	.60
133	7	2	1	FF (fine)	.90
134	7	2	1	180 (medium)	.90
135	7	2	1	120 (coarse)	.90
136	5	2	5/8	FF (fine)	.50
137	5	2	5/8	180 (medium)	.50
138	5	2	5/8	120 (coarse)	.50
142	4	1 3/4	1 1/2	FF (fine)	.40
143	4	1 3/4	1 1/2	180 (medium)	.40
144	4	1 3/4	1 1/2	120 (coarse)	.40
145	4	1	1 1/4	FF (fine)	.25
146	4	1	1 1/4	180 (medium)	.25
147	4	1	1 1/4	120 (coarse)	.25



Extra Hard, Extra Fine

This stone is made for all tools that require an extra fine, delicate edge. It is made of the finest of the Carborundum grain and is graded extra hard. Woodworkers and wood carvers, etc., will find this stone especially adapted to sharpening their tools. Made in four sizes.

No. 157, 8 x 2 x 3/4 inches.	Each.....	\$.80
No. 159, 6 x 2 x 5/8 inches.	Each.....	.60
No. 154 Slip, 4 1/2 x 2 1/8 x 5/8 - 5/16 inches.	Each.....	.60
No. 155 Slip, 4 1/2 x 1 3/4 x 1/2 - 3/16 inches.	Each.....	.50

Machinists Special

The grit and grade of hardness of this stone is adapted to sharpening lathe and planer tools, milling cutters, reamers, and drills.

No. 292, 4 x 1 x 1/2 inches, FF (fine).	Each.....	\$.30
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Boxes for Carborundum Stones

Wooden

Made of well seasoned quartered oak with lock corners. Base is made with a shoulder so that cover will set down tight. Boxes are highly polished and well made in every respect. Four sizes.

No. 1, for stones 8 x 2 x 1 inches, box without stone.	Each.....	\$.25
No. 2, for stones 6 x 2 x 1 inches, box without stone.	Each.....	.25
No. 3, for stones 4 x 1 1/2 x 1 inches, box without stone.	Each.....	.25
No. 107, round, for stone No. 107, box without stone.	Each.....	.50

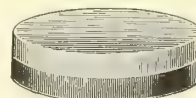


Combination

These stones are designed especially for carpenters and mechanics. They are made with one face of coarse and one face of very fine grit. The coarse side can be used for sharpening dull tools; the fine side to bring the required keen, sharp edge.

Made in Five Sizes

No. 108, 8 x 2	x	1-inch.	Each.....	\$1.25
No. 109, 6 x 2	x	1-inch.	Each.....	1.00
No. 110, 7 x 2	x	1-inch.	Each.....	1.15
No. 111, 5 x 2	x	3/4 inch.	Each.....	.75
No. 112, 4 x 1 3/4	x	5/8-inch.	Each.....	.50



Combination Round Bench

The round Combination Bench Stone No. 107 is made to meet the sharpening needs of the carpenter and general mechanic. It is a novel as well as a decidedly practical addition to the tool box. The stone is made in the round form so as to allow for the circular motion required in sharpening chisels and similar tools.

The stone is made with one side coarse grit for taking out nicks and bringing the tool to an edge and the other side of a very fine grit for giving the keen finished edge.

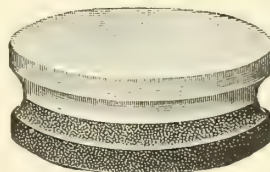
No. 107, 4 inches diameter, 1-inch thick.	Each.....	\$1.00
Quartered-oak box for No. 107.	Each.....	.50

Combination Round Axe

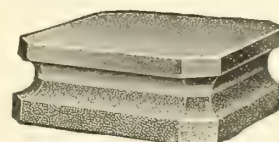
The Carborundum Round Axe Stone has several decided advantages. It is a combination stone having one side coarse grit and the other fine grit; the same stone takes out the nicks and gives the finished edge quickly; and it is of such convenient size and shape as to be easily carried in the workmans pocket.

Number 196, 3 inches diameter by 5/8-inch thick.	Each.....	\$.35
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Combination for Machine Knives



No. 289



No. 332

A combination stone specially designed to sharpen planer knives, paper knives, and cloth-cutting knives, without taking the blades from the machine. The groove protects the fingers from the knife edge. Has one side coarse grit, the other fine.

No. 289, size 4 inches diameter, 1 1/2 inches thick.	Each.....	\$1.50
No. 332, size 3 1/2 inches square, 1 1/2 inches thick.	Each.....	1.50

Iron

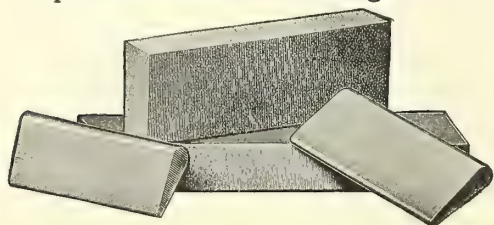
Perfectly plain gray iron castings. Fine dull black finish. Base has shoulder so that cover will set down tight. Felt oil retaining pad furnished with each box.

6 x 2 x 1 inches.	Each.....	\$.50
7 x 2 x 1 inches.	Each.....	.50
8 x 2 x 1 inches.	Each.....	.50

Oil Stones

Carborundum
(Miscellaneous Shapes)

Special for Manual Training School



These carborundum stones are particularly adapted to sharpening tools used in the manual training schools. The manual training school stones include the rectangular sharpening stones for chisels, plane bits, etc., and two sizes of slip stones for touching up gouges, chisels, etc. Each stone cuts fast and clean; doesn't fill or glaze, and it will show long life.

No. 343	8 x 2 x 1 inch.	Each	\$1.00
No. 344	8 x 2 x 3/4 inch.	Each	.80
No. 345	6 x 2 x 1 inch.	Each	.75
No. 346	6 x 2 x 5/8 inch.	Each	.60
No. 349	Slip, 4 1/2 x 2 1/8 x 5/8 - 3/16 inch.	Each	.60
No. 350	Slip, 4 1/2 x 1 3/4 x 1/2 - 3/16 inch.	Each	.50
No. 351	8 x 2 x 1 Combination.	Each	1.25
No. 352	7 x 2 x 1 Combination.	Each	1.15
No. 353	6 x 2 x 1 Combination.	Each	1.00

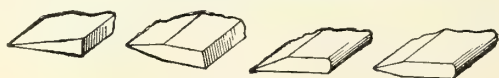
For boxes, see page 363



Slips

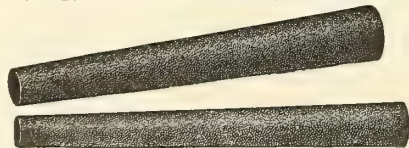
Are made in four sizes and three different grits of each size. These slip stones cut rapidly and retain their shape perfectly.

No. 174	6 x 2 1/4 x 3/4 - 3/8 inch, F F (fine).	Each	\$.75
No. 175	6 x 2 1/4 x 3/4 - 3/8 inch 180 (medium).	Each	.75
No. 176	6 x 2 1/4 x 3/4 - 3/8 inch 120 (coarse).	Each	.75
No. 177	4 1/2 x 1 3/4 x 1/4 - 1/16 inch F F (fine).	Each	.50
No. 178	4 1/2 x 1 3/4 x 1/4 - 1/16 inch 180 (medium).	Each	.50
No. 179	4 1/2 x 1 3/4 x 1/4 - 1/16 inch 120 (coarse).	Each	.50
No. 180	4 1/2 x 2 1/8 x 5/8 - 1/16 inch F F (fine).	Each	.60
No. 181	4 1/2 x 2 1/8 x 5/8 - 1/16 inch 180 (medium).	Each	.60
No. 182	4 1/2 x 2 1/8 x 5/8 - 1/16 inch 120 (coarse).	Each	.60
No. 183	4 1/2 x 1 3/4 x 1/2 - 3/16 inch F F (fine).	Each	.50
No. 184	4 1/2 x 1 3/4 x 1/2 - 3/16 inch 180 (medium).	Each	.50
No. 185	4 1/2 x 1 3/4 x 1/2 - 3/16 inch 120 (coarse).	Each	.50



Drawings Half Size
Carvers Slips

Shape Nos. 80, 81, 82	Shape Nos. 83, 84, 85	Shape Nos. 86, 87, 88	Shape Nos. 89, 90, 91
No. 80	2 1/4 x 7/8 x 3/16 inch, F F (fine).	Each	\$.30
No. 81	2 1/4 x 7/8 x 3/16 inch, F (medium fine).	Each	.30
No. 82	2 1/4 x 7/8 x 3/16 inch, 180 (medium).	Each	.30
No. 83	2 1/4 x 7/8 x 3/16 inch, F F (fine).	Each	.30
No. 84	2 1/4 x 7/8 x 3/16 inch, F (medium fine).	Each	.30
No. 85	2 1/4 x 7/8 x 3/16 inch, 180 (medium).	Each	.30
No. 86	2 1/4 x 7/8 x 3/16 inch, F F (fine).	Each	.30
No. 87	2 1/4 x 7/8 x 3/16 inch, F (medium fine).	Each	.30
No. 88	2 1/4 x 7/8 x 3/16 inch, 180 (medium).	Each	.30
No. 89	2 1/4 x 7/8 x 3/16 inch, F F (fine).	Each	.30
No. 90	2 1/4 x 7/8 x 3/16 inch, F (medium fine).	Each	.30
No. 91	2 1/4 x 7/8 x 3/16 inch, 180 (medium).	Each	.30



For Machine Carving Bits

These stones are made especially for sharpening carving bits or knives used on wood-carving machines in furniture factories.

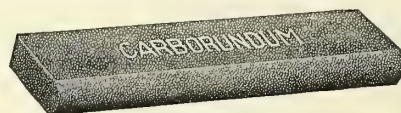
No. 290	4 x 7/16 x 1/4 inch, fine.	Each	\$.50
No. 291	4 x 7/16 x 1/4 inch, coarse.	Each	.50



Knife Edge Slip

For sharpening welt awls on McKay stitching machine and for sharpening channel knives used in shoe factories.

No. 293	5 x 1 x 5/16 - 3/32 inch, FF (fine).	Each	\$.40
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Round Edge Gouge

Made in Three Grits

These stones are rapid cutters. Because of their uniform hardness, they do not wear out of shape.

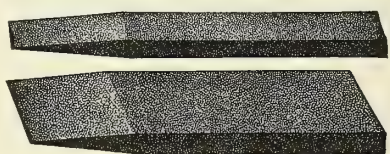
No. 160	8 x 2 x 3/4 inch, F F (fine).	Each	\$.90
No. 161	8 x 2 x 3/4 inch, 180 (medium).	Each	.90
No. 162	8 x 2 x 3/4 inch, 120 coarse.	Each	.90
No. 163	5 x 1 1/2 x 1/2 inch, F F (fine).	Each	.60
No. 164	5 x 1 1/2 x 1/2 inch, 180 (medium).	Each	.60
No. 165	5 x 1 1/2 x 1/2 inch, 120 (coarse).	Each	.60
No. 166	4 x 1 1/2 x 1/2 inch, F F (fine).	Each	.50
No. 167	4 x 1 1/2 x 1/2 inch, 180 (medium).	Each	.50
No. 168	4 x 1 1/2 x 1/2 inch, 120 (coarse).	Each	.50
No. 169	4 x 1 x 1/4 inch, F F (fine).	Each	.35
No. 170	4 x 1 x 1/4 inch, 180 (medium).	Each	.35
No. 171	4 x 1 x 1/4 inch, 120 (coarse).	Each	.35



With Beveled Edge and Side

Medium grit for sharpening the trimming knives on a Gem Insole Machine in shoe factories. The short beveled edge is for sharpening the circular knife with a short bevel. The beveled side is used for sharpening the long beveled knife or trimmer.

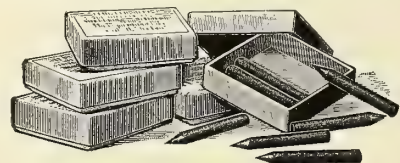
No. 295	3 1/2 x 3/4 x 3/8 - 1/8 inch, FF (fine).	Each	\$.40
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Amazeen

Used to sharpen the knives of the Amazeen skiving machine, and produce a sharp, keen edge.

No. 296	Size 4 x 1 x 1/4 inch, (medium).	Each	\$.35
No. 298	Size 4 x 1/2 x 1/4 inch, (medium).	Each	.25



Engravers Pencil Points

For engravers, die sinkers, mould makers, and metal chasers. The points are one-eighth of an inch in diameter, one inch in length; of three grits—coarse, medium, and fine; boxes contain twelve points of one grit or assorted grits, as desired.

Dozen			\$.75
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Engravers Chuck

A very convenient tool for holding pencil points. Made from steel tubing, knurled and nickel-plated.

Each, with one dozen points			\$1.25
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Oil Stones

Carborundum (Miscellaneous Shapes)

Silversmiths

Special Sizes and Shapes for Silversmith, Watchmakers,
and General Die Work

Each



Size, $4 \times \frac{1}{2} \times \frac{1}{16}$ -inch

No. 300, FF (fine) \$.50
No. 301, 220 (medium fine) .50
No. 302, 150 (medium) . . .50



Size, $4 \times \frac{1}{2} - \frac{1}{4} \times \frac{7}{32} - \frac{5}{64}$ -inch
No. 303, F F (fine)50
No. 304, 220 (medium fine) .50
No. 305, 150 (medium) . . .50



Size, $4 \times \frac{5}{16} \times \frac{3}{32} - \frac{1}{16}$ -inch

No. 306, F F (fine)50
No. 307, 220 (medium fine) .50
No. 308, 150 (medium) . . .50



Size, $4 \times \frac{1}{2} - \frac{9}{32} \times \frac{1}{4} - \frac{1}{8}$ -inch
No. 309, F F (fine)50
No. 310, 220 (medium fine) .50
No. 311, 150 (medium) . . .50

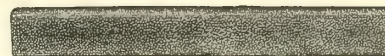


Size, $4 \times \frac{7}{16} - \frac{3}{16} \times \frac{3}{16} - \frac{1}{16}$ -inch
No. 312, FF (fine)50
No. 313, 220 (medium fine) .50
No. 314, 150 (medium) . . .50



Size, $4 \times \frac{3}{8} - \frac{1}{8} \times \frac{3}{16} - \frac{1}{16}$ -inch

No. 315, FF (fine)50
No. 316, 220 (medium fine) .50
No. 317, 150 (medium) . . .50



Size, $4 \times \frac{1}{2} \times \frac{3}{16} - \frac{3}{32}$ -inch

No. 318, FF (fine)50
No. 319, 220 (medium fine) .50
No. 320, 150 (medium) . . .50



Size, $3 \frac{1}{2} \times \frac{9}{16} \times \frac{7}{32}$ -inch

No. 321, FF (fine)50
No. 322, 220 (medium fine) .50
No. 323, 150 (medium) . . .50



Size, 4 inches long, diameter
tapering $\frac{1}{2}$ to $\frac{1}{4}$ -inch

No. 334 (fine)50
No. 335 (medium)50
No. 336 (coarse)50



Size, 4 inches long, triangle
taper $\frac{1}{2}$ to $\frac{1}{4}$ -inch

No. 337 (fine)50
No. 338 (medium)50
No. 339 (coarse)50



Size, 4 inches long diamond
 $\frac{9}{16} \times \frac{3}{16}$ -inch

No. 340 (fine)50
No. 341 (medium)50
No. 342 (coarse)50



Sticks

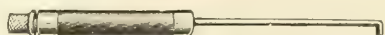
Length			4 Inch		6 Inch		8 Inch		10 Inch		12 Inch	
Symbol for Length and Grit			AB	C	DE	F	GH	I	JK	L	MN	O
Number	Shape	Size Inches	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each
1	Sq.	$\frac{1}{4}$	\$.25	\$.35	\$.40	\$.50						
2	Tri.	$\frac{1}{4}$	.25	.35	.40	.50						
3	$\frac{1}{2}$ Rd.	$\frac{1}{4}$	.25	.35	.40	.50						
4	Rd.	$\frac{1}{4}$	.25	.35	.40	.50						
5	Sq.	$\frac{3}{8}$	.25	.35	.40	.50						
6	Tri.	$\frac{3}{8}$	.25	.35	.40	.50						
7	$\frac{1}{2}$ Rd.	$\frac{3}{8}$	.25	.35	.40	.50						
8	Rd.	$\frac{3}{8}$	.25	.35	.40	.50						
9	Sq.	$\frac{1}{2}$	.25	.35	.40	.50	\$.55	\$.75				
10	Tri.	$\frac{1}{2}$	.25	.35	.40	.50	.55	.75				
11	$\frac{1}{2}$ Rd.	$\frac{1}{2}$	.25	.35	.40	.50	.55	.75				
12	Rd.	$\frac{1}{2}$	.25	.35	.40	.50	.55	.75				
13	Sq.	$\frac{5}{8}$	.30	.40	.40	.55	.65	.85	\$.85	\$1.15	\$1.05	\$1.40
14	Tri.	$\frac{5}{8}$	.30	.40	.40	.55	.65	.85	.85	1.15	1.05	1.40
15	$\frac{1}{2}$ Rd.	$\frac{5}{8}$	.30	.40	.40	.55	.65	.85	.85	1.15	1.05	1.40
16	Rd.	$\frac{5}{8}$	.30	.40	.40	.55	.65	.85	.85	1.15	1.05	1.40
17	Sq.	$\frac{3}{4}$	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
18	Tri.	$\frac{3}{4}$	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
19	$\frac{1}{2}$ Rd.	$\frac{3}{4}$	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
20	Rd.	$\frac{3}{4}$	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
21	Sq.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
22	Tri.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
23	$\frac{1}{2}$ Rd.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
24	Rd.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
25	Sq.	$1 \frac{1}{4}$	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
26	Tri.	$1 \frac{1}{4}$	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
27	$\frac{1}{2}$ Rd.	$1 \frac{1}{4}$	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
28	Rd.	$1 \frac{1}{4}$	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
29	Sq.	$1 \frac{1}{2}$	.55	.75	.75	.95	.85	1.15	1.20	1.60	1.55	2.10
30	Tri.	$1 \frac{1}{2}$	.55	.75	.75	.95	.85	1.15	1.20	1.60	1.55	2.10
31	$\frac{1}{2}$ Rd.	$1 \frac{1}{2}$	.50	.65	.60	.80	.75	1.00	1.00	1.35	1.35	1.70
32	Rd.	$1 \frac{1}{2}$	.50	.65	.60	.80	.75	1.00	1.00	1.35	1.35	1.70

Note.—In ordering sticks order by stick number and symbol for the length and grit, viz.: 12 No. 1-A sticks means 12 sticks, 4 inches long, $\frac{1}{4}$ -inch square, coarse grit.

Stick Holder

The Carborundum Stick Holder is a convenient device for holding Carborundum Sticks, square, round, half-round, or triangular. The holder can be adjusted to take any size stick from four to one and one-quarter inches in length.

No. 54 Each \$.50



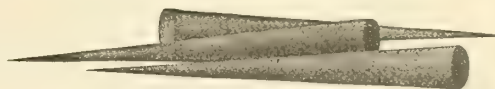
Points

Each

No. 97, FF
(fine) \$.50

No. 98, 180
(medium)50

No. 99, 120 (coarse)50



For die sinkers, hard and sharp three inches long,
made in three grits

SINCE
1848

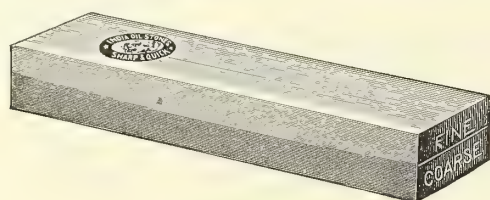
HAMMACHER SCHLEMMER & CO. NEW YORK

Oil Stones and Boxes



India
Coarse, Medium or Fine

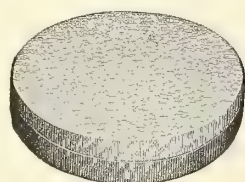
Number	Dimensions Inches	Each
0	8 x2x1	\$1.00
1	8 x1 $\frac{3}{4}$ x1 $\frac{1}{4}$	1.00
1 $\frac{1}{2}$	7 x2x1	.75
2	6 x1 $\frac{5}{8}$ x $\frac{3}{4}$	.50
3	4 x1x $\frac{1}{2}$	.30
24	4 $\frac{1}{2}$ x1 $\frac{1}{2}$ x $\frac{5}{8}$	.40
29	6 x2x1	.60



Combination

Possess the advantage of having two stones in one, the coarse side being used for grinding down very dull or badly nicked tools and the fine side for putting on a finishing edge. India Combination Stones are not two separate stones glued together but are in reality single stones, the two grits being vitrified together, so that no amount of throwing about or ill usage will cause them to come apart.

Number	Dimensions Inches	Each
0	8 x2 x1	\$1.25
1	8 x1 $\frac{3}{4}$ x1 $\frac{1}{4}$	1.25
1 $\frac{1}{2}$	7 x2 x1	1.00
2	6 x1 $\frac{5}{8}$ x $\frac{3}{4}$	.60
24	4 $\frac{1}{2}$ x1 $\frac{1}{2}$ x $\frac{5}{8}$	.50
29	6 x2 x1	.75



Combination Circular

A practical and economical shape for mechanics who require tools with perfectly straight edges. Especially desirable for those who prefer that broad rotary stroke as the danger of hollowing out is entirely eliminated.

No. 63 4 inches diameter, each..... \$1.00

Boxes for India Stones

Wooden

Made of highly finished quartered oak.

For Stones

8x2 x1 inches	6x1 $\frac{5}{8}$ x $\frac{3}{4}$ inches
8x1 $\frac{3}{4}$ x1 $\frac{1}{4}$ inches	4x1 x $\frac{1}{2}$ inches
7x2 x1 inches	6x2 x1 inches

All sizes, each..... \$.25

Iron

Fitted with four cork feet which will prevent sliding on the bench. The stone rests on a piece of felt which absorbs surplus oil, and keeps the stone moist and ready for instant use.

For Stones

8x2x1 inches	6x1 $\frac{5}{8}$ x $\frac{3}{4}$ inches
7x2x1 inches	6x2 x1 inches

All sizes, each..... \$.50

Steel

For Round Stones

4 inches diameter, 1-inch thick, each..... \$.50



Arkansas, No. 1 Quality
Unmounted

	Each
6x1 $\frac{3}{4}$ x $\frac{3}{4}$ -inch, Regular.....	\$3.95
6x1 $\frac{3}{4}$ x $\frac{3}{4}$ -inch, Soft.....	1.80
8x2 x1-inch, Regular.....	7.35
8x2 x1-inch, Soft.....	3.40

In Mahogany Case

	Each
6x2-inch, Regular.....	\$3.15
6x2-inch, Soft.....	1.60
8x2-inch, Regular.....	4.40
8x2-inch, Soft.....	2.50

Washita

Rosy Red—Unmounted

	Dozen
6x1 $\frac{3}{4}$ x $\frac{3}{4}$ -inch.....	\$6.70
8x2 x1-inch.....	12.00

Rosy Red—In Cherry Cases

	Dozen
6x2-inch.....	\$12.00
8x2-inch.....	15.00

Lily White—Unmounted

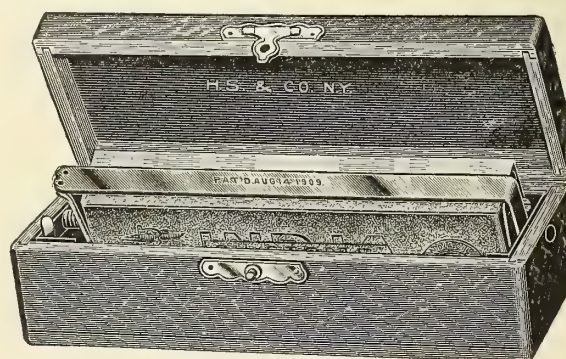
	Dozen
Medium Hard, 8x2x1-inch.....	\$7.50
Soft, 8x2x1-inch.....	12.00



Pike Reversible

Two stones in one splendid mounting. This mounting insures the proper care of the two stones, keeping them out of dirt and dust and properly oil-moistened by a felt pad in each cover. Stones, 7x2x $\frac{5}{8}$ inches are held in place by a patented device which provides for replacing stones when desired.

	Each
India and Lily White Washita.....	\$2.00
Soft Arkansas and Coarse India.....	3.00
Hard Arkansas and Coarse India.....	4.50

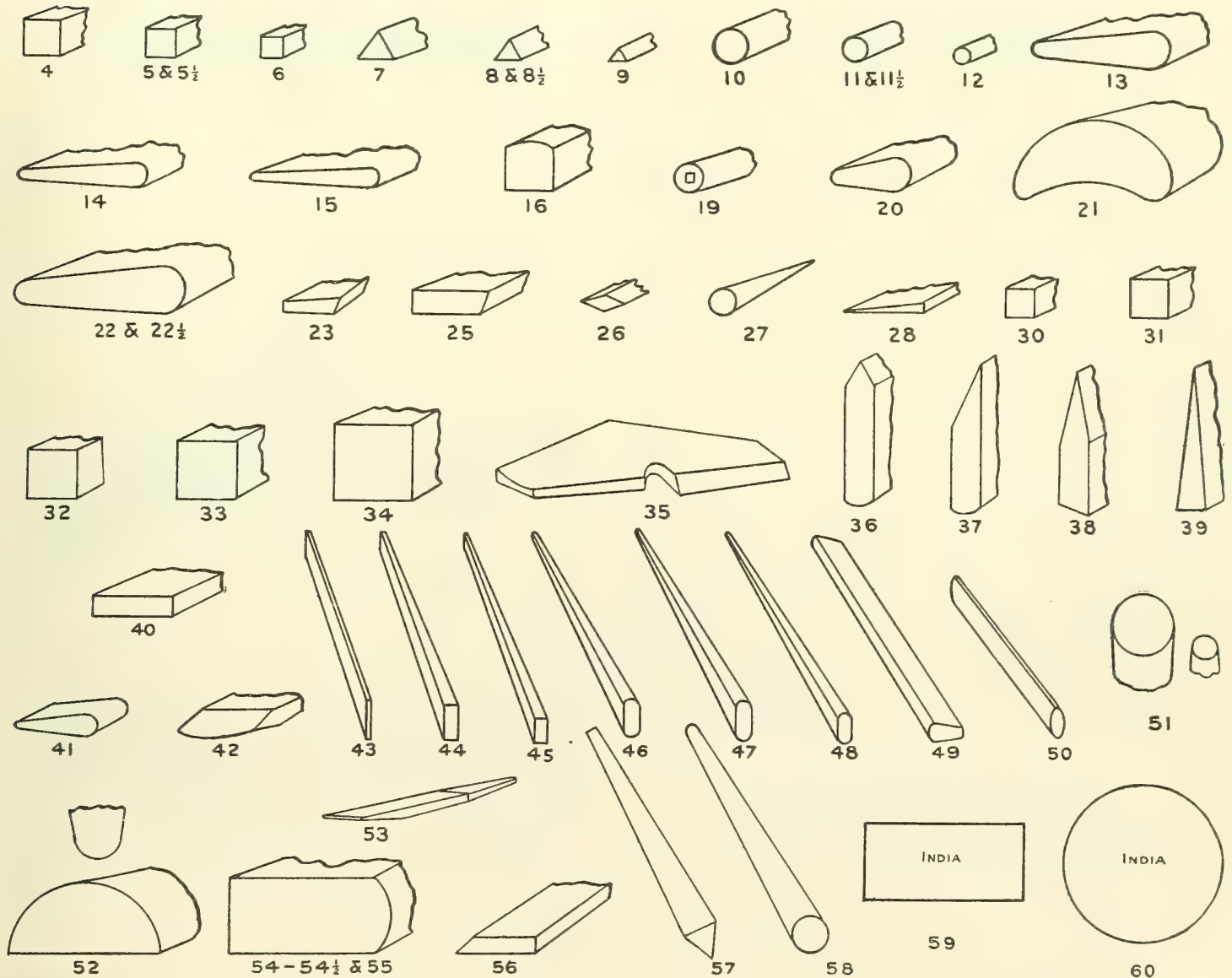


Pike Revolvable

Similar to Reversible in general appearance except that box has regulation hinged cover. The stones, which are fastened firmly into a steel frame revolving on center pins at each end, are held in position by a strong spring catch.

	Each
India and Lily White Washita.....	\$2.00
Soft Arkansas and Coarse India.....	3.00
Hard Arkansas and Coarse India.....	4.50

Oil Stones (India (Miscellaneous Shapes))



Coarse, Medium or Fine

Shape	Dimensions Inches	Each
4	4 x 1 1/2 x 1 1/2	.30
5	4 x 3/8 x 3/8	.30
5 1/2	4 x 5/16 x 5/16	.30
6	4 x 1/4 x 1/4	.30
7	4 x 1/2 x 1/2	.40
8	4 x 3/8 x 3/8	.40
8 1/2	4 x 5/16 x 5/16	.40
9	4 x 1/4 x 1/4	.40
10	4 x 1/2	.45
11	4 x 3/8	.45
11 1/2	4 x 5/16	.45
12	4 x 1/4	.45
13	4 1/2 x 1 3/4 x 1 1/2 x 3/16	.35
14	4 1/2 x 1 3/4 x 3/8 x 1/4	.35
15	4 1/2 x 1 3/4 x 1/4 x 1/16	.35
16	8 x 5/8 x 5/8	.50
19	{ Engravers Pencils, Fine one end, medium the other }	.40
20	4 x 1 x 1/16 x 3/16	.30
21	6 x 2 x 1 x 3/8 x 1/16	.75
22	4 1/2 x 2 1/8 x 5/8 x 1/16	.50

Shape	Dimensions Inches	Each
22 1/2	6 x 2 1/4 x 3/4 x 3/8	.60
23	3 1/2 x 3/4 x 1/16 x 1/8	.30
25	4 1/2 x 1 x 5/16	.30
26	Reamer Stone	.30
27	4 x 9/16 x 3/16	.50
28	Points 3 x 5/16	.50
30	4 x 1 x 1/8	.50
31	6 x 3/8 x 3/8	.45
32	6 x 1/2 x 1/2	.45
33	6 x 5/8 x 5/8	.45
34	6 x 3/4 x 3/4	.55
35	6 x 1 x 1	.55
36	Bath Universal Slip	1.75
37	{ 1 set (4) Carvers Slips }	1.00
38	2 1/4 x 7/8 x 3/16	
39		
40	2 x 1 x 1/4	.30
41	5 x 1 x 5/16 x 3/32	.35
42	1 x 1 x 1/4	.35
43	4 x 1/2 x 3/16	.50

Shape	Dimensions Inches	Each
44	4 x 1/2 x 1/4 x 3/16 x 1/8	.50
45	4 x 5/16 x 3/16 x 1/16	.50
46	4 x 1/2 x 1/4 x 3/16 x 1/8	.50
47	4 x 1/2 x 3/16 x 1/16 x 1/16	.50
48	4 x 3/8 x 3/16 x 1/8 x 1/16	.50
49	4 x 7/16 x 3/16 x 1/8	.50
50	3 1/2 x 7/16 x 3/16	.50
51	Oval Plug 6 x 7/8 x 5/16	.60
52	Heel Breasting Stone	.50
53	Automobile Stone	.35
54	Automobile Stone in Case	.60
54 1/2	8 x 2 x 3/4	.90
55	5 x 1 1/2 x 1 1/2	.60
56	{ 5 x 1 x 3/16 } { (Reamer Stone) }	.40
56 1/2	{ 6 x 1 x 1/4 } { (Reamer Stone) }	.60
57	4 x 1/2 x 1/4	.50
58	4 x 1/2 x 1/4	.50
59	{ 3 x 1 1/2 x 1/2 } { (Axe Stone) }	.25
60	Circular Axe Stone, 3 x 5/8	.35

Oil Stones

Round Edge Slips



Arkansas (Regular)

No. 1	$3\frac{1}{2} \times 1 \times \frac{3}{16}$ to $\frac{1}{16}$ -inch.	Dozen	\$7.00
No. 2	$3\frac{1}{2} \times 1 \frac{3}{8} \times \frac{1}{4}$ to $\frac{3}{32}$ -inch.	Dozen	10.50
No. 3	$3\frac{1}{2} \times 1 \frac{1}{2} \times \frac{5}{16}$ to $\frac{1}{8}$ -inch.	Dozen	12.60
No. 4	$4 \times 2 \times \frac{7}{16}$ to $\frac{3}{16}$ -inch.	Dozen	21.70
No. 5	$4 \frac{1}{2} \times 2 \times \frac{9}{16}$ to $\frac{1}{4}$ -inch.	Dozen	28.00

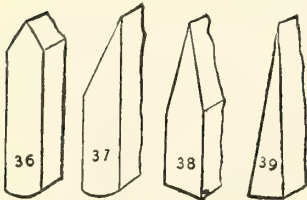
Soft Arkansas

No. 6	$3\frac{1}{2} \times 1 \times \frac{3}{16}$ to $\frac{1}{16}$ -inch.	Dozen	\$3.50
No. 7	$3\frac{1}{2} \times 1 \frac{3}{8} \times \frac{1}{4}$ to $\frac{3}{32}$ -inch.	Dozen	6.60
No. 8	$3\frac{1}{2} \times 1 \frac{1}{2} \times \frac{5}{16}$ to $\frac{1}{8}$ -inch.	Dozen	9.00
No. 9	$4 \times 2 \times \frac{7}{16}$ to $\frac{3}{16}$ -inch.	Dozen	9.80
No. 10	$4 \frac{1}{2} \times 2 \times \frac{9}{16}$ to $\frac{1}{4}$ -inch.	Dozen	14.00

Rosy Red Washita

No. 11	$3\frac{1}{2} \times 1 \frac{1}{2} \times \frac{5}{16}$ to $\frac{1}{8}$ -inch.	Dozen	\$2.80
No. 12	$4 \times 2 \times \frac{7}{16}$ to $\frac{3}{16}$ -inch.	Dozen	3.50
No. 13	$4 \frac{1}{2} \times 2 \times \frac{9}{16}$ to $\frac{1}{4}$ -inch.	Dozen	4.90
No. 14	$5 \times 2 \times \frac{3}{4}$ to $\frac{5}{16}$ -inch.	Dozen	9.00

Carving Tool Sets



Arkansas, set of 4. \$1.50

Soft or hard. Soft sent unless otherwise specified.

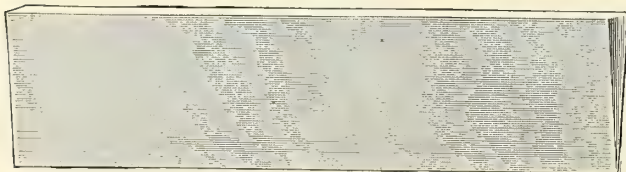
Special Carving Tool Slip



Soft Arkansas

No. 15	$2 \frac{7}{16} \times 1 \times \frac{1}{4}$ inch, dozen.	\$4.20
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Miscellaneous Arkansas Sticks



No. 19	Knife Blade, 4 inches long, dozen.	\$6.00
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No. 22	Points, $2 \frac{3}{4}$ inches long, dozen	\$4.00
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Directions for Use

Use only a thin, clear oil and wipe the stone clean after using. Then moisten with clean oil.

To Repair a Broken Oil Stone

Heat the pieces thoroughly on a hot plate, so as to remove all oil, then clean in regular way. Dust the broken edges thickly with powdered shellac, which melt by reheating on the hot plate. Place the pieces together and clamp tightly until cold. If the joining is carefully done, the stone will give as good service as when new and may be used until worn out.

Penknife Pieces



Arkansas

No. 16	$3\frac{1}{2} \times \frac{3}{4} \times \frac{3}{8}$ -inch.	Dozen	\$7.75
No. 17	$4 \times 1 \times \frac{1}{2}$ -inch.	Dozen	13.35
No. 18	$5 \times 1 \times \frac{1}{2}$ -inch.	Dozen	15.50

Washita

No. 26	$3 \frac{7}{8} \times 1 \times \frac{1}{2}$ inch.	\$3.20
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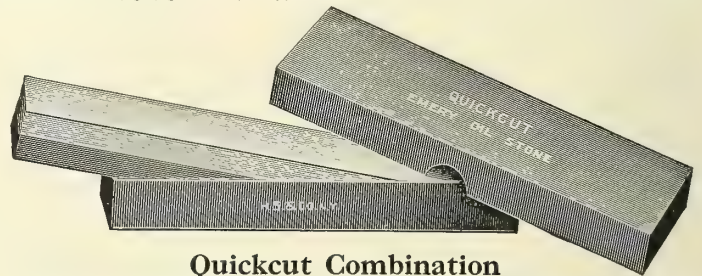
India

No. 61	$3 \frac{1}{2} \times 1 \times \frac{3}{8}$.	1.80
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Pocket Hones—Carborundum

Very useful for sharpening the penknife or ink scratcher. Complete in neat leather case.

No. 145	$4 \times 1 \times \frac{1}{4}$ inches (fine).	Each	\$.40
No. 146	$4 \times 1 \times \frac{1}{4}$ inches (medium).	Each	.35
No. 149	$3 \times \frac{7}{8} \times \frac{3}{8}$ -inch (fine), without case	Each	.15



Quickcut Combination

Made of Naxos Emery. Combination of coarse and fine grits, packed in neat individual telescope box.

$6 \times 2 \times \frac{3}{4}$ inches, each.	\$.25
$8 \times 2 \times 1$ inch, each.	.35

Genuine Queer Creek—Oil or Water



A hard, medium, coarse-grained stone, adapted for grinding down dull tools or sharpening those intended for coarse work.

$8 \times 2 \times 1$ inch, each.	\$.40
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No. 20	Triangular, $4 \frac{1}{2}$ inches long, dozen	\$5.00
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No. 21	Square, 4 inches long, dozen.	\$3.50
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To Clean

Wash India or Carborundum Stones in kerosene, which will remove the gummed surface oil. This may be more easily and thoroughly done by heating on a hot plate, or sticking in the fire, which latter will not damage the stones.

A natural stone may also be heated on a hot plate to remove the surplus or gummed oil, after which a good cleaning with gasolene or ammonia will usually restore its cutting qualities, but if it does not, then scour the stone with loose emery or sandpaper fastened to a perfectly smooth board.

Sharpening Stones



Emery

For dry rubbing or sharpening. Furnished in either Nos. 60, 70, 80, 90, 100 or 120 Emery.
8x2x1-inch, dozen..... \$4.50

Sand

This stone is very coarse and has a sharp grit. Is used largely for sharpening shoemakers and fishermens knives. It is the best stone known for sharpening tools requiring a very harsh, coarse edge.
8x1½x1½ inches, Dozen..... \$2.50

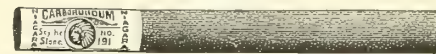


Carborundum File

For general shop work; can be used to advantage in place of the steel file for certain operations, such as touching up case-hardened parts and removing scale from metals that cannot be touched by the steel file.

Each
No. 59 Carborundum File, 13 inches long, wood handle..... \$.75
No. 53 Carborundum File, 18 inches long, wood handle..... 1.50

Scythe



Carborundum Niagara

These Stones must not be classed with the ordinary scythe stones. The old style stones are merely sandstone and are of very little use. They simply rub the edge into shape while Carborundum cuts it fast and clean. The advantage is obvious.

No. 191 12 inches long, each..... \$.25

Lectro

The material from which the Lectro stone is made is the product of the electric furnace. The process of manufacture leaves it strong, though porous, exposing myriads of hard, tough, sharp-pointed crystals making the cutting properties of this stone unexcelled. Every stone guaranteed not to glauce.

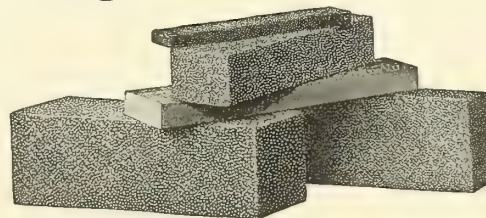
Dozen..... \$2.00

Willoughby Lake

Bluish gray in color; round oval in shape. Has very sharp grit but gives fine edge.

Dozen..... \$1.60

Rubbing Bricks and Stones



Carborundum

Under the head of Rubbing Bricks and Stones are manufactured a great variety of different shapes and sizes of stones for dressing and smoothing granite and marble, also for scouring castings, chilled iron and steel rolls used in tin-plate mills, rolling mills, etc. These stones are not squared up and dressed, but are packed as they come from the kilns. There is practically no limit to the possibility of manufacture in this line, and while we list a few sizes most commonly used and carried in stock, we are prepared to furnish, when called upon, any size or shape of any grit, from the coarsest to the very finest powder. We shall be pleased to quote special prices on any plain or irregular shapes. These stones are all made by the vitrified process, and can be used dry or with water or oil.

Number	Size Inches	Dozen	Number	Size Inches	Dozen
210	8x4x4	\$40.00	217	5x2½x1	\$5.75
209	8x4x3	30.50	218	5x1½x1	4.15
208	8x4x2	21.00	219	5x1½x ½	2.95
207	8x3x3	23.40	220	4x4 x4	21.00
206	8x3x2	16.30	221	4x3 x3	12.70
211	8x2x2	11.40	228	4x3 x2	9.00
212	8x2x1	6.70	222	4x2 x2	6.70
213	6x3x3	18.00	223	4x2 x1	4.30
205	6x3x2	12.70	224	4x2 x ½	3.00
214	6x2x2	9.00	226	4x1 x ½	2.35
215	6x2x1	5.60	227	4x1 x ¼	2.00
216	6x2x ½	3.70			

For Concrete

The Carborundum Rubbing Bricks are the fastest cutting mediums known for removing form marks and for dressing down concrete work.



The slip is used for cleaning up moldings and curved surfaces. Supplied in 20 grit only.

	Dozen
8x3x3 inches, fluted.....	\$23.40
8x2x2 inches, fluted.....	11.40
6x2x2 inches, fluted.....	9.00
4x2x2 inches, fluted.....	6.70
4½ inches diameter, fluted, 2 inches thick.....	11.40
Slip, 8 inches long, 4 inches wide, tapered from 1¼-inch to ½-inch	12.70

For Grain or Grit, see pages 358 and 359.

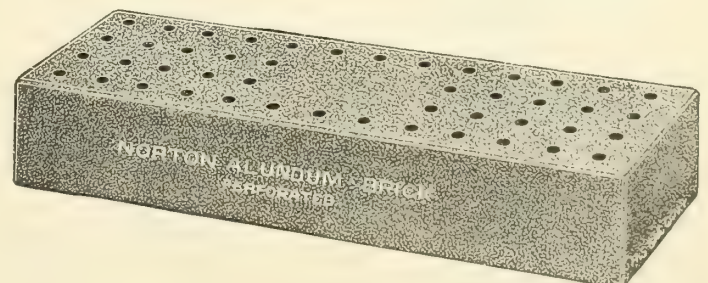
Alundum

Manufactured in a variety of shapes, sizes and grits.

Used principally for scouring castings, general foundry and machine shop work, dressing and smoothing granite and marble, scouring chilled iron rolls and work of like nature. While the list below includes only the sizes commonly used, we are prepared to furnish special shapes and sizes in any grit desired.

Can be used dry, or with water or oil.

Number	Size	Dozen	Number	Size	Dozen
101	8x4x2	\$15.00	104	8x2x1	\$4.50
102	8x3x3	16.50	105	6x3x3	13.50
103	8x3x2	12.00	107	6x3x2	9.00
209	8x2x2	8.00	108	4x2x2	4.50



Perforated

A valuable brick for rubbing down castings after filling, also rubbing down varnish on patent leather.

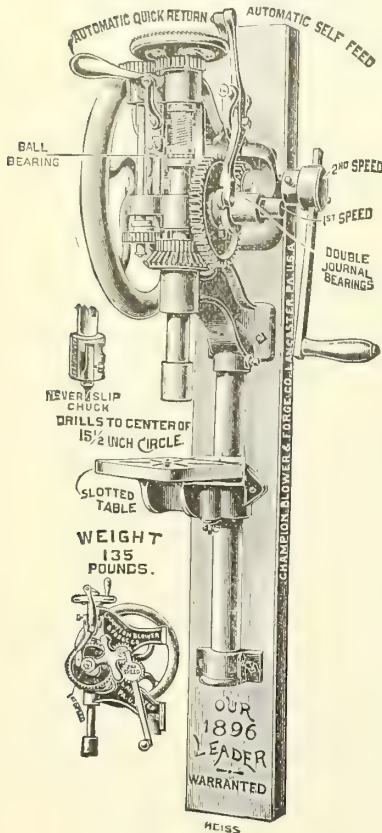
These bricks can be made in different sizes and grits.

No. 109 6x2x1, dozen..... \$4.50

Blacksmiths Post Drills

Champion

No. 96 Self-Feed with Automatic Quick Return



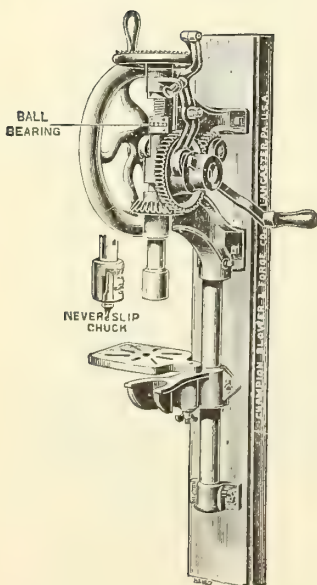
The quick return lever is thrown into place while the drill continues in motion, where it remains until the bit is raised out of the work, when it automatically stops, requiring no attention from the operator, and is ready to start the next hole.

It is back-gearred with improved third-gear principle. The crank has a forward motion on both 1st and 2d speed, the third gear being part of the handle hub and only in use as a gear when on the 2d speed, thus saving the continuous labor of pulling along an intermediate or third gear while working the first speed.

Drills to the center of 15½-inch circle. All gears are protected with double journal bearings. All bearings are ground to a working fit out of the solid metal, precisely like all drills costing from \$100 to \$500. It has two speeds. Will drill from ⅜ to 1½-inch hole. Spindle bored regularly to take ½-inch straight shank drills, furnished to take ¾-inch if specially ordered.

Weight, 135 pounds. Each \$12.50
Extra for power 3.00

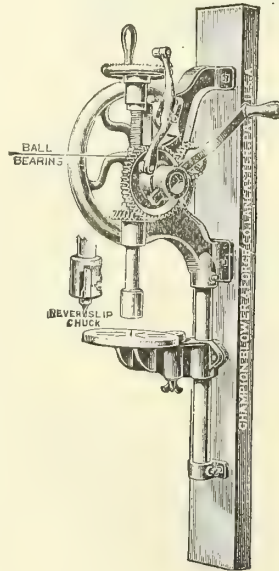
No. 90 Self-Feed



Has a slotted square table lathe-turned. It is a strong and stoutly proportioned drill. Has full back gear with one speed. Drills to the center of a 14½-inch circle. The bearings are all ground from solid metal. Will bore holes up to 1 inch. Has spindle 1⅝-inch in diameter with an up-and-down run of 3 inches. Spindle bored to take ½-inch straight shank drills. If specially ordered will be bored to take ⅝-inch or ¾-inch.

Weight, 100 pounds. Each \$8.50
Extra for Power 3.00

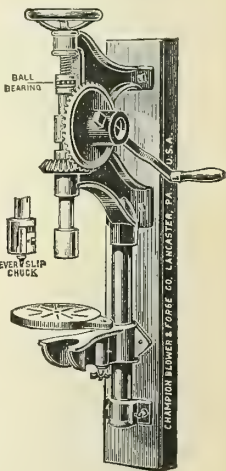
No. 101 Self-Feed



Built to furnish an automatic self-feed drill at the lowest price possible. Has back gears and slotted lathe-turned table. It will drill to the center of a 12-inch circle. It has one speed for the crank. The spindle is ⅞-inch in diameter. It drills holes up to ¾-inch and has an up-and-down run of 3 inches. The spindle is bored for ½-inch straight shank drills. When specially ordered will be bored for ⅝ or ¾-inch.

Weight, 80 pounds. Each . . . \$7.00

No. 92 Hand Feed



Will drill holes from ⅜ to ¾-inch and to the center of a 12-inch circle.

It has a slotted table planed off on its top side. The spindle is made of ⅞-inch steel and has an up-and-down run of 3 inches. The end thrust ball bearings save power and no babbitt metal is used in machine. All drills are machined-jigged, therefore, parts are standard and interchangeable. Spindle bored for ½-inch straight shank drills. When specially ordered will be bored for ⅝ or ¾-inch. Weight, 65 pounds. Each . . . \$6.00

No. 92½ Exactly the same as Number 92, except that it has fly wheel.

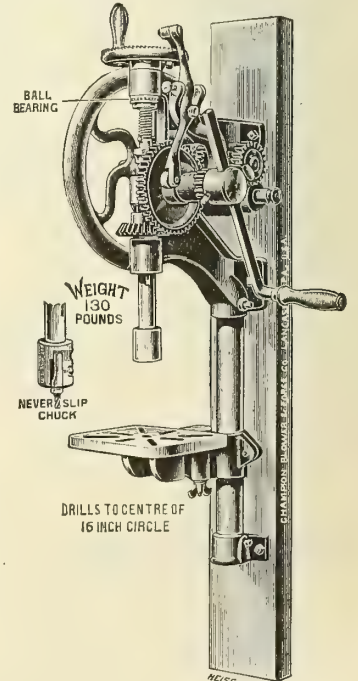
Weight, 70 pounds. Each . . . \$6.50

Ball Bearing Self-Feed

Has three gears to give the second speed the same turning direction of the crank that the first speed has. It drills to the center of a 16-inch circle, making it a very useful and valuable drill, and giving it a greater range of work than any other drill sold at this price. The ball-bearings are first-class, the cup and cone both made from die steel and will save power, as the ball-bearing takes up the end thrust of the high-speed drill. It has full automatic self-feed and lathe-turned square-slotted table. Has spindle 1¼ inches in diameter. Has an up-and-down run of 3 inches. Spindle bored to take ½-inch straight shank drills. If specially ordered, bored to take in ⅝ or ¾. Will drill holes up to 1¼ inches. It has double-journal bearings all through, and all bearings are ground out of the solid metal to a working fit.

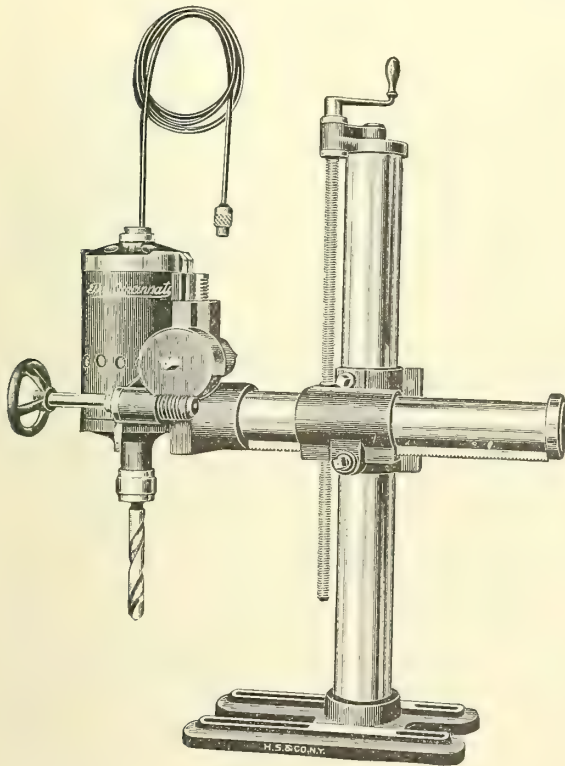
Weight, 130 pounds. Each . . . \$12.50

Extra for power 3.00



Upright Bench Drills

Cincinnati Portable Radial



Direct and Alternating Current

This Scotch Radial Drill is made in several sizes. The stand has a horizontal adjustment by means of a rack and pinion on the cross arm, and a vertical adjustment through the 34-inch lead screw, attached to the upright column. The Drill Motor can be set at any angle and has a circle radius of 24 inches in any direction. It has a 10-inch hand-wheel feed with quick return.

The hand-wheel and worm box are adjustable to drill in either horizontal or vertical position, allowing the operator to get into close corners. All adjustments are positive and under immediate control. The columns are of Shelby steel tubing and ground. This Drill can be set anywhere, as any length cord can be used. The motor is of our Heavy Duty Type and guaranteed in every way.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Each	Type Direct Current	Capacity in Steel Inches	Taper Socket	Weight Pounds	Speed R. P. M.	Type Alternating Current	Each
115.00	MS (2 speed)	$\frac{7}{8}$	No. 2	160	220-400	MSA	125.00
140.00	MO (2 speed)	1	No. 3	190	175-350	MOA	152.00
165.00	MM (2 speed)	$1\frac{1}{4}$	No. 3	225	145-300	MMA	175.00
166.00	MR	2	No. 4	270	95	*MRA	185.00
178.00	MY	$2\frac{1}{2}$	No. 5	290	85	*MYA	190.00

*Made in two and three phase only.

Champion Power No. 0

For Light and Rapid Drilling

The top of the drill base is planed off to use as a table when the regular drill table is turned to one side, thus giving a space of 16 inches between the chuck and base-table. The upper cone pulley is between two bearings, thus equalizing the strain and making the drill more powerful. The counter-shaft is supplied with a belt shift on the tight and loose pulley and the feed lever is manipulated with a spring arrangement to automatically keep the lever and bit out of the work.

This Drill is particularly adapted for garages, pattern makers and machine shops where light, accurate and rapid drilling is done.

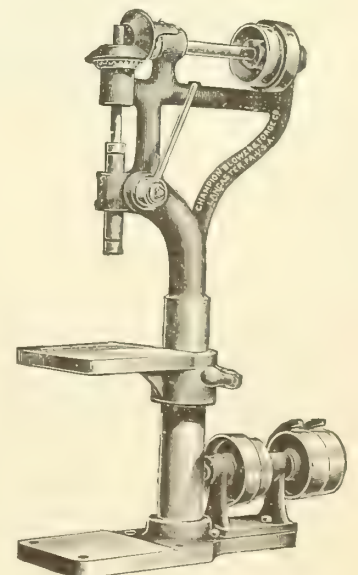
Dimensions

Drills to center of a 9-inch circle.
Bores holes up to $\frac{9}{16}$ -inch in diameter.
Up and down run of spindle $3\frac{1}{4}$ inches.
Up and down run of table 9 inches.

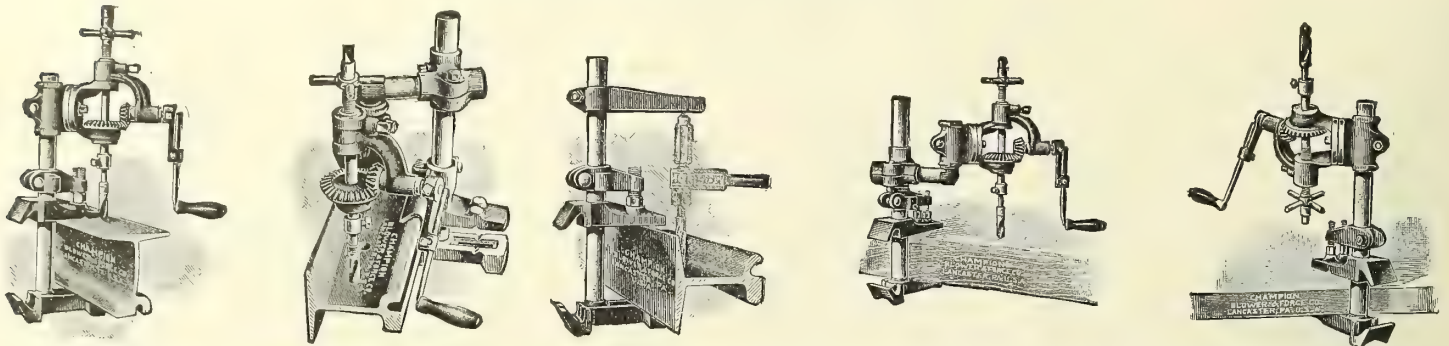
Greatest distance from table to spindle 10 inches.
Greatest distance from planed base to spindle 16 inches.

Diameter of column $2\frac{1}{2}$ inches.
Size tight and loose pulleys $4 \times 1\frac{3}{4}$ inches.
Size of large cone pulley $4\frac{1}{2} \times 1\frac{1}{2}$ inches.
Size of small cone pulley $3 \times 1\frac{1}{2}$ inches.
Spindle is bored with No. 1 Morse taper hole.
Height, 32 inches.
Weight, 100 pounds.

Each..... \$30.00



Hand Drills Champion Universal Radial

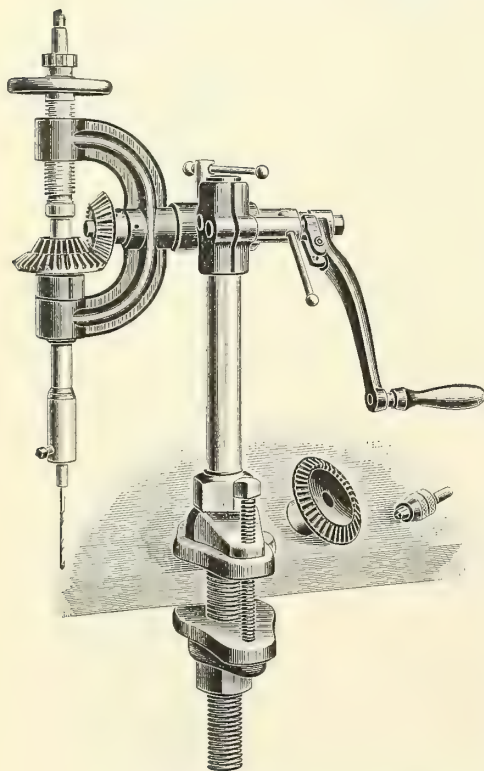


Ball-bearing Drill, designed and constructed to drill holes in practically all positions, angles or locations where an ordinary drill cannot reach. By the various illustrations the drill explains itself and the purposes for which it has been designed. It is a convenient, practical and profitable tool for contractors, steam railroads, electric railroads, bridge builders, structural steel workers, machine shops, repair shops, bridge builders and is a particularly good drill for municipal corporations owning their own water works, etc. While the Drill can be radiated in practically any position, it also makes a very convenient regular standard drill for straight boring. Spindle bored to take in $\frac{1}{2}$ -inch straight shank drills.

No. 1 Capacity $1\frac{1}{4}$ -inch hole, weight, 42 pounds each \$30.00
No. 2 Capacity $1\frac{1}{2}$ -inch hole, weight 70 pounds, each 45.00

Angular and Ratchet Drilling Machine

M. F. Co.



Steel standards shafts, and spindles; iron frame, crank and bench clamp; malleable iron gears.

Attachable either to bench or to object to be drilled.

Drills vertically or at any angle desired, above or below bench.

Extensible from standard outward. No. 1 machine, $4\frac{1}{2}$ to $5\frac{3}{4}$ inches; No. 2, 6 to 8 inches; and No. 3, 7 to $10\frac{1}{2}$ inches.

Hand feed.

Ratchet attachment.

Socket hole in spindle for $\frac{1}{2}$ -inch round shanks but bored to order for $\frac{5}{8}$ -inch without extra charge.

One $\frac{1}{4}$ -inch drill to fit socket and star chuck to hold round shanks from 0 to $\frac{1}{2}$ -inch in diameter supplied with each machine, without extra charge; omitted when machine is made to order with taper socket.

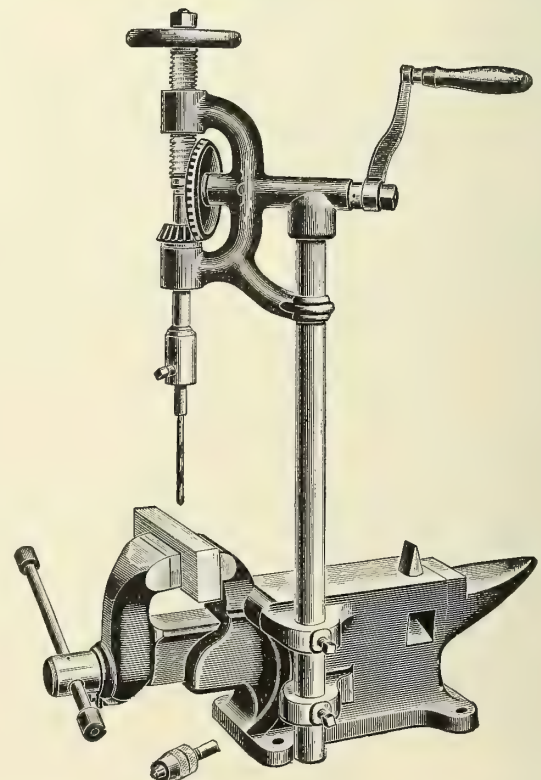
No. 1 Speeded; ball bearing. Drills hole up to $\frac{3}{8}$ -inch.
No. 2 With two sets of gears making either speeded or geared back; hardened anti-friction bearings. Drills hole up to 1-inch.

No. 3 Geared back; hardened anti-friction bearings. Drills hole up to $1\frac{1}{2}$ inches.

Numbers	1	2	3
Height of standard	25 $\frac{1}{2}$ inches	25 $\frac{1}{2}$ inches	28 $\frac{1}{2}$ inches
Weight, net	34 pounds	68 pounds	108 pounds
Each	\$16.00	20.00	30.00

To order with hole for taper socket, extra, net \$1.50
Note—When ordering state size of taper wanted.

Anvil, Vise and Drill



(1) Drilling Attachment: Steel standards and spindle; hand feed; socket hole $\frac{1}{2}$ -inch in diameter; provided with one $\frac{1}{4}$ -inch drill to fit socket hole and extra chuck to hold round shanks from 0 to $\frac{1}{2}$ -inch in diameter; attachment may be swung away from vise and work done below the bench; height of standard, 24 inches.

(2) Vise: Of best material and construction; jaws $3\frac{1}{2}$ inches wide with inserted steel faces.

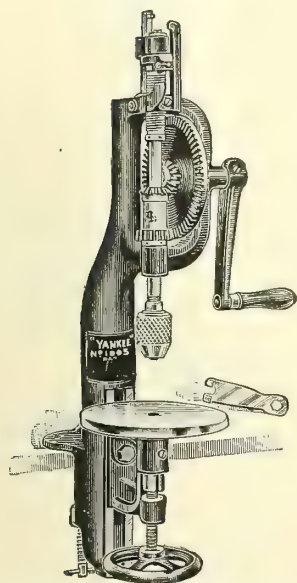
(3) Anvil: Steel face 4x8 inches; hardie provided.

Anvil, Vise, and Drill	Anvil and Vise	Drilling Attachment
Weight, net, 80 pounds,	60 lbs.	20 lbs.
Each \$30.00	12.80	17.20

Packed one in a wooden box.

Bench Drills

Yankee, With Automatic Friction and Ratchet Feeds



No. 1005

For Drills up to $\frac{1}{2}$ -inch, inclusive.

Made with two speeds and quickly changed from one to the other by simply moving the shifter on spindle to top notch (S) for slow or bottom notch (F) for fast speed. When the shifter is placed in center notch, the spindle is locked fast, to open or close chuck. On the fast speed (geared 64 to 18) one revolution of crank gives $3\frac{1}{2}$ to spindle and on slow speed (geared 14 to 14) one revolution of crank gives 1 to spindle. The spindle is $\frac{9}{16}$ -inch diameter, of steel; all gears have teeth of extra strength and are cut from solid to run smoothly and accurately, the pinion of slow speed being of steel. The chuck is of steel $2\frac{3}{4}$ inches long, $1\frac{9}{16}$ -inch diameter, polished and nickel plated, has three jaws of tool steel, hardened and holds round shank drills up to $\frac{1}{2}$ -inch diameter, inclusive. The traverse of spindle (automatic feed) is 2 inches. The friction feed brings drill to and from work quickly and ratchet feeds automatically all drills from No. 45 up to $\frac{1}{2}$ -inch without risk of breaking. Provision is made by bracket with arms to throw off ratchet feed at extreme up or down movement, to prevent parts being jammed. The feed screw is of steel, has square thread to insure durability, and fitted with ball bearing at lower end. All steel parts subject to wear are hardened. The crank is 6 inches between centers.

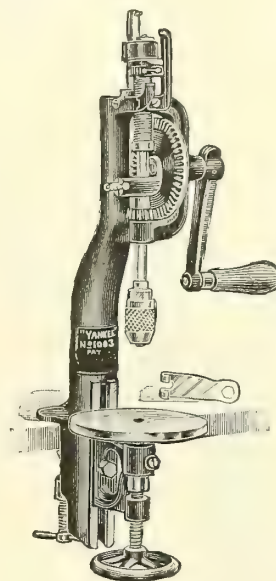
The bracket at base of column has a vertical adjustment of 5 inches, the slide being $9\frac{1}{4}$ inches and bracket $4\frac{1}{4}$ inches long. The table on bracket has an independent movement of $1\frac{1}{4}$ inches by means of a $4\frac{1}{4}$ -inch hand wheel and screw, and can be used for feeding in emergencies, in addition to automatic feed. The table is $6\frac{3}{4}$ inches diameter, its center $3\frac{1}{2}$ inches from fall of side. The lower end of bracket slide on column is 6 inches below base resting on bench; from bench the top of column is 18 inches, and from there to top of guide is 4 inches.

Total height of drill above bench is 22 inches, below 6 inches, making extreme height of drill 28 inches. The distance from end of base on bench to front of table is $13\frac{1}{2}$ inches. With table bracket flush with end of column, table all the way down and spindle up, the distance between table and end of chuck is $7\frac{1}{2}$ inches, quite a large capacity for a drill of this kind.

A steel wrench is furnished for nut holding table bracket and to tighten clamp screw for bench. The frame is finished in dead black color. In design, capacity, construction and efficiency, the "Yankee" Bench Drill excels any similar tool and stands in a class by itself.

Packed one in wooden box, $28 \times 13\frac{1}{2} \times 8$ inches outside; net weight, 29 pounds, gross weight, 57 pounds.

Each \$12.50



No. 1003

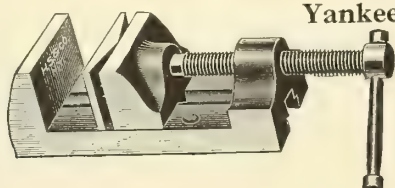
For Drills up to $\frac{1}{4}$ -inch, inclusive.

Made with one speed only (geared 49 to 14) and one turn of crank gives $3\frac{1}{2}$ revolutions to spindle. The spindle is steel, $\frac{3}{8}$ -inch diameter, all gears have teeth of extra strength and are cut from solid to run smoothly and accurately, the pinion being of steel. A small lever on arm to left of spindle locks spindle fast to open and close chuck. The chuck is of steel $1\frac{3}{4}$ inches long, 1-inch diameter, polished and nickel-plated, has 3 jaws of tool steel, hardened and holds round shank drills up to $\frac{1}{4}$ -inch diameter, inclusive. The traverse of spindle (automatic feed) is $1\frac{1}{2}$ inches. The friction feed brings to and from work quickly and ratchet feeds automatically all drills from No. 54 up to $\frac{1}{4}$ -inch without risk of breakage. Provision is made by a bracket with arms to throw off ratchet feed at extreme up or down movement to prevent parts being jammed. The feed screw is of steel, has V-thread and fitted with ball bearing at lower end. All steel parts subject to wear are hardened. The crank is 4 inches between centers. The bracket at base of column has a vertical adjustment of $2\frac{3}{4}$ inches, the slide being $5\frac{3}{4}$ inches, and bracket 3 inches long. The table on bracket has an independent movement of $1\frac{1}{4}$ inches by means of a 3-inch hand wheel and screw, and can be used for feeding in emergencies, in addition to automatic feed. The table is $4\frac{3}{4}$ inches diameter, its center $2\frac{1}{2}$ inches from face of slide. The lower end of bracket slide on column is $4\frac{1}{4}$ inches below base resting on bench; from bench the top of column is $11\frac{1}{2}$ inches and from there to top of guide 3 inches. Total height of Drill above bench is $14\frac{1}{2}$ inches, below $4\frac{1}{4}$ inches, making extreme height of Drill $18\frac{3}{4}$ inches. The distance from end of base on bench to front of table is $9\frac{3}{4}$ inches with table bracket flush with end of column, table all way down and spindle up, the distance between table and end of chuck is 5 inches, a quite large capacity for a Drill of this kind. A steel wrench is furnished for nut holding table bracket and to tighten clamp screw for bench. The frame is finished in dead black color. In design, capacity, construction and efficiency, the "Yankee" Bench Drill excels any similar tool and stands in a class by itself.

Packed one in wooden box, $19 \times 9\frac{3}{4} \times 6\frac{1}{2}$ inches outside; net weight, $10\frac{1}{4}$ pounds, gross weight, 20 pounds.

Each \$7.50

Yankee No. 990 Vise for Above Drills



Designed for use on Yankee Bench Drills, or separately attached to bench.

The body and sliding jaw are of cast-iron, accurately machined to hold work square, when used either flat or on sides. The sliding jaw has a T-shaped block screwed to its underside, sliding in a T-shaped slot $\frac{9}{16}$ -inch wide, insuring parallel movement of jaw.

A removable swivel jaw is provided to hold taper work, and is made of steel, case hardened. The stem has a friction spring to hold jaw in position. The adjusting screw is of steel $\frac{1}{2}$ -inch diameter with $\frac{3}{4}$ -inch head to receive sliding bar. The boss on end of body in which screw works is $\frac{7}{8}$ -inch long. Two countersunk holes are provided in base to screw vise to bench if desired.

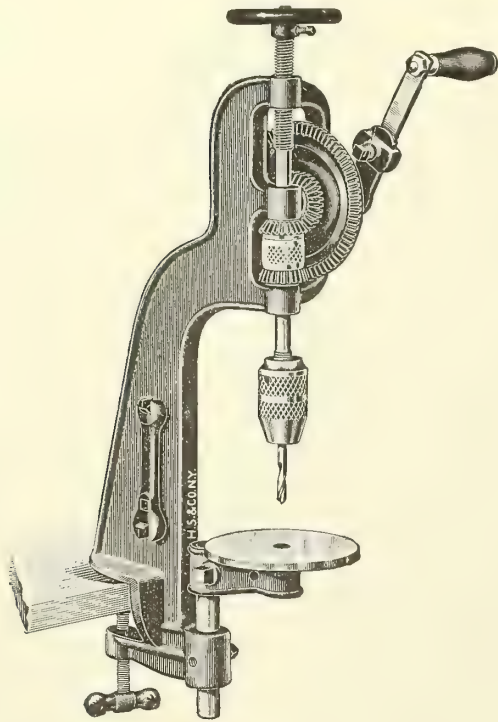
The base of vise is 6 inches long and $2\frac{3}{8}$ inches wide. Extreme height 2 inches. The opening of jaws, without swivel jaw, is 3 inches, with swivel jaw $2\frac{5}{8}$ inches. Depth of jaws $1\frac{3}{8}$ inches. Weight of vise $3\frac{3}{4}$ pounds.

Packed one in paper box, measuring $7\frac{3}{8} \times 3\frac{1}{8} \times 2\frac{1}{8}$. Net weight, 4 pounds, gross weight, 4 pounds, 3 ounces.

Each \$1.40

Bench Drills

M. F. Co.



No. 210

Frame finished in French gray with red trimmings; large gear enameled black with red stripe.

Strong cast-iron standard.

Hand feed.

Instantly changeable speed, $1\frac{1}{2}$ to 1 and 4 to 1.

Adjustable crank, extensible from 3 to 6 inches in radius.

Table with swivel arm, may be raised within range of 2 inches.

Wrench to fit all nuts on the tool.

Chuck of star pattern, holding round shanks from 0 to $\frac{1}{2}$ -inch; and jaws operated by springs that are protected from injury and will not get out of order.

Height over all, 24 inches.

Maximum distance from chuck to table, 9 inches.

Weight, boxed, $27\frac{1}{2}$ pounds; net, 22 pounds.

Packed in a wooden box.

No. 210 Each..... \$8.00

No. 208 Same in general design as No 210. Without changeable speed.

Height over all, 18-inches.

Maximum distance from chuck to table, $4\frac{1}{2}$ inches.

Capacity of chuck, 0 to $\frac{1}{4}$ inches.

Diameter of table, $3\frac{1}{2}$ inches.

Speed of gears, $3\frac{1}{2}$ to 1 inch.

Crank, $4\frac{1}{2}$ inches long.

Ball thrust bearing.

Weight each, $7\frac{1}{2}$ pounds.

Each..... \$5.00

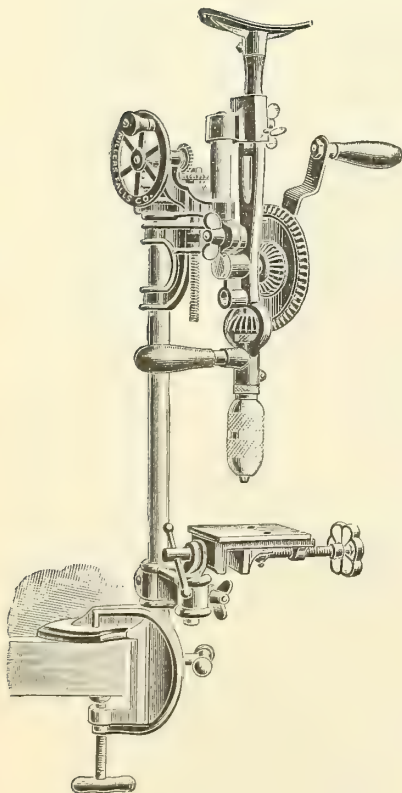
Bench Drill Presses

M. F. Co.

Universal

No. 20

For Breast Drills



A standard and fixtures to hold Breast Drills Nos. 12 and 118.

Sensitive hand feed.

Drill may be swiveled into many positions and clamped at varying heights, either above or below the bench.

Vise swung on pin off center, permitting its use in many positions; may be used horizontally, on an angle, or reversed and table turned uppermost.

Height of standard, 24 inches.

Weight, boxed, 28 pounds; net, 19 pounds.

Without breast drill.

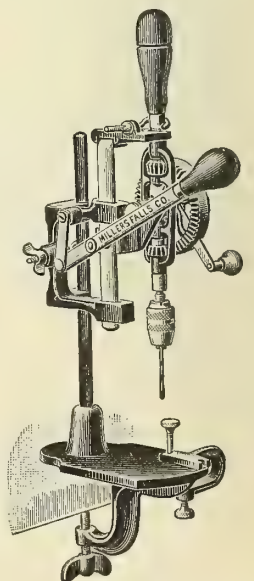
Packed 1 in a case.

Each..... \$5.00

For drills, see page 376

No. 22

For Hand Drills



A simply constructed standard and fixtures to hold hand drills Nos. 1, 2, 03, 5 and 105.

Steel and iron japanned.

Sensitive, compound lever feed.

Adjustable clamp to hold drill.

Height between chuck and table, when former is raised to its highest point, varying from $6\frac{1}{2}$ to $7\frac{1}{2}$ inches according to drill used.

Height of standard above bench, $15\frac{1}{2}$ inches.

Weight, with pasteboard box, 8 pounds.

Packed 1 in a pasteboard box.

Note—For prices of drills see Hand Drills.

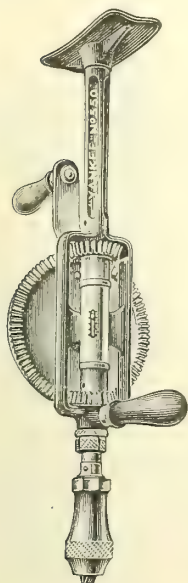
Frame only..... \$2.25

For drills, see page 387

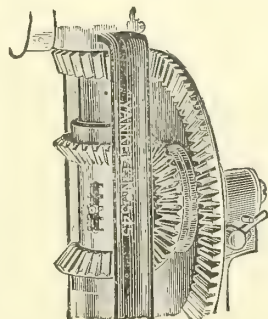
Breast Drills

Yankee Ratchet

With Right and Left-Hand and Continuous Ratchet Movements



No. 550



Differs from all others in what it will do and how it does it.

Note the little slide on Cylinder between Gears and the notches. With slide in first notch (at top), it is a Plain Drill, in second a Left-hand Ratchet, in third a Right-hand Ratchet, in fourth a Double Ratchet where any movement of Crank forward or backward causes the Drill to cut continuously, a time saver and convenience when working in corners where Crank cannot be turned. In fifth (at bottom) Gearing, etc., is locked to open or close Chuck.

In double speed styles the change of speed, fast or slow, is made by simple movement of lever on hub or Gear and without removing Drill from work and with any of the movements named above.

Made with either two or three Jaw Chuck. The two Jaw Chuck holds accurately and securely both square or round Shanks, the three Jaw round Shanks only.

Adjustable Ball Bearings takes all strain or thrust.

The side handle can be unscrewed and has Screw-driver Bit to fit screws in Drill.

The Frame is malleable iron, finished in dead black Japan. The Chuck body is malleable iron, polished and nickel-plated. The Jaws of steel, drop forged and hardened. The Spindle is of steel and gears are cast iron with cut teeth.

No. 550. Single speed with two Jaw Chuck to hold round and square Shanks up to $\frac{1}{2}$ inch.

Large Gear is $5\frac{1}{4}$ inches, small Gear $1\frac{7}{8}$ inches diameter.

Entire length of Drill is 18 inches. Net weight $5\frac{1}{2}$ pounds.

Packed one in heavy paper box. Price each..... \$4.25

No. 1550. Single speed with three Jaw Chuck to hold round Shank only up to $\frac{1}{2}$ -inch diameter, inclusive.

Large Gear is $5\frac{1}{4}$ inches, small Gear $1\frac{7}{8}$ inches diameter.

Entire length of Drill is 18 inches. Net weight $5\frac{1}{2}$ pounds.

Packed one in heavy paper box. Price each..... \$4.25

No. 555. Double speed with two Jaw Chuck to hold round and square Shanks up to $\frac{1}{2}$ -inch.

Large Gear is $5\frac{1}{4}$ inches, small Gear $1\frac{7}{8}$ inches diameter.

Entire length of Drill is 18 inches. Net weight $6\frac{1}{2}$ pounds.

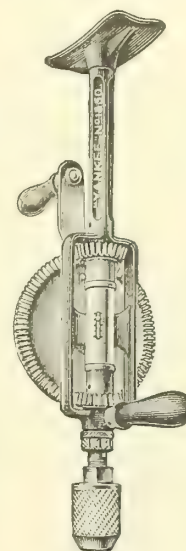
Packed one in heavy paper box. Price each..... \$5.00

No. 1555. Double speed with three Jaw Chuck to hold round Shank only up to $\frac{1}{2}$ -inch diameter, inclusive.

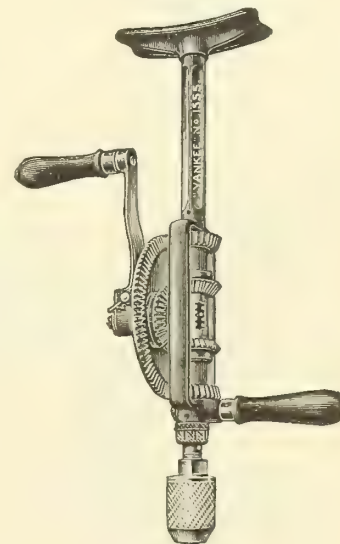
Large Gear is $5\frac{1}{4}$ inches, small Gear $1\frac{7}{8}$ inches diameter.

Entire length of Drill is 18 inches. Net weight $6\frac{1}{2}$ pounds.

Packed one in heavy paper box. Price each..... \$5.00



No. 1550



No. 1555

Yankee Plain

These are of the same superior and substantial construction as the "Yankee" Ratchet styles, but without the ratchet movements. They are made only with double speed. Special attention is called to the very quick and easy change in speed made by the small shifter on the main frame between small gears. With shifter at top notch S it is set for slow speed, at bottom notch F fast speed, in center notch L the spindle is locked so the chuck can be readily opened and closed. They are strong and substantially built for hard work and durability, have adjustable ball bearings on spindle to take up all strain or wear. The side handle can be unscrewed and has screw-driver bit to fit screws in Drill. The frame is of malleable iron, spindle of steel turned and fitted, all gears have cut teeth to run smoothly and accurately and of extra strength.

The Drills are finished in dead black color with bright parts polished.

No. 455. Double speed with two Jaw Chuck. Jaws (alligator pattern) are drop-forged of steel, and hold square shank Drills up to $\frac{1}{2}$ -inch. Large Gear is 5 inches, small Gear is $1\frac{7}{8}$ inches, and Gears on Spindle $1\frac{1}{2}$ inches diameter, all have extra strong cut teeth.

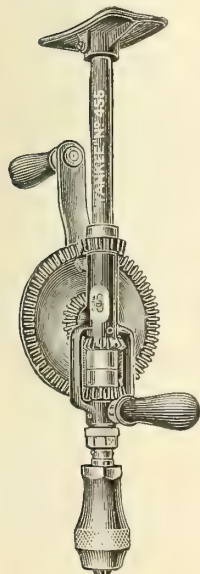
Entire length of Drill is $17\frac{1}{4}$ inches. Net weight $5\frac{1}{2}$ pounds.

Packed one in heavy paper box. Price each..... \$3.25

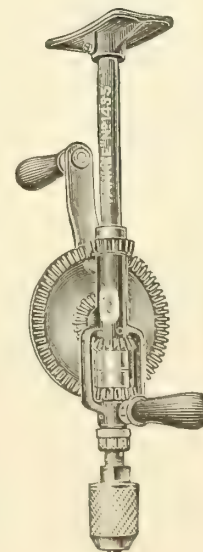
No. 1455. Double speed with three Jaw Chuck. Jaws are of tool steel and hold round shank Drills only, up to $\frac{1}{2}$ -inch diameter, inclusive. Large Gear is 5 inches, small Gear $1\frac{7}{8}$ inches, and Gears on Spindle $1\frac{1}{2}$ inches diameter, all have extra strong cut teeth.

Entire length of Drill is $16\frac{1}{2}$ inches. Net weight $5\frac{1}{2}$ pounds.

Packed one in heavy paper box. Price each..... \$3.25



No. 455

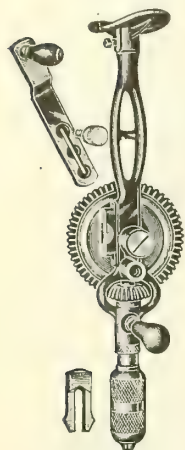


No. 1455

Breast Drills

M. F. Co.

Each of these drills has its distinctive operations, though all are constructed on the same general plan. They are so designed as to practically eliminate the loss of power by running each driving gear on its own independent bearing, thus adding largely to the power, and a careful comparison by way of actual test will demonstrate this fact.



No. 12 Improved

No. 12 Improved

Cocobolo handles, large gear and breast plate painted green and malleable iron main stock enameled black; chuck and crank nicked. Breast plate adjustable to different positions and removable. Patent level attachment. Cut gears, large gear with idler roll to equalize bearings. Ball-thrust bearing. Extensible crank with radius from 4 to 6 inches adding to the power of the tool. Changeable speed from even to 3 to 1. Master chuck holding round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ -inch in diameter, all sizes of bit stock and No. 1 taper shanks. Length, 17 $\frac{1}{2}$ inches.

Dozen \$40.00

No. 118

Same as Number 12, except that chuck is star pattern (see below).

Dozen \$47.00

No. 13

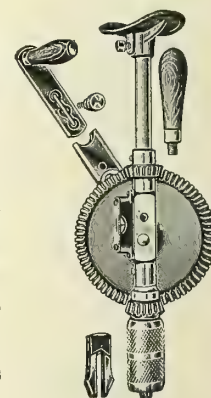
Cocobolo handles, solid steel main stock, large gear and under side of breast plate painted red; other metal parts polished and nicked. Breast plate adjustable to different positions and removable. Extensible crank with radius of 5 $\frac{1}{2}$ to 7 inches adding to powers of the tool. Cut gears, large gear 6 inches in diameter, giving speed of 4 $\frac{1}{2}$ to 1, idler gear to equalize bearings. Patent level attachment. Ball thrust bearing. Master chuck holding round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ -inch in diameter, all sizes of bit stock and Number 1 taper shanks. Length, 15 inches.

Dozen \$55.00

No. 130

Same as Number 13, except that chuck is star pattern (see below).

Dozen \$63.00



No. 13

No. 019

Breast plate adjustable to different positions and made to fit the hand; when grasped with middle finger through hole provided for it the tool can be held easily and steadied in awkward and out-of-the-way places when the breast plate must be held in the hand. Auxiliary breast plate, as shown in illustration, to add ease and comfort or for use in doing heavy work. Stained hardwood handles; black enameled cast-iron frame; rolled-steel main stock, detachable from frame; large gear painted French gray and red. Adjustable crank, enameled black, with radius of 4 to 7 inches adding power to the tool. Changeable speed from even to 3 to 1, changed by loosening a knurled nut, instantly shifting the gear without taking bit from the work. Cut gears. Ball-thrust bearing. Barber improved chuck with alligator jaws holding bit stock and many sizes of round shanks. Length, 18 inches.

Dozen \$31.00

No. 029

Same as Number 019, except that chuck is star pattern (see below).

Dozen \$39.00



No. 019

No. 199

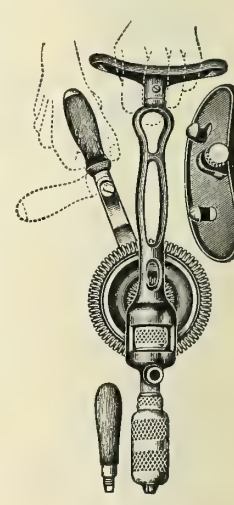
Selected hardwood handles, stained; malleable iron, black frame; large gear and breast plate dark gray with red trimmings. Crank handle adjustable to two positions; one at right angles to crank, the other in line with the crank, which is of advantage in cramped quarters and increases the power of the crank. Provided with simple and effective ratchet, operated by raising and turning the cap to the right or left. Instantly changeable speed from even to 3 to 1. Cut gears, small gears of steel. Ball-thrust bearing. Chuck of the master pattern, holding round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ -inch in diameter, No. 1 Morse taper and all sizes of bit stock shanks. Length, 18 inches.

Dozen \$53.00

No. 200

Same as Number 199, except that chuck is star pattern (see below).

Dozen \$59.00



No. 199

Star Pattern Chuck



With three jaws for round shanks only from 0 to $\frac{1}{2}$ -inch diameter. Jaws are operated by protected springs that will not get out of order. Used on Drills Nos. 118, 130, 029 and 200.

D-Handle for Breast Drills

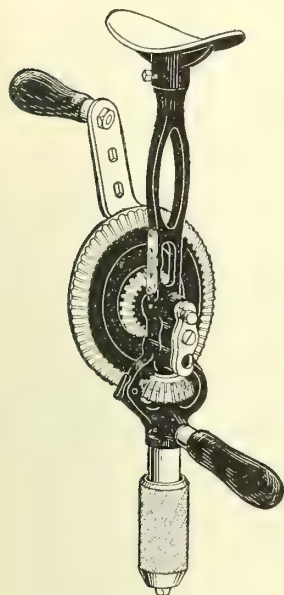


Fits Numbers 12, 13, 118, 130, 199, 200. May be substituted for breast plates at regular prices.

Dozen \$4.00

Breast Drills

Stanley Iron Frame



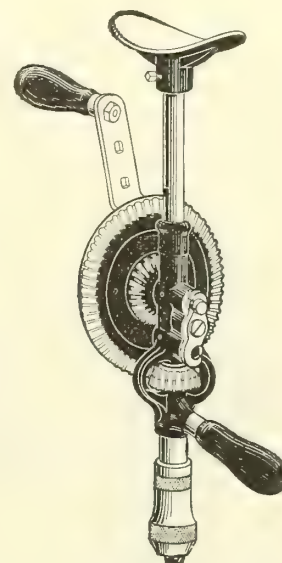
No. 733

This line of Breast Drills is of the highest grade of workmanship, material and general finish. The frame is of one piece, made of malleable iron, giving strength with light weight. They are made in two speeds, 3 to 1 for small drills, and 1 to 1 for heavier work.

The chuck is heavily nickel plated; other bright parts polished; balance of tool finished in a dull-black enamel. A level is firmly set in the frame to assist the user to maintain a horizontal position of the drill while working. There is a ball thrust bearing between the pinion and frame. The breast plate may be adjusted to suit and is locked by a set screw. The spindle is kept from turning while changing drills by means of a latch mounted on the frame and readily engaged with the pinion. The crank is pierced in three places so that the handle can be set for three different sweeps, depending upon the character of the work.

Universal jaws adapted for round shanks $\frac{1}{8}$ -inch to $\frac{1}{2}$ -inch diameter as well as taper-shank bits. All jaws are forgings, machined, hardened and fit into machined sockets.

No. 733 Double Speed, weight, 5 $\frac{3}{8}$ pounds, dozen \$33.00



No. 744

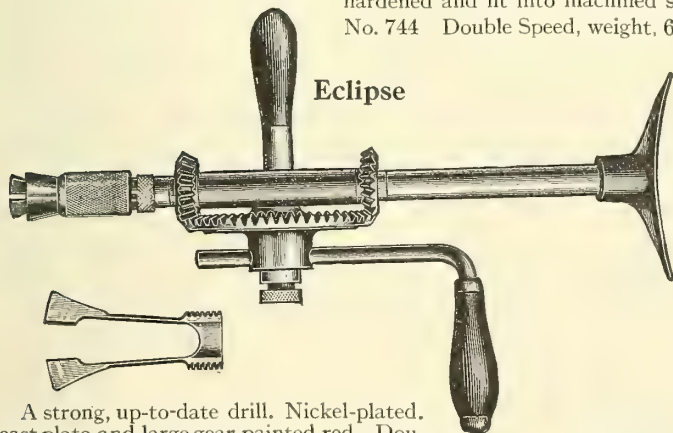
Victor Iron Frame

All bright parts are polished, other parts are finished in a dull black enamel. The handles are ebonized. There is a ball thrust bearing between the pinion and frame. The breast plate may be adjusted to suit, and is locked by a set screw. The crank is pierced in three places, so that the handle can be set for three different sweeps.

Alligator jaws adapted for small and medium round shanks, as well as ordinary taper-shank bits. All jaws are forgings, machined, hardened and fit into machined sockets.

No. 744 Double Speed, weight, 6 pounds, dozen \$24.00

Eclipse

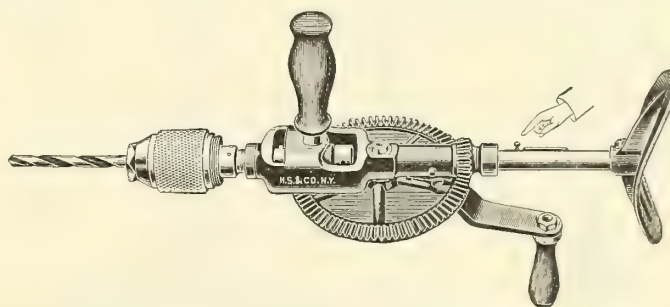


A strong, up-to-date drill. Nickel-plated. Breast plate and large gear painted red. Double gear. Adjustable crank of heavy pattern. Steel chuck fitted with two hardened forged steel jaws that will center and firmly hold small size round shank drills or wood bits of all kinds. Furnished with ratchet attachment for right or left.

Gears are all mill-cut and turn true.
No. 352 Ratchet attachment, dozen \$40.00
1 each in metal-edged box.

Approximate weight complete is 6 pounds each.

Wilkinson



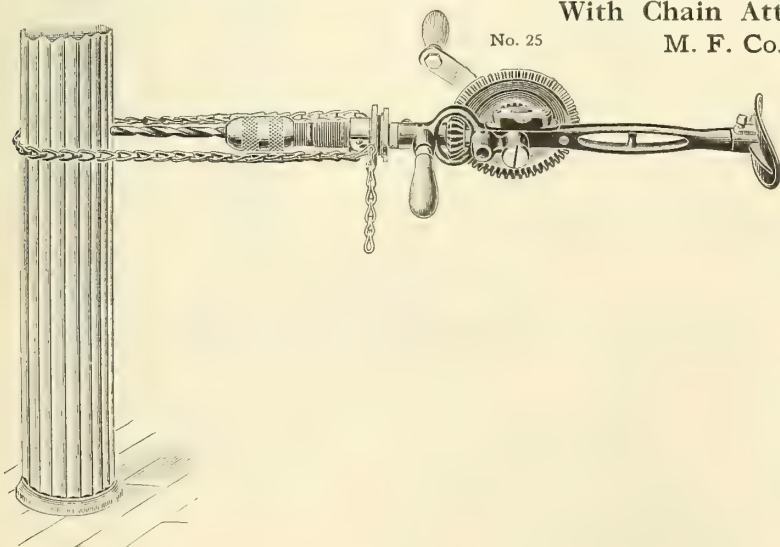
The feature of this drill is the gear locking device enabling the operator to put all the power on the chuck when inserting the drill without having the gears revolve. The chuck is of the universal self-centering pattern, and will hold from $\frac{1}{8}$ to $\frac{1}{2}$ -inch round shank drills. Gears and pinions have cut teeth.

Dozen \$66.00

With Chain Attachment

M. F. Co.

No. 25



Cocobolo handles; black enameled, malleable iron frame; gear and breast plate painted green; other metal parts nicked.

Breast plate adjustable to different positions and removable.

Patent level attachment.

Extensible crank with radius from 4 to 6 inches adding power to the tool.

Changeable speed from even to 3 to 1.

Cut gears, idler roll to equalize bearings.

Ball thrust bearing.

Master chuck, holding round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ -inch in diameter; bitstock and No. 1 Morse Taper shanks.

Automatic, adjustable feed.

Three feet of stout chain.

May be used as an ordinary breast drill without the chain.

Length, 20 inches.

Weight, per dozen (with pasteboard boxes), 98 pounds.

Price, per dozen, \$60.00.

Packed 1 in a pasteboard box and 1 dozen in a case.

Chain Drills

Yankee

Its distinguishing feature is its convenience and rapidity of operation, and automatic friction and ratchet feed. The taking up and releasing of chain is done in a movement with a friction feed, by simply turning brace or Breast Drill by which Chain Drill is operated. When the chain is tight, the automatic feed operates by turning of small lever to horizontal position. When drill has reached desired depth the automatic feed is thrown off by turning lever to upright position. Reverse movement of brace and drill is withdrawn, chain slackened in a moment.

The automatic feed is positive, fixed and without adjustment for drills up to $\frac{1}{2}$ inch, so that drills cannot be broken in use. There is no hand feed, nor any parts to fuss over, and nothing to catch or pinch the fingers in use. The feed screw is of steel, and has square thread to insure durability in chain holder. The screw is hardened at each end for ratchet and ball bearing. The friction feed in interior of tool is a novel device, doing away with the slow method of tightening chain by thumb and finger. A couple turns of brace tightens the chain and drill is at work.

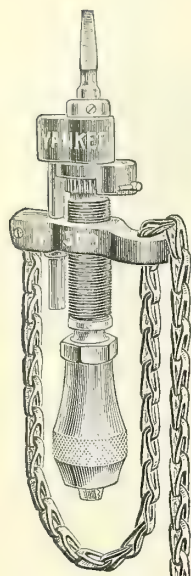
The "Yankee" Chain Drills have been subjected to long and severe trial for durability and strength, and while excelling in these respects, they excel even more from a practical standpoint in convenience and rapidity with which they work and the fact that they do not break drills.

No. 500 With Two-jaw Chuck, same as used on "Yankee" Plain Breast Drills, with alligator jaws. Chuck body malleable iron, polished and nickel-plated; length, $3\frac{1}{8}$ inches, with hexagon to use wrench in tightening large drills. Jaws (alligator pattern) are drop-forged steel. Chuck holds up to $\frac{1}{2}$ -inch Drills with square shanks.

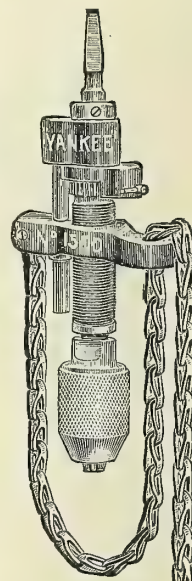
Extreme length $10\frac{3}{4}$ inches
Weight $3\frac{1}{2}$ pounds
Packed one in cardboard box.
Each \$4.50

No. 1500 With Three-jaw Chuck, same as used on "Yankee" Breast Drill. The chuck body is of malleable iron, polished and nickel-plated, $2\frac{3}{4}$ inches long, $1\frac{5}{8}$ inches diameter. The three jaws are of tool steel. Chuck holds round shanks only up to $\frac{1}{2}$ inch diameter inclusive.

Extreme length $9\frac{3}{4}$ inches
Weight $3\frac{1}{4}$ pounds
Packed one in cardboard box.
Each \$4.50



No. 500



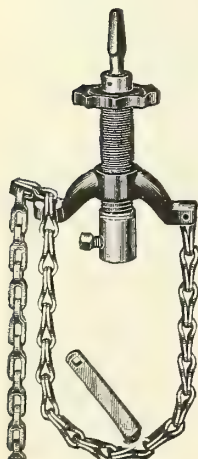
No. 1500

M. F. Co.

No. 817

Yoke and nut japanned black; socket and bit stock polished.

Free-acting hand feed.
Four feet of stout chain.
Ball bearing.
Diameter of hole in socket, $\frac{1}{2}$ inch.
Length of main spindle, $7\frac{3}{4}$ inches.
Weight, 3 pounds.
Each \$1.70
Packed one in a pasteboard box.



No. 817

No. 717

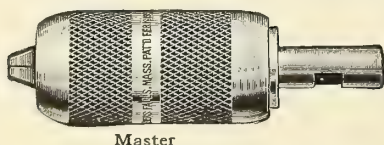
Yoke and nuts japanned; socket and bit shank nickeled.

Automatic, self-regulating feed or may be fed by hand.
Four feet of stout chain.
Ball-bearing.
Length of main spindle, $8\frac{1}{2}$ inches.
Weight, $3\frac{1}{2}$ pounds.
Each \$2.00
Packed one in a pasteboard box.



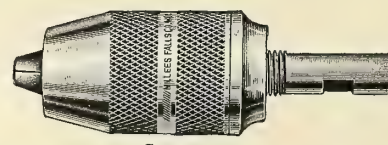
No. 717

Extra Chucks for M. F. Co. Chain Drills



Master

Forged Steel Jaws, holding positively and securely, and centering with reasonable accuracy, round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter, No. 1 Morse Taper and all sizes of Bit Stock and Expansion bit shanks.
Each \$1.40



Star

Holding round shanks from 0 to $\frac{1}{2}$ inch in diameter. Jaws are operated with springs that are protected from injury and will not get out of order.
Each \$2.40

Breast Drills for Concrete Work

Star Spring Hammer

It has a hard punch and drills a straight, round hole because perfect clearance is obtained by the drill-point automatically turning in the hole after each blow. This does away with the necessity for moving the drill back and forth, and results in the operator concentrating his efforts upon turning the crank, which produces eight sharp blows with every revolution.

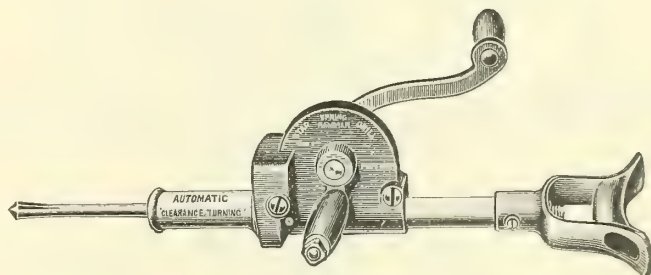
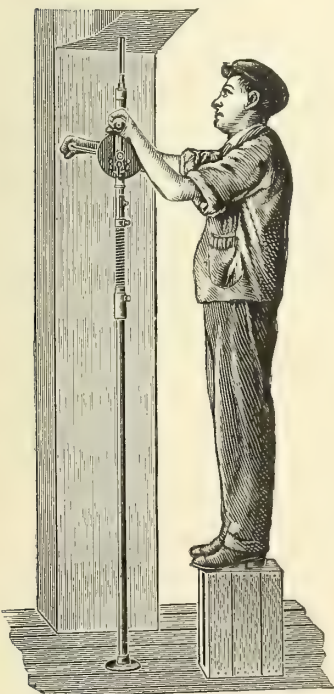
The best materials are used throughout—the drill being built for hard usage. There are no weak spots. Every part has been designed to do its work smoothly: the “S” crank-handle absorbs friction; the automatic “clearance-turning” insures a clean, accurate hole; the drill-points are flared to overcome binding; the arrangement of handle and breast-plate are adapted for drilling in walls, floors and ceilings.

It not only makes the drilling of holes a comparatively easy and inexpensive operation, but also opens up the possibility of making fastenings to brick and stone which at the present time are not made on account of the labor and expense involved. Any size and depth of hole can be made, and the cost of drilling accurately estimated.

	Each
Without Holder or Points	\$15.00
With Holder	16.50
Drill Holder only	2.00

S-H Drills for Above

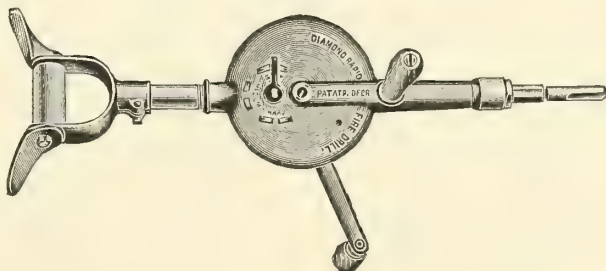
A set of five— $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$ and 1 inch	\$5.84
A set of five— $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$ and $\frac{1}{2}$ inch	3.70
A complete set— $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$ and 1 inch	8.72
Diameter of hole	
drilled, inch	$\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ 1
Dozen	\$8.50 8.50 8.50 9.00 10.00 12.00 14.00 16.00 18.00
Depth of hole, in. 2 $3\frac{1}{2}$ $3\frac{1}{2}$ 4 $4\frac{1}{2}$ 5 5 5 5	



Drills Longer Than Ordinary for Above

Diameter, inch. $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ 1	
Length,	
12 ins., dozen	\$8.50 8.50 8.50 9.00 10.00 12.00 14.00 16.00 18.00
Length,	
18 ins., dozen	11.00 11.00 11.00 11.50 12.50 15.00 17.50 20.00 22.50
Length,	
24 ins., dozen	13.50 13.50 13.50 14.00 15.00 17.50 20.00 22.50 25.00

Diamond Rapid-Fire Drill



Specially designed for drilling holes in concrete, brick and stone. Strikes blows like a hand hammer, with much greater speed. No vibration felt by operator. Simplifies the use of expansion bolts, each \$32.00

Ceiling Stand for Above

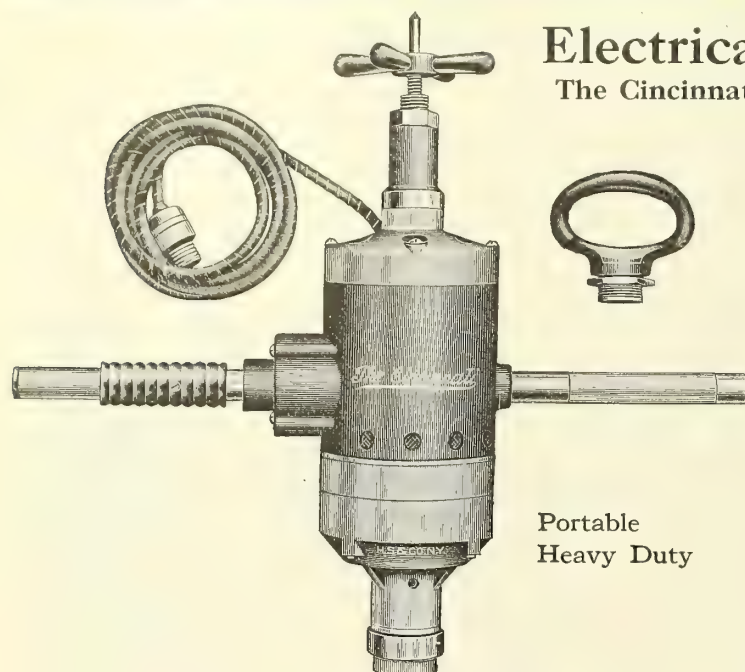
As illustrated, this stand will greatly increase the efficiency of the drill for ceiling work. It is made of telescopic sections, which permit adjustment for any height of ceiling, from 7 to 20 feet, in two styles, as listed. They are very light and are convenient for use from the top of scaffolds.

Style A For heights from 7 to 12 feet	Each \$12.00
Style B For heights from 8 to 20 feet	15.00

Drills for Above

	Diameter Inch	Length Over All Inches	Depth of Hole Drilled Inches	Dozen
Assorted Sets, Consisting of One Each				
	$\frac{1}{4}$	$4\frac{1}{4}$	3	\$8.50
	$\frac{5}{16}$	$4\frac{1}{4}$	3	8.50
	$\frac{3}{8}$	$4\frac{1}{4}$	3	8.50
	$\frac{7}{16}$	$4\frac{1}{4}$	3	9.00
	$\frac{1}{2}$	6	$4\frac{1}{2}$	10.00
	$\frac{5}{8}$	6	$4\frac{1}{2}$	12.00
	$\frac{3}{4}$	6	$4\frac{1}{2}$	14.00
	$\frac{7}{8}$	$6\frac{1}{2}$	5	16.00
	1	$6\frac{1}{2}$	5	18.00
Set No. 1 $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$ and $\frac{1}{2}$ inch				Set \$3.70
Set No. 2 $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$ and 1 inch				5.84
Set No. 3 $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$ inch				4.46
Set No. 4 $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 inch				7.40

For Regular Drills used by hand for drilling concrete, brick, stone, etc., see Index



Electrical Drills

The Cincinnati Air-Cooled

Portable
Heavy Duty

Direct and Alternating Current

Center drive. They are powerful, durable and compact. Simple in construction with no complicated parts to get out of order. Especially built to withstand hard work and rough usage of all kinds.

The gears and armature are mounted on ball bearings and the chuck spindle is fitted with end thrust bearings, insuring easy running, and practically obviating all friction. All working parts are hardened. Switch operated from one side handle, other detachable for close corner work. Sent out as illustrated.

Order by Type, Current and Volts

If alternating, give Cycles and Phase

Direct Current Type	Capacity In Steel Inches	Taper Socket	Weight Pounds	Speed R. P. M.	Dimensions Inches	Alternating Current Type
F	1	No. 3	52	200	6 x 18½	FA
G	1¼	No. 3	53	160	6 x 19	GA
H	1½	No. 4	80	120	7½ x 19½	HA
J	2	No. 4	88	95	7½ x 20	JA
K	2½	No. 5	90	85	7½ x 20½	KA

Direct Current Type	Each	Alternating Current Type	Each
F	\$88.00	FA	\$98.00
G	98.00	GA	108.00
H	115.00	*HA	125.00
J	125.00	*JA	135.00
K	135.00	*KA	145.00

*Made in two and three phase only

Side Drive

Same as above except smaller and side drive. Particularly adapted for hard usage. It is fitted with telescopic screw-feed and shovel handle. Carries No. 2 taper socket; ½-inch chuck for smaller bits furnished as an extra. Switch operated from one side handle other detachable.

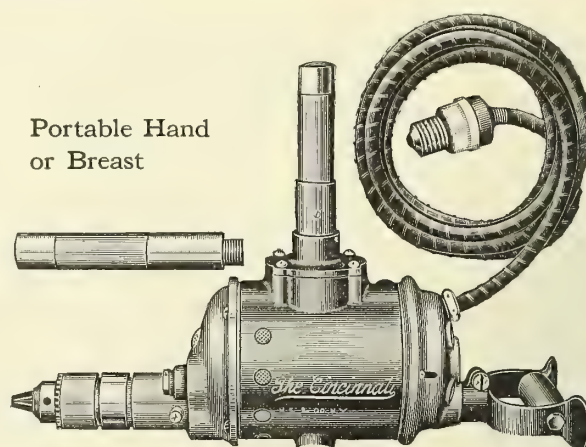
This type drill has unusual power and efficiency. Equipped with ball and end thrust bearings. All working parts are hardened. Guaranteed to their given capacities with an overload allowance. Made for single and two speed. Furnished center drive if desired. Sent out as illustrated.

Order by Type, Current and Volts

If alternating, give Cycles and Phase

Direct Current Type	Capacity In Steel Inches	Weight Pounds	Speed R. P. M.	Motor Dimensions Inches	Alternating Current Type
D	¾	35	260	6 x 17	DA
DD	¾	37	260-450	6 x 17½	DDA
E	7/8	38	220	6 x 18	EA
EE	7/8	40	220-410	6 x 18½	EEA

Direct Current Type	Each	Alternating Current Type	Each
D	\$78.00	DA	\$86.00
DD (2 speed)	80.00	DDA	88.00
E	84.00	EA	94.00
EE (2 speed)	86.00	EEA	96.00



Portable Hand
or Breast

Direct and Alternating Current

Side drive with detachable handle for close corner work. Note the direct line drive from handle to chuck. Patent Switch in the handle. Under immediate control. Send out equipped as illustrated. Center drive drill furnished if desired, same price.

Order by Type, Current and Volts

If alternating, give Cycle and Phase

Direct Current Type	Capacity In Steel Inches	Weight Pounds	Speed R. P. M.	Motor Diameter and Length Over All	Alternating Current Type
A	¼	14	900	4½ x 14	AA
B	3/8	16	750	4¾ x 16	BA
C	½	18	450	5 x 16	CA
CC (2 speed)	½	19	450-750	5 x 16½	CX

Direct Current Type	Each	Alternating Current Type	Each
A	\$40.00	AA	\$45.00
B	50.00	BA	54.00
C	60.00	CA	64.00
CC (2 speed)	68.00	CX	72.00

Portable Universal

Made with an all-aluminum housing and end caps, giving lightness in weight with durability and power.

A drill wound for 110 volts can be used on either direct or alternating current of the same voltage; 60 cycles, single phase.

A drill wound for 220 volts can be used on either direct or alternating current of the same voltage; 60 cycles, single phase.

Where only one current is used, viz: Either direct or alternating, it is preferable to have a motor wound for that particular current.

One-quarter-inch drills furnished with one side handle, which operates the switch.

Three-eighths inch and ½-inch drills furnished with two side handles, one detachable for close corner work.

Order by Type, Current and Volts

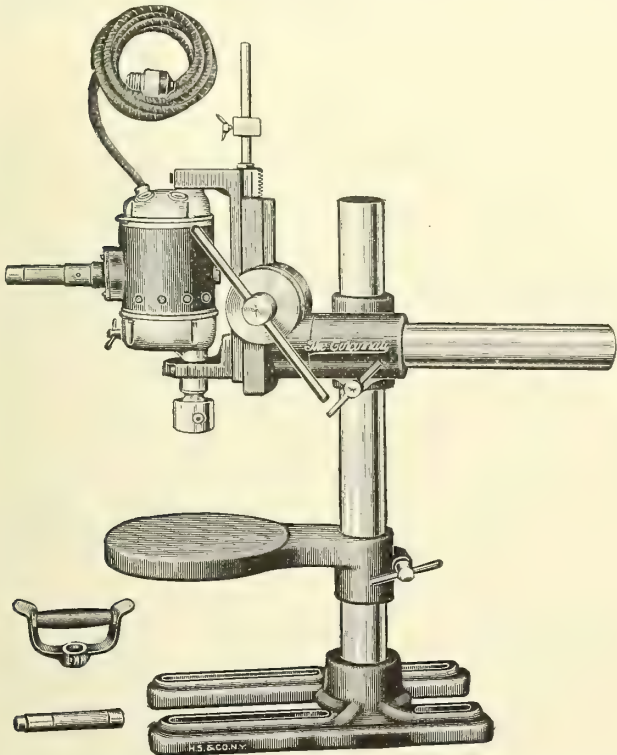
If alternating, give Cycle and Phase

Type	Capacity In Steel Inches	Weight Pounds	Speed R. P. M.	Motor Diameter and Length Over All	Each
U	¼	7	1000	4 x 14	\$40.00
UT	3/8	16	800	4¾ x 15	50.00
UH	½	18	500	5 x 16	60.00
UD (2 speed)	½	19	450-750	5 x 16½	65.00

All drills up to ½-inch capacity, inclusive, are fitted with chucks. Taper socket instead of chuck with ½-inch drills if desired. Screw-feed furnished as an extra. Special slow speed for drilling in marble, glass or slate. Capacities as given are for drilling in metal. Mention if intended for other work. Any drill will bore larger size holes in wood than to given capacity. Brace bit chuck to carry auger bits furnished if desired. Weights given are for direct current. Alternating current drills are slightly heavier.

Portable Bench Stands with Drill Bracket and Table

For Use with Cincinnati Portable Electric Drills



Illustrated with Drill in Bracket. The Bracket has an 8-inch feed by means of rack and pinion, through hand lever with quick return. It is provided with a gauge to regulate the depth of hole to be drilled. The cross arm of stand holding the Bracket has a horizontal and vertical adjustment and the Drill can be turned at any angle. The table is 12 inches diameter and is adjustable for height. It can be turned aside if not desired for all work. The bracket has a hinged cap held in position with a thumb nut. Through this special arrangement a Drill can be instantly locked in the proper position by hand, without the use of tools, thus avoiding loss of any small parts. This machine as illustrated makes a particularly handy combination, as it gives two tools in one, namely, a Portable Hand or Screw-feed Drill and a Bench Drill. The Hand or Screw-feed Drill is standard tool complete, and can be used independent of the stand.

Order by Number of Bench Stand and Type of Drill

Type Number	To Hold Portable Drills Inch	Feed	Table Dimensions Inches	Net Weight without Portable Drill Pounds	Each
1	3/8 and 1/2	Lever	10	110	\$32.00
2	3/4 and 7/8	Lever	12	125	36.00
3	7/8 to 1 1/4	Hand-wheel	12	135	48.00

Drilling Posts

(Old Man)

Armstrong Drop-Forged

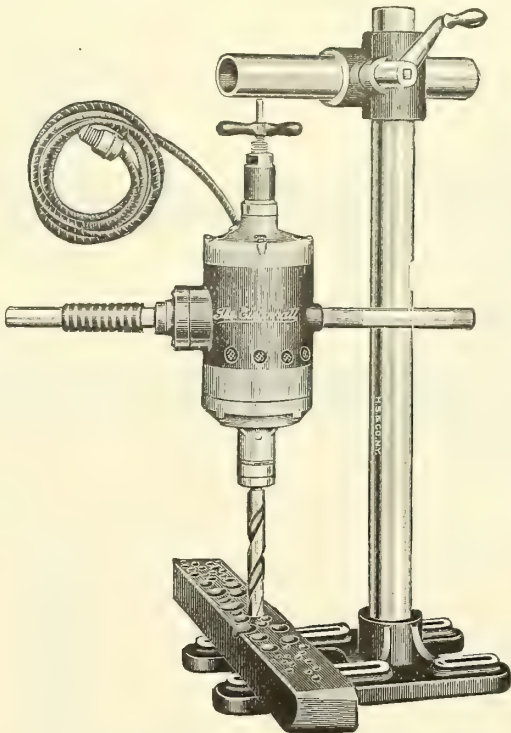
All Steel. For Use with Ratchet Drills

Foot and arm are drop-forged. The finished steel post is screwed into the foot and can be easily removed for packing in tool kit.

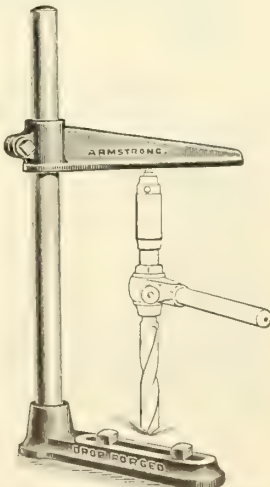
Number	Height of Post Inches	Arm Radius Inches	Weight Pounds	Each
8	16	8	9	\$5.00
10	20	10	16	6.00
12	26	12	30	7.50

Old Man Stand

For Use with Cincinnati Screw-Feed Drills



Above illustrates Old Man Stand, showing a Screw-Feed Drill set in position. Stand can be used with any type Drill over 1/2-inch capacity, and is particularly handy for in-door and out-door work. The cross arm is adjustable to height on the vertical column, and horizontally through the knuckle. The columns are of Shelby steel tubing and ground. Height, over all, inches..... 38 Cross arm, inches..... 12 Weight, pounds..... 80 Each, \$12.00

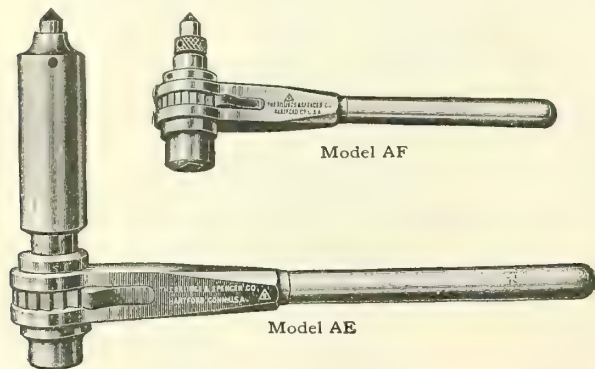


Ratchet Drills

Genuine Packer

Drop-forged from the best bar steel for the purpose. These are the original Packer Ratchet Drills known to the public for the past forty years. They cannot be excelled for efficiency, durability, ease of action and economy. They are made of drop-forged steel, and carefully assembled and finished. All working parts are properly hardened. These ratchets are guaranteed to meet all requirements for which they are intended.

For Flat Drills and Square Shank Drills Only



Model AE

For number of Morse taper, see table below

Number	Length of Handles Inches	Length A to B Inches	Feed Inches	Weight Pounds	Each
1	10	7 $\frac{3}{4}$	2 $\frac{1}{4}$	5	\$10.50
2	12	8 $\frac{1}{2}$	2 $\frac{1}{2}$	7	13.50
3	15	9 $\frac{1}{2}$	3	9 $\frac{3}{4}$	16.00
4	17	10 $\frac{1}{4}$	3 $\frac{1}{2}$	12	19.00
5	20	11 $\frac{1}{4}$	4	15 $\frac{3}{4}$	23.00

Boiler Ratchets

Model AF

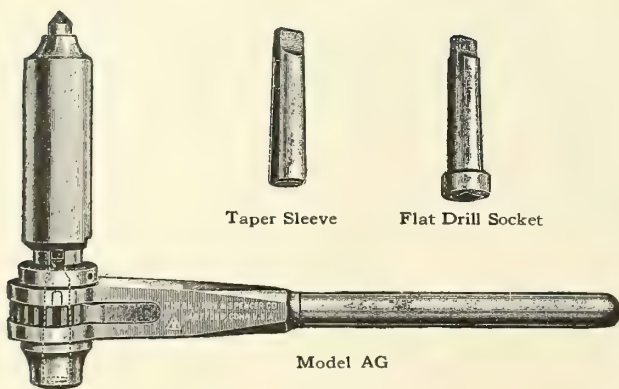
For number of Morse taper, see table below

Number	Length of Handles Inches	Length A to B Inches	Feed Inches	Weight Pounds	Each
1	10	4 $\frac{3}{4}$	1 $\frac{1}{4}$	3 $\frac{3}{4}$	\$9.00
2	12	5	1 $\frac{3}{8}$	5 $\frac{1}{4}$	10.50

List of Tapers

- No. 1 Packer Ratchet, for Flat Drills, or Morse No. 1 Square Taper
- No. 1B Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
- No. 2 Packer Ratchet, for Flat Drills, or Morse No. 1 Square Taper
- No. 2B Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
- No. 3 Packer Ratchet, for Flat Drills, or Morse No. 1 Square Taper
- No. 3B Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
- No. 4 Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
- No. 5 Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
- No. 1 Boiler Ratchet, for Flat Drills, or Morse No. 1 Square Taper
- No. 2 Boiler Ratchet, for Flat Drills, or Morse No. 1 Square Taper
- No. 2B Boiler Ratchet, for Flat Drills, or Morse No. 2 Square Taper

For Morse Taper Shank Drills

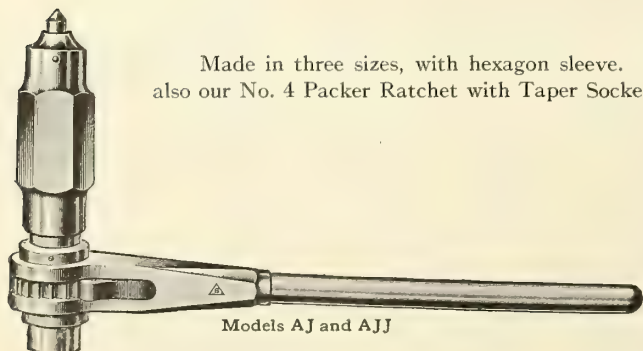


Model AG

- No. 1 Ratchet, 10-inch Handle, takes Morse Taper Shank Drill from $\frac{1}{16}$ -inch to $\frac{1}{32}$ -inch, inclusive. Feed, 1 $\frac{3}{8}$ -inch. Weight, 5 pounds. Each..... \$13.00
- No. 2 Ratchet, 12-inch Handle, takes Morse Taper Shank Drills from $\frac{3}{32}$ -inch to $\frac{25}{32}$ -inch, inclusive. Also No. 1 Morse Taper Sleeve and No. 1 B. & S. Flat Drill Socket. Feed, 1 $\frac{1}{2}$ inches. Weight, 6 $\frac{1}{2}$ pounds. Each..... 16.00
- No. 3 Ratchet, 15-inch Handle, takes Morse Taper Shank Drills from $\frac{5}{32}$ -inch to 1 $\frac{1}{4}$ inches, inclusive. Also No. 2 Morse Taper Sleeve and No. 2 B. & S. Flat Drill Socket. Feed, 2 $\frac{3}{4}$ inches. Weight, 9 pounds. Each..... 20.00
- No. 4 Ratchet, 17-inch Handle, takes Morse Taper Shank Drills from 1 $\frac{1}{4}$ -inch to 2 inches, inclusive. Also No. 3 Morse Taper Sleeve and No. 3 B. & S. Flat Drill Socket. Feed, 2 $\frac{5}{8}$ inches. Weight, 11 pounds. Each..... 25.00

Railroad

Made in three sizes, with hexagon sleeve. We can furnish these sleeves to fit No. 4 and No. 5 Regular Packer Ratchet; also our No. 4 Packer Ratchet with Taper Socket. Model AJ with Square socket. Model AJJ with Taper Socket.



Models AJ and AJJ

Model	Number	Length of Handles Inches	Feed Inches	Weight Pounds	Each
AJ	3	15	3	10	\$16.00
AJ	4	17	3 $\frac{3}{8}$	12 $\frac{1}{2}$	19.00
AJ	5	20	3 $\frac{3}{4}$	15 $\frac{1}{2}$	23.00
AJJ	3	15	3 $\frac{1}{4}$	10	20.00
AJJ	4	17	3 $\frac{1}{4}$	12 $\frac{1}{2}$	25.00

For drill sockets and sleeves, see index

Ratchet Drills

Armstrong

Improved Packer

All Steel, Hardened All Over

No small screws; spindle bears on strong collar nut; extra strong teeth and pawl, large key and ample bearings. Have shorter head with full length feed. Each ratchet is packed in a cardboard box. Hardened all over, will outwear two of the soft kind. The pawl drives on drill shank, not above it.



With Sleeve Feed Screw
and Square Taper Socket

Number	Length Inches	Size of Drill Socket	Length of Head Inches	Feed Inches	Each
1	10	No. 1 Square Taper*	6	2¼	\$4.75
2	12	No. 1 Square Taper	6¾	2½	6.00
3	15	No. 1 Square Taper	7¾	3	7.25
4	18	No. 2 Square Taper†	9	3½	8.50
5	21	No. 2 Square Taper	9¾	4	10.25

*Number 1 or small socket is ¾-inch square at small end and ¾-inch square at large end.
†Number 2 or large socket is ½-inch square at small end and ¾-inch square at large end.



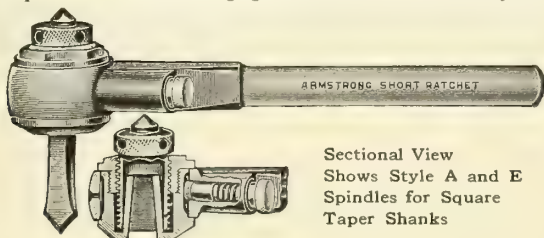
With Sleeve Feed Screw
and Morse Taper Socket

Number	Length Inches	Size of Drill Socket	Takes Morse Taper Drill Inches	Length of Head Inches	Feed Inches	Each
1-M	10	No. 2 Morse	39 64 to 39 64	6	2¼	\$5.75
2-M	12	No. 3 Morse	59 64 to 1¼	6¾	2½	7.25
3-M	15	No. 3 Morse	59 64 to 1¼	7¾	3	9.00
4-M	18	No. 4 Morse	117 64 to 2	9	3½	11.25
5-M	21	No. 4 Morse	117 64 to 2	9¾	4	13.50
6-M	30	No. 5 Morse	21 64 to 3	12½	4½	20.00

Railroad Pattern Packer Ratchets for Morse Taper Shank Drills

Short

The sectional view shows clearly the construction which is simple, compact and strong. All parts are made from drop forgings of bar steel. Pawl and center are tool steel, carefully tempered. It is self-discharging and can be reversed instantly. Each ratchet is packed in a cardboard box.

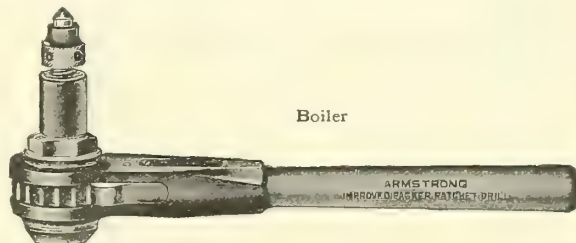


Sectional View
Shows Style A and E
Spindles for Square
Taper Shanks

Styles A and E

Style A for drills with Number 1 Taper Square Shanks. Style E for drills with No. 2 Taper Square Shanks. Its short head, strength, compactness and quick reverse it a perfect boiler ratchet.

Number	Length Inches	Length Head Inches	Feed Inches	Each
2	12	2¾	1½	\$8.00
3	18	2¾	1½	10.00

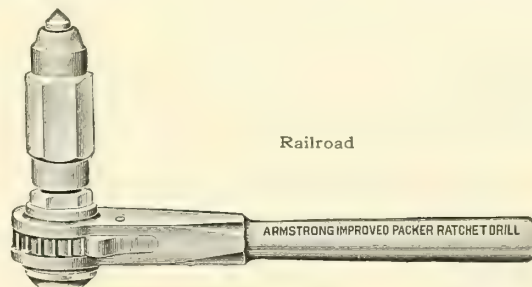


Boiler

Number	Length Inches	Size of Drill Socket	Length of Head Inches	Feed Inches	Each
1-B	10	No. 1 Square Taper*	4¾	1½	\$4.00
2-B	12	No. 1 Square Taper	5	1¾	4.75
3-B	15	No. 1 Square Taper	5½	2	7.25
4-B	18	No. 2 Square Taper†	6	2¼	8.50
5-B	21	No. 2 Square Taper	6½	2½	10.25

*Number 1, or small drill socket is ¾-inch square at small end and ¾-inch square at large end.

†Number 2, or large drill socket is ½-inch square at small end and ¾-inch square at large end.

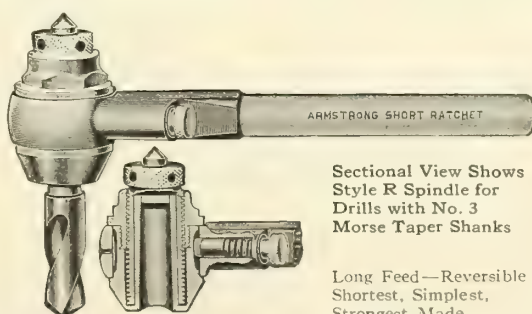


Railroad

Number	Length Inches	Size of Drill Socket	Length of Head Inches	Feed Inches	Weight Pounds	Each
1-RR	10	No. 1 Square Taper*	6	2¼	4	\$4.75
2-RR	12	No. 1 Square Taper	6¾	2½	6	6.00
3-RR	15	No. 1 Square Taper	7¾	3	8¾	7.25
4-RR	18	No. 2 Square Taper†	9	3½	12	8.50
5-RR	21	No. 2 Square Taper	9¾	4	16	10.25

*Number 1 or small socket is ¾-inch square at small end and ¾-inch square at large end.

†Number 2 or large socket is ½-inch square at small end and ¾-inch square at large end. Can be furnished at prices listed for the regular, as above, numbers 1-M to 6-M. When ordering same, use regular number, but specify "Railroad Pattern."



Sectional View Shows
Style R Spindle for
Drills with No. 3
Morse Taper Shanks

Long Feed—Reversible
Shortest, Simplest,
Strongest Made

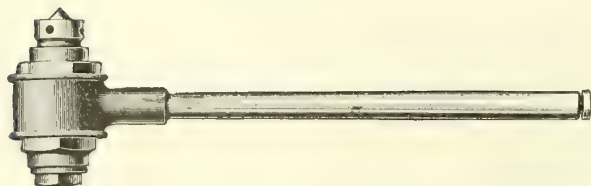
Style R for Drills with No. 3 Morse Taper Shanks

Number	Length Inches	Length of Head Inches	Feed Inches	Each
2	12	3¾	2½	\$8.00
3	18	3¾	2½	10.00

For Drill Sockets and Sleeves, see Index

Ratchet Drills

Renshaw



These tools are made in two sizes: No. 1 taking drills to $\frac{1}{2}$ inch, No. 3 taking drills to $1\frac{1}{2}$ inches. All the parts are made from steel and hardened.

No. 1 has one collet for drills, with shank $\frac{1}{2}$ inch square at shoulder, and one collet for drills fitting No. 1 Morse standard taper socket.

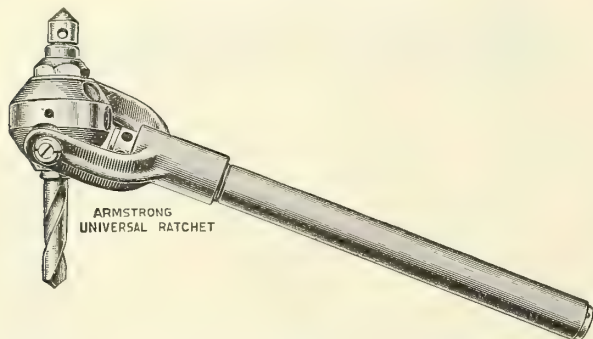
No. 3 has one collet, No. 5, for drills, with shank $\frac{1}{2}$ inch square at shoulder, of $\frac{1}{2}$ to $1\frac{1}{2}$ inches diameter, which are the extreme sizes that this ratchet is adapted to carry, and collets Nos. 1, 2 and 3, for Morse standard taper shanks. No. 3 and No. 5 collets are held in the spindle by screw thread. No. 1 and No. 2 collets are tapered externally to fit No. 3 socket.

	No. 1	No. 3
Length of handle over all, inches.....	9 $\frac{1}{2}$	18
Depth from top feed screw to bottom of collet, inches.....	2 $\frac{1}{2}$	5
Full depth of feed, inches.....	1 $\frac{1}{2}$	2 $\frac{3}{4}$

No. 1 ratchet drill complete, with two collets.....	\$11.00
No. 1 ratchet drill, with one collet.....	9.40
No. 1 collet, with square or taper hole, each.....	1.60
No. 3 ratchet drill complete, with four collets.....	15.00
No. 3 ratchet drill, with No. 3 or No. 5 collet only.....	11.05
No. 3 ratchet drill, with Nos. 1, 2 and 3 collets only.....	13.25
No. 1 or No. 2 collet for No. 3 ratchet, each.....	1.10
No. 3 or No. 5 collet for No. 3 ratchet, each.....	1.75

We will also supply collets for No. 3 Renshaw ratchet for taper square shank drills, $\frac{5}{8}$ x $\frac{3}{8}$ x $1\frac{1}{2}$ inches long. Each..... \$1.75

Armstrong Universal



Designed to operate successfully in difficult situations where obstructions might make the use of the ordinary ratchet impossible, and at the same time provision is made for its operation in the usual way, so that it may perform the work of a plain ratchet as well as the special service for which it is particularly adapted. The construction of the tool in every respect is good and substantial.

Pawls and center are tool steel hardened, all other parts (except handle of tubing) are made of steel drop-forged, or machined from bar.

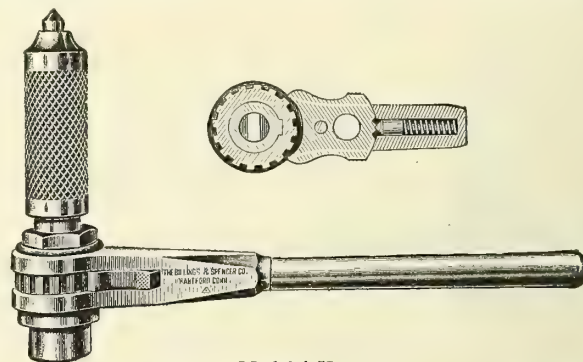
Number	Length Inches	Feed Inches	Complete with One Spindle Only	Extra Spindles Each
4	14	1 $\frac{1}{2}$	\$12.00	\$2.40
5	16	1 $\frac{7}{8}$	15.00	3.00
6	18	2 $\frac{1}{4}$	18.00	3.60

Spindles Furnished

Style	Fitting Ratchet	Taking Drills
M	No. 4	With No. 1 Square Taper Shanks
K	No. 4	With No. 2 Morse Taper Shanks
J	No. 5	With No. 1 Morse Taper Shanks
L	No. 5	With No. 2 Morse Taper Shanks
O	No. 5	With No. 3 Morse Taper Shanks
F	No. 6	With No. 2 Square Taper Shanks
N	No. 6	With No. 3 Morse Taper Shanks
S	No. 6	With No. 4 Morse Taper Shanks

Billings Double-Acting

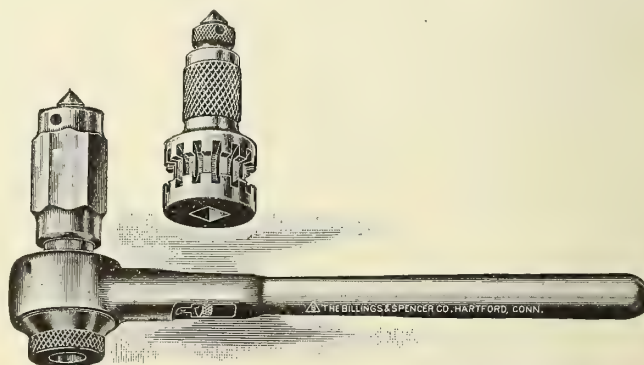
These Drills are drop-forged of the best bar iron and steel for the purpose, and are made to use Morse Taper Shank Twist Drill, also provided with socket with square hole for square shank drill.



Model A H

This Drill can be changed from right to left-hand drilling by simply moving the pawl to the right or left. The sockets furnished with the drill can be utilized in any drilling spindle that may be fitted to receive them.

No. 1 D. A. Ratchet, 10 $\frac{3}{4}$ -inch handle, takes Morse Twist Drills from $\frac{5}{8}$ inch to $\frac{3}{8}$ -inch, inclusive. Feed, 1 $\frac{1}{2}$ inch. Weight, 4 $\frac{3}{4}$ pounds.....	Each \$11.00
No. 1 D. A. Ratchet, with Morse Taper Sleeve. No. 1 will take Morse Twist Drills from $\frac{1}{4}$ inch to $\frac{3}{8}$ inch, inclusive.	12.07
No. 1 D. A. Ratchet, with B. & S. Flat Drill Socket only.....	12.18
No. 1 D. A. Ratchet, with Morse Taper Sleeve No. 1 and B. & S. Flat Drill Socket No. 1.....	13.25
No. 2 D. A. Ratchet, 13 $\frac{3}{4}$ -inch handle, taking Morse Twist Drills from $\frac{1}{8}$ inch to $1\frac{1}{4}$ inch, inclusive. Feed 1 $\frac{3}{4}$ inches. Weight, 7 pounds.....	14.00
No. 2 D. A. Ratchet, with No. 2 Morse Taper Sleeve, will take Morse Twist Drills from $\frac{5}{8}$ inch to $1\frac{1}{4}$ inches, inclusive.....	15.40
No. 2 D. A. Ratchet, with Morse Taper Sleeves Nos. 1 and 2, will take drills from $\frac{1}{4}$ inch to $1\frac{1}{4}$ inches, inclusive.....	16.45
No. 2 D. A. Ratchet, with No. 2 B. & S. Flat Drill Socket, only.....	15.17
No. 2 D. A. Ratchet, with Morse No. 2 Taper Socket and B. & S. Flat Drill Socket.....	16.50
No. 2 D. A. Ratchet, with No. 1 and No. 2 Taper Socket and No. 2 Flat Drill Socket.....	17.60



Model A II

A high-grade combination tool for light work. Double-acting or reversible. This Ratchet differs materially from those now on the market in that the change of sockets is quickly and easily made without the use of a wrench or other tool.

The tool includes two removable sockets for taper and square shank drills, as shown in cut. The taper socket is No. 1 Morse taper, taking all sizes of taper shank twist drills from $\frac{1}{8}$ to $\frac{3}{8}$ inch. The square socket takes bit stock, square shank twist drills.

The tool is drop-forged and properly finished. All working parts are hardened, and the tool is thoroughly high grade in all respects.

Model A II No. 0 Ratchet, 8-inch handle, including taper and square sockets, complete. Each..... \$7.00

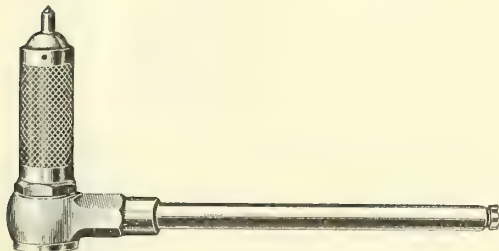
Boiler

Model A I, No. 0 Ratchet, for bit stock square shank drills, 8-inch handle, height of head, 3 inches. Each..... 4.50

For Drill Sockets and Sleeves, see Index

Ratchet Drills

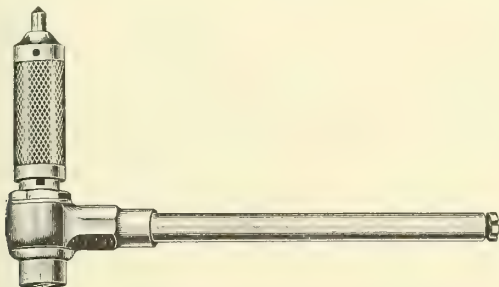
Keystone Reversible



For Square Shank Drills

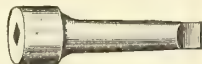
Number	1	2	3	4	5	6	7
Length of Handle, inches	10	14	16	18	22	24	28
Height of Head, inches	5 ⁵ / ₈	7 ⁷ / ₈	7 ⁷ / ₈	8 ³ / ₄	8 ³ / ₄	8 ³ / ₄	8 ³ / ₄
Each	\$5.00	5.75	6.50	7.25	7.50	7.75	8.25

No. 1 Standard Square Taper ⁵/₈ x ³/₈ x 1¹/₂ inches long is on all ratchets up to and including 16 inches, and No. 2 Standard Square Taper, ³/₄ x ¹/₂ x 1³/₄ inches long on all larger sizes.



For Morse Taper Shank Drills

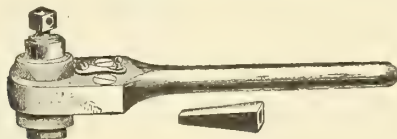
Number	21	22	23	24	25	26	27
Length of Handle, inches	10	14	16	18	22	24	28
Morse Taper No.	2	3	3	4	4	4	4
Takes Drills to, inches	²⁹ / ₃₂	1 ¹ / ₄	1 ¹ / ₄	2	2	2	2
Takes Morse Taper Sleeve No.	1	2	2	3	3	3	3
Each	\$5.25	6.00	6.75	7.50	7.75	8.00	8.50



Square Shank Drill Sleeve—Extra

No. 1 Sleeve fits No. 21 Ratchet	Each \$1.00
No. 2 Sleeve fits Nos. 22 and 23 Ratchets	1.25
No. 4 Sleeve fits Nos. 24, 25, 26 and 27 Ratchets	1.50

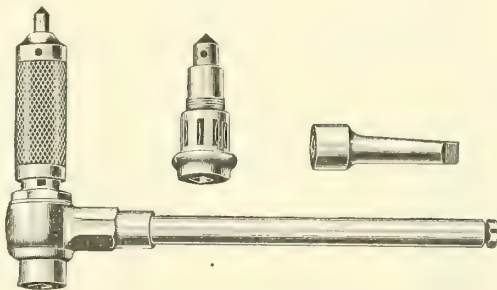
M. F. Co.



Handsomely nicked. Distance from top of feed screw to mouth of socket, 4 inches only. Socket hole for shanks ⁵/₈ x ³/₈ x 1¹/₂ inches. Extra socket to hold bit stock shanks provided with each drill.

Number	10
Length of lever inches	10
Weight, each, pounds	2 ¹ / ₂
Each	\$4.00

Packed one in a pasteboard box



Combination No. 200

Consists of ratchet for taper shank twist drills, sleeve for square shank drills, and short boiler socket for square shank drills (sockets interchangeable).

Number	51	52	53	54	55	56	57
Length of Handle, inches	10	14	16	18	22	24	28
Morse Taper No.	2	3	3	4	4	4	4
Takes Drills to, inches	²⁹ / ₃₂	1 ¹ / ₄	1 ¹ / ₄	2	2	2	2
Takes Morse Taper Sleeve No.	1	2	2	3	3	3	3
Each	\$7.75	9.00	10.00	11.25	11.50	11.75	12.25



Boiler

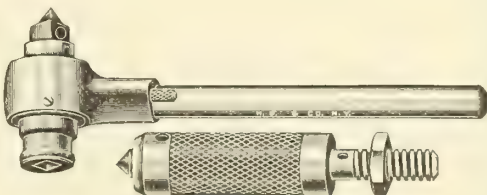
(Short Feed)

For Square Shank Drills Only

Number	31	32	33	34	35	36	37
Length of Handle, inches	10	14	16	18	22	24	28
Height of Head, inches	3 ⁵ / ₈	4 ³ / ₈	4 ⁵ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈
Each	\$5.00	5.75	6.50	7.25	7.50	7.75	8.25

No. 1 Standard Square Taper ⁵/₈ x ³/₈ x 1¹/₂ inches long is on all ratchets up to and including 16 inches, and No. 2 Standard Square Taper ³/₄ x ¹/₂ x 1³/₄ inches long on all larger sizes.

Whitney



Combined Double Acting

This drill stock has a socket fitted to taper square shank drills, having Morse standard taper.

These Ratchet Drills combine the short boiler drill and the common ratchet in one by a larger range of adjustment of feeding screw than has been heretofore obtainable with the same length of drill stock.

The ratchets are encased, so that there is no chance for dirt to prevent the catch going to bottom of teeth at each movement of the lever.

The parts are duplicates, so that when worn out they can be replaced. Little space is occupied, each ratchet being complete in a substantial slide cover box.

Full polished, with nickel-plated head.

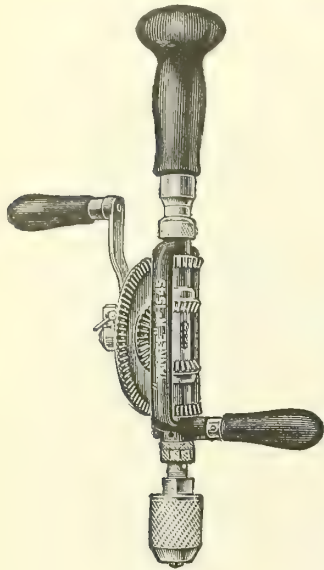
No. 00	8 inches.	For Bit Stock Drills only.	Each	\$9.25
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For Drill Sockets and Sleeves see Index

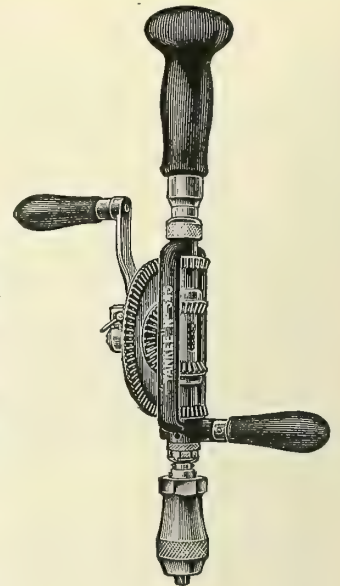
Hand Drills

Yankee Ratchet

With Right and Left-Hand and Continuous Ratchet Movements



No. 1545



No. 545

Differs from all others in what it will do and how it does it. For enlarged cut of cylinder showing notches, see page 375. Note the little slide on cylinder between gears and the notches. With slide in first notch (at top), it is a plain drill; in second a left-hand ratchet; in third a right-hand ratchet; in fourth a double ratchet where any movement of crank forward or backward causes the drill to cut continuously, a time saver and convenience when working in corners where crank cannot be turned; in fifth (at bottom), gearing, etc., is locked to open or close chuck.

In double speed styles the change of speed, fast or slow, is made by simple movement of lever on hub or gear and without removing drill from work, and with any of the movements named above.

Made with either two or three-jaw chuck. The two-jaw chuck holds accurately and securely both square or round shanks; the three-jaw, round shanks only.

Adjustable ball bearings take all strain or thrust.

The side handle can be unscrewed and has screw driver bit to fit screws in drill.

The frame is malleable iron, finished in dead black Japan. The chuck body is malleable iron, polished and nickel-plated. The jaws of steel, drop-forged and hardened. The spindle is of steel and gears are cast iron with cut teeth.

No. 1545. Double-speed with three-jaw chuck to hold round shank only up to $\frac{3}{8}$ inch diameter inclusive. Large gear is $4\frac{1}{2}$ inches, small gear $1\frac{1}{2}$ inches diameter.

The wood handle is $4\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill is $16\frac{1}{2}$ inches. Net weight, $4\frac{1}{4}$ pounds.

Packed one in heavy paper box. Each..... \$6.75

No. 545. Double speed with two-jaw chuck to hold round and square shanks up to $\frac{3}{8}$ inch. Large gear is $4\frac{1}{2}$ inches, small gear, $1\frac{1}{2}$ inches diameter.

The wood handle is $4\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill is $16\frac{1}{2}$ inches. Net weight, $4\frac{1}{4}$ pounds.

Packed one in heavy paper box. Each..... \$6.75

No. 1530. Single speed with three-jaw chuck to hold round shank only up to $\frac{3}{16}$ inch diameter inclusive. Large gear is 3 inches, small gear $\frac{7}{8}$ inch diameter.

The wood handle is 4 inches long, $1\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

The thrust on spindle is taken by hardened steel bearing in lower end of frame, in place of ball bearings, and so arranged that any wear can be readily taken up.

Entire length of drill is $10\frac{1}{2}$ inches. Net weight, $1\frac{1}{4}$ pounds.

Packed one in heavy paper box. Each..... \$3.60

No. 1540. Single speed with three-jaw chuck to hold round shank only up to $\frac{3}{8}$ inch diameter inclusive. Large gear is $4\frac{1}{2}$ inches, small gear $1\frac{1}{2}$ inches diameter.

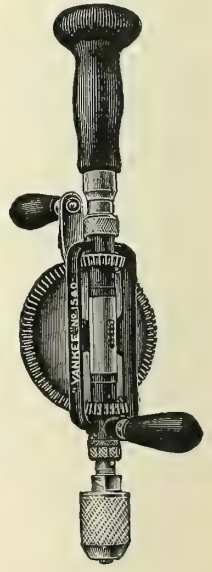
The wood handle is $4\frac{1}{2}$ inches long $2\frac{1}{2}$ inches diameter and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill is $16\frac{1}{2}$ inches. Net weight, $3\frac{3}{8}$ pounds.

Packed one in heavy paper box. Each..... \$5.65



No. 1530



No. 1540

Yankee, Plain

These are of the same construction as the Ratchet styles, but without the ratchet movements. They are made only with double speed. Special attention is called to the very quick and easy change in speed made by the small shifter on the main frame between small gears—with shifter at top notch S it is set for slow speed, at bottom notch F fast speed, in center notch L the spindle is locked so the chuck can be readily opened and closed. They are strong and substantially built for hard work and durability, have adjustable ball bearings on spindle to take up all strain or wear. The side handle can be unscrewed and has screw driver bit to fit screws in drill. The frame is of malleable iron, spindle of steel turned and fitted, all gears have cut teeth to run smoothly and accurately and of extra strength.

The drills are finished in dead black color with bright parts polished.

No. 1445. Double speed with three-jaw chuck. Jaws are of tool steel and hold round shank drills only up to $\frac{3}{8}$ inch in diameter inclusive. Large gear is 4 inches small gear $1\frac{5}{8}$ inches, gears on spindle $1\frac{1}{4}$ inches diameter; all have extra strong cut teeth.

The wood handle is $4\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches in diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill, 15 inches. Net weight, $3\frac{1}{2}$ pounds.

Packed one in heavy paper box. Each..... \$4.50

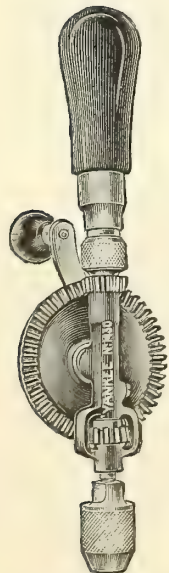
No. 1430. Single speed with three-jaw chuck to hold round shank drills only up to $\frac{3}{16}$ inch diameter inclusive. Large gear is $3\frac{1}{8}$ inches, small gears on spindle $1\frac{3}{8}$ inches, all have extra strong cut teeth.

The wood handle is 4 inches long, $1\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

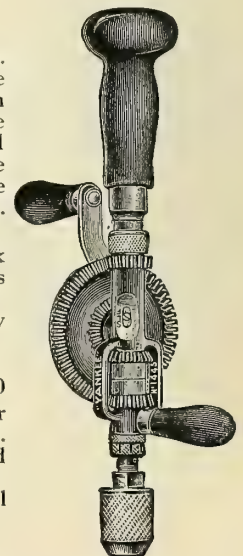
The thrust on spindle is taken by hardened steel bearing in lower end of frame, in place of ball bearings, and so arranged that any wear can be readily taken up.

Entire length of drill is $10\frac{1}{2}$ inches. Net weight, $1\frac{1}{4}$ pounds.

Packed one in heavy paper box. Each..... \$2.65



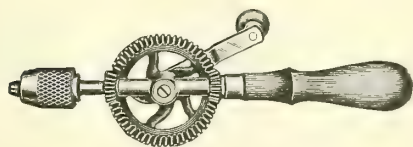
No. 1430



No. 1445

Hand Drills

M. F. Co. Single Speed

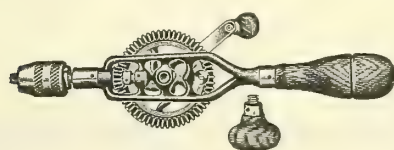


No. 313

Stained hardwood; solid steel frame. Large gear enameled black; all other metal parts nicked. Cut gears. Three-jawed chuck holding round shanks from 0 to $\frac{3}{16}$ inch in diameter. Has idler gear to equalize bearings. Length, 11 $\frac{1}{4}$ inches.

Dozen..... \$18.00

Packed one in a pasteboard box.

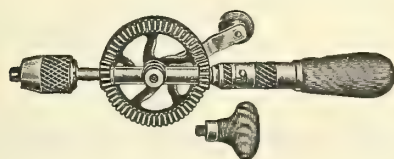


No. 1

Cocobolo wood; malleable iron frame; large gear and frame black enameled; other metal parts nicked. Hollow end handle with screw cap, containing 8 wood boring points ranging in size from $\frac{1}{16}$ to $\frac{1}{8}$ inch in diameter. Removable side, grip handle. Cut gears with adjustable equalizing bearing. Ball thrust bearing. Three-jawed chuck holding and centering accurately, round shank drills from 0 to $\frac{3}{16}$ inch in diameter. Length, 12 $\frac{1}{2}$ inches.

Dozen, including 8 fluted drill points..... \$20.00

Packed one in a pasteboard box.

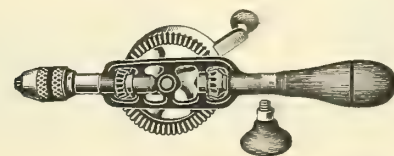


No. 03

Stained hardwood; solid steel frame. Large gear enameled French gray with red stripe; all other metal parts nicked. Hollow end handle quickly detached and with receptacle large enough to hold any twist drills within the capacity of the tool. Detachable side, grip handle. Cut gears. Three-jawed chuck holding round shanks from 0 to $\frac{3}{16}$ inch in diameter. Length, 11 inches.

Dozen..... \$20.00

Packed one in a pasteboard box.

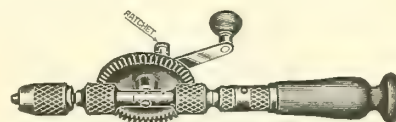


No. 5

Cocobolo wood; malleable iron frame; large gear red and frame black enameled; other metal parts nicked. Hollow end handle, with screw cap, containing 8 wood boring points, ranging in size from $\frac{1}{16}$ to $\frac{1}{8}$ inch in diameter. Removable side, grip handle. Large gear with wide rim to be grasped between thumb and fingers when delicate work is being done, and with idler gear to equalize bearings. Ball thrust bearing. Three-jawed chuck holding, and centering accurately, round shank drills from 0 to $\frac{3}{16}$ inch in diameter. Length, 12 $\frac{1}{2}$ inches.

Dozen, including 8 fluted drill points with each drill..... \$24.00

Packed one in a pasteboard box.

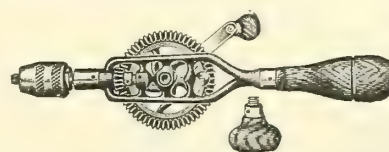


No. 306

Choice hardwood stained; solid steel frame. Large gear painted machine gray with red trimmings; other metal parts nicked. Detachable hollow end handle of graceful design and with receptacle to hold twist drills up to the capacity of the chuck. Cut gears with a small steel working gear and a steel idler gear to equalize bearings, both gears being almost totally inclosed as protection against dust and dirt. Ball thrust bearings. Provided with simple and effective ratchet operated by raising and turning to the right or left the cap to a small boss on the crank handle. This is a convenience in cramped places or when doing delicate work. Chuck of star pattern with three jaws opening with springs, which are protected and do not get out of order, and closing evenly on, and centering accurately, round shanks from 0 to $\frac{1}{4}$ inch in diameter. Length, without handle, 8 inches. Length, with handle, 12 $\frac{1}{2}$ inches.

Dozen..... \$38.00

Packed one in a pasteboard box.

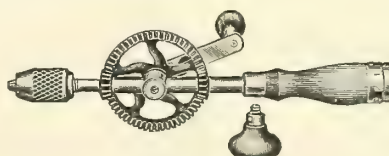


No. 105

Rare tropical hardwood handle; malleable iron frame; large gear and frame, black enameled; other metal parts nicked. Hollow end handle with screw cap containing 8 wood boring points. Removable side grip handle. Cut gears with adjustable equalizing bearings. Ball thrust bearings. Three-jawed chuck of the Star pattern with jaws opening evenly by means of springs that will not get out of order. Chuck holds and centers accurately round shanks from 0 to $\frac{1}{4}$ inch in diameter. Length, 12 $\frac{1}{2}$ inches.

Dozen, including 8 fluted drill points..... \$24.00

Packed one in a pasteboard box.



No. 307

Star pattern chuck holding round shank from 0 to $\frac{1}{4}$ inch. Jaws are actuated by springs that are protected from injury and will not get out of order. Rolled steel main stocks, nicked. Cut gears, pinions of steel. Stained hardwood handle, main handle being hollow with eight separate cells, each for a wood-boring point which is put up with the drill. Any one drill may be released without disturbing the others.

Dozen..... \$30.00



No. 2

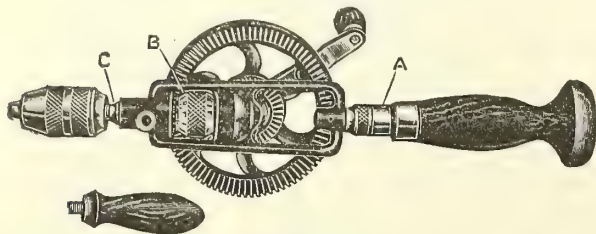
Cocobolo wood; malleable iron, black enameled frame; large gear painted red; other metal parts nicked. Hollow end handle, with screw cap, shaped so tool may be used as a breast drill, and containing 8 wood boring points, ranging in size from $\frac{1}{16}$ to $\frac{1}{8}$ inch in diameter. Removable side, grip handle. Cut gears with adjustable friction roll to equalize bearings. Ball thrust bearing. Chuck of star pattern with 3 jaws opening with springs and closing evenly on, and centering accurately, round shanks from 0 to $\frac{3}{8}$ inch in diameter. Length, 14 $\frac{1}{2}$ inches.

Dozen, including 8 fluted drill points..... \$35.00

Packed one in a pasteboard box.

Hand Drills

M. F. Co. Changeable Speed



No. 980

Choice stained hardwood. Hollow end handle with receptacle for holding twist drills, detached by loosening a knurled check nut and pressing on the plunger at A, shown in illustration, of shapely design with mushroom head, so tool may be used as a breast drill. Malleable iron frame; large gear painted French gray with red stripe; other parts nicked. Removable side, grip handle.

Instantly changeable speed, $1\frac{1}{2}$ to 1 and 4 to 1, operated by shifting knurl ring B under any conditions and without removing the bit from the work.

Pinion and shifting device of steel and inclosed for protection.

Cut gears with adjustable friction roll to equalize bearings.

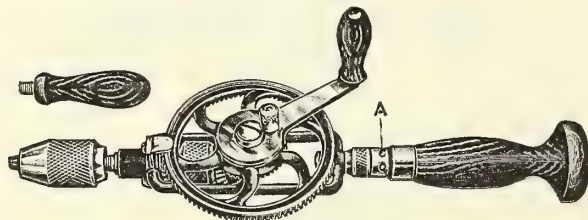
Ball thrust bearing at point marked C in illustration.

Chuck of Star pattern with 3 jaws opening with springs and closing evenly on, and centering accurately, round shanks from 0 to $\frac{3}{8}$ inch in diameter.

Length, without handle, 10 inches; with handle, $15\frac{1}{4}$ inches.

Dozen \$40.00

Packed one in a pasteboard box.



No. 1980, with Ratchet

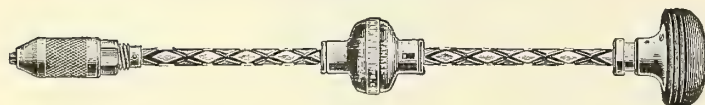
The same as Drill No. 980, shown above, except provided with simple and effective ratchet, operated by raising and turning to the right or left the cap to a small boss on the crank handle. This is a convenience in cramped places or in doing delicate work.

Dozen \$48.00

Packed one in a pasteboard box.

Reciprocating Drill

Yankee



No. 50

For Drilling Wood and Metals

The movement or traverse of the driver is $8\frac{1}{2}$ inches. Drill cuts continuously during both forward and backward movement of driver. The entire length of tool, without drill, is 16 inches. No drill points are furnished with this tool. Any style straight shank drill $\frac{1}{8}$ inch diameter or less can be held in chuck.

Each \$3.50

Packed one in box.

Push Brace

Yankee



No. 75

Right and Left Hand Ratchet, and Rigid

Holds all the small tools used in a bit brace, but is operated by pushing the handle to revolve the tools, in same manner as a "Yankee" Spiral Ratchet Screw Driver. It will drill holes, drive screws in or out; can be used for tapping holes, and with socket bit drive in small lag screws, run burrs, or nuts, on bolts, etc. Not only will it do this more rapidly and conveniently than a brace, but being straight and cylindrical and operated by pushing, it can reach into many places, in corners, holes back of obstructions where a brace cannot be operated.

All the working parts are protected by sleeves, so no parts are exposed to grit or dirt. The Chuck is made of malleable iron, polished and nickel-plated. The jaws are of steel, drop forged and hardened. The Chuck will hold squares up to $\frac{1}{2}$ inch wood bit.

The entire length of tool is $16\frac{1}{4}$ inches when closed, and $23\frac{1}{2}$ inches when extended.

Each \$3.75

Packed one in a box

Automatic Drills

Yankee



No. 41

Has eight drill points, $\frac{1}{8}$ to $\frac{1}{4}$ inches, which are in plain sight when magazine is open. During the return movement of handle the drill point revolves backward to clear chips, etc. The Chuck is of new and improved design, and will hold drill points tight and absolutely rigid. Entire length of tool, inclusive of drill point, $11\frac{3}{4}$ inches.

Each \$2.30

One in box.



No. 42

Same as No. 41, but without any magazine for drill points, and has a wood in place of metal handle, hence lower price. Drill points are in wood box. Entire length of tool, inclusive of drill point, $11\frac{3}{4}$ inches.

Each \$1.80

One in box.



No. 44

With adjustable tension. Of all the Automatic Drills there has never been one entirely satisfactory, because no one strength of spring in these tools would answer in both soft and hard woods, of for large and small drills furnished. A spring of average strength had to be used. The cap on top of Drill has a screw attached to it, by revolving which the spring is made longer or shorter, and as a result weaker or stronger. The spring is held at any desired tension by a small bolt engaging in cap and operated by the small knob on side of handle. The Drill has eight drill points, $\frac{1}{8}$ to $\frac{1}{4}$ inch, in magazine in handle, arranged to show all in plain sight. Entire length of tool, inclusive of drill points, $11\frac{1}{4}$ inches.

Each \$2.60

One in box.

Extra drill points for Nos. 41, 42 and 44.

Dozen 1.00

Set of 870

Sizes, $\frac{1}{8}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ inch.

M. F. Co.



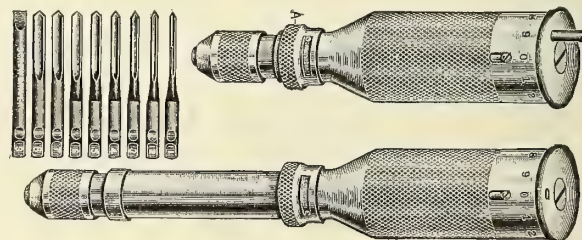
No. 45

Cocobolo handle; metal parts polished and nicked. Chuck holding round shank drill bits from 0 to $\frac{1}{4}$ inch diameter.

A knurled chuck nut immediately back of the chuck prevents the latter from working loose. Length, $11\frac{1}{4}$ inches.

Dozen \$20.00

Packed one in a pasteboard box.



Star No. 8

Handsomely knurled and nicked steel.

May be compressed into convenient size for the pocket.

Magazine handle, containing 8 drill points, sizes, $\frac{1}{16}$, $\frac{5}{32}$, $\frac{3}{32}$, $\frac{7}{64}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$ and $\frac{1}{4}$ inch in diameter, and a screwdriver bit.

Device for releasing a bit from handle without disturbing the others.

Screwdriver bit to be used when tool is compressed.

Chuck with positive grip.

Length, extended, $7\frac{1}{4}$ inches; compressed, $4\frac{7}{8}$ inches.

Dozen \$23.00

Packed one in a pasteboard box.

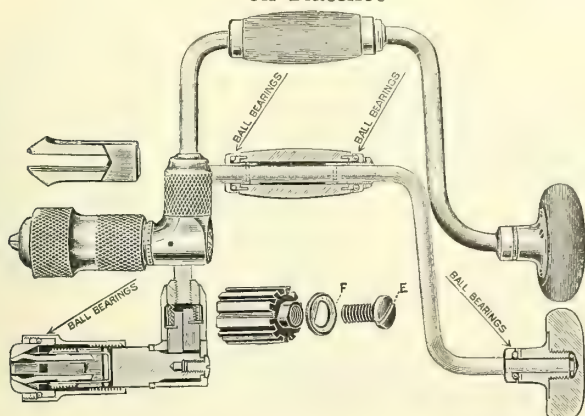
Extra drill points for Star No. 8. Dozen72

Set of 8 drills48

Bit Braces

M. F. Co.

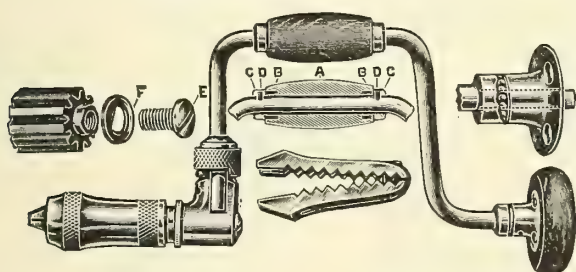
Lion Ratchet



Polished and nicked steel; rare tropical wood. Ball-bearing head. Non-splitting, adjustable ball-bearing, always free acting sweep handle. The ball-bearing feature is of much importance in operation of the tool. Covered, dust-protected ratchet parts. Patent cup washer (F) and screw (E) to hold chuck to sweep without working loose. Unbreakable jaw socket made from bar steel. Chuck shell ball-bearing, with case-hardened hood and with powerful grip upon bit shanks and easily released when desired. Forged steel jaws, holding positively and securely, and centering with reasonable accuracy, round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter, No. 1 Morse taper, and all sizes of bit stock and expansion bit shanks.

Number	870	871	872	873
Size of sweep, inches	14	12	10	8
Dozen	\$41.00	\$39.00	\$37.00	\$35.00

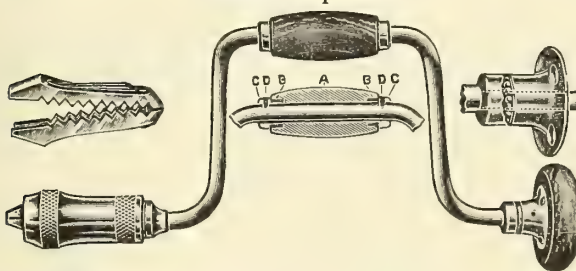
Barber Improved Ratchet



Polished and nicked steel; cocobolo wood. Ball-bearing head. Non-splitting, always free acting sweep handle with inserted steel rings (B) and adjustable bearings (C) clamped with screws (D). Covered ratchet teeth with exposed ratchet dogs. Patent cup washer (F) and screw (E) to hold chuck to sweep without working loose. Forged steel alligator jaws holding bit stock and many sizes of round and irregular shanks. For nearly two generations the standard in the bit brace world.

Number	30	31	32	33	34
Size of sweep, inches	14	12	10	8	6
Dozen	\$29.00	\$27.00	\$25.00	\$23.00	\$21.00

Barber Improved



Polished and nicked steel; cocobolo wood. Ball-bearing head except on No. 15. Non-splitting, always free acting sweep handle with inserted steel rings (B) and adjustable bearings (C) clamped with screws (D). Forged steel alligator jaws holding bit stock and many sizes of round and irregular shanks.

Number	10	11	12	13	14	15
Size of sweep, inches	14	12	10	8	6	4
Dozen	\$23.00	\$21.00	\$19.00	\$17.00	\$15.00	\$14.00

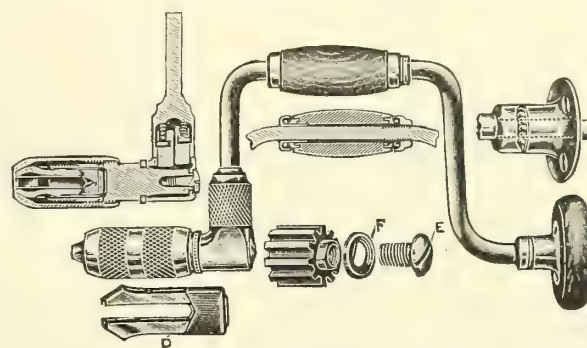
List of Parts of M. F. Co. Bit Braces



No. 7	Alligator jaws, per pair	\$.25
No. 8	Head, cocobolo wood, each	.20
No. 9	Shell, nicked, each	.40
No. 25	Master jaws, per pair	.30
No. 27	Master shell, each	.45

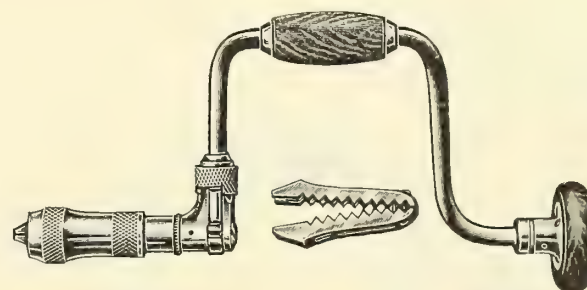
For Genuine Russell Jennings Precision Braces see Index

Master Ratchet



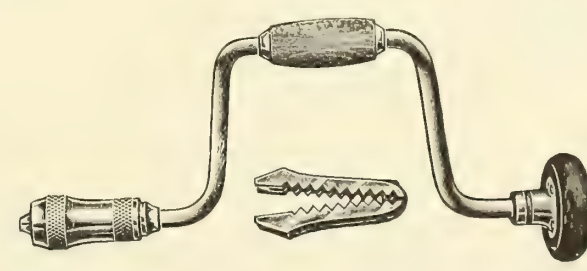
Polished and nicked steel; cocobolo wood. Ball-bearing head. Non-splitting adjustable ball-bearing, always free acting sweep handle. Covered, dust-protected ratchet parts. Patent cup washer (F) and screw (E) to hold chuck to sweep without working loose. Unbreakable jaw socket made from bar steel. Chuck shell strengthened at the lip and of convenient shape to fit the hand. Forged steel jaws, holding positively and securely and centering with reasonable accuracy round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter, No. 1 Morse taper, and all sizes of bit stock and expansion bit shanks.

Number	830	831	832	833
Size of sweep, inches	14	12	10	8
Dozen	\$38.00	\$36.00	\$34.00	\$32.00



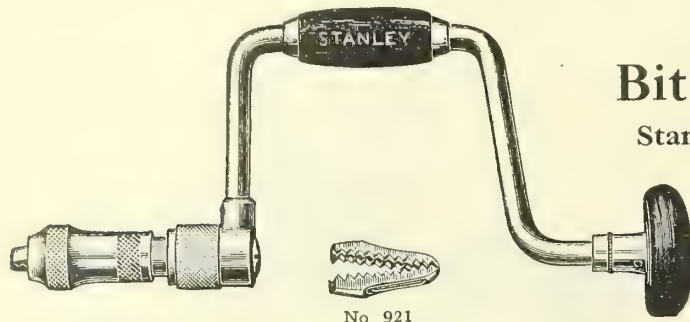
Open ratchet, Ball-bearing head. Polished and nicked steel; stained hardwood. Brass rings inserted in sweep handle. Forged steel alligator jaws.

Number	320	321	322	323
Size of sweep, inches	14	12	10	8
Dozen	\$19.50	\$18.50	\$17.50	\$16.50



Polished and nicked steel; stained hardwood. Brass rings inserted in sweep handle. Forged steel alligator jaws.

Number	220	221	222	223
Size of sweep, inches	14	12	10	8
Dozen	\$11.25	\$10.25	\$9.25	\$8.25



No. 921

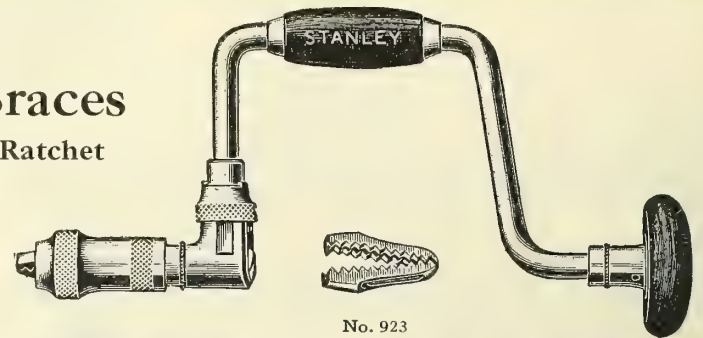
Heads and handles of cocobolo. Heavily nickel-plated. Ball-bearing heads, with the wood screwed on to the large spindle and three small screws preventing its working loose, and likewise containing a ball thrust. Hardened steel alligator jaws.

Concealed Ratchet in which the cam ring governs the ratchet, and, being in line with the bit, makes it more convenient in handling than when it is at right angles. The ratchet parts are entirely enclosed, thus keeping out moisture and dirt, retaining lubrication and protecting the user's hands. The ratchet mechanism is interchangeable, may be taken apart by removing one screw, and is readily put together again. The two-piece clutch, which is drop-forged, machined and hardened, is backed by a very strong spring, insuring a secure lock. When locked, ten teeth are in engagement, while five are employed when working as a ratchet.

Sweep, inches	6	8	10	12	14
Dozen	\$23.40	\$23.40	\$25.20	\$27.00	\$28.80

Parts

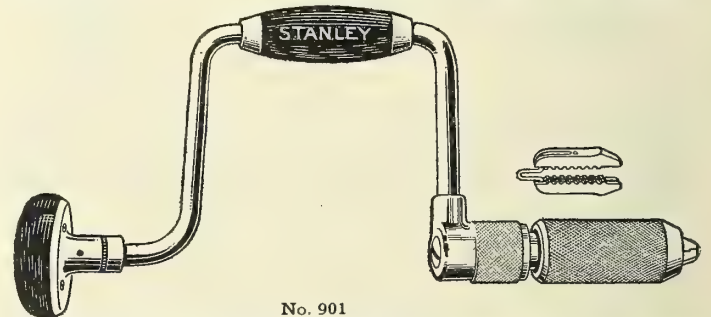
Shell for Nos. 921 and 923	Each	\$.40
Jaws for Nos. 921 and 923		.30
Head for No. 901, 921 and 923		.35
Jaws for No. 901		.35
Shell for No. 901		.50



No. 923

Box Ring Ratchet is at right angle to the bit. Gear teeth cut on the extra heavy spindle and encased so that the user's hands are protected from the teeth, and dust or dirt prevented from clogging the working parts.

Sweep, inches	6	8	10	12	14
Dozen	\$21.60	\$21.60	\$23.40	\$25.20	\$27.00



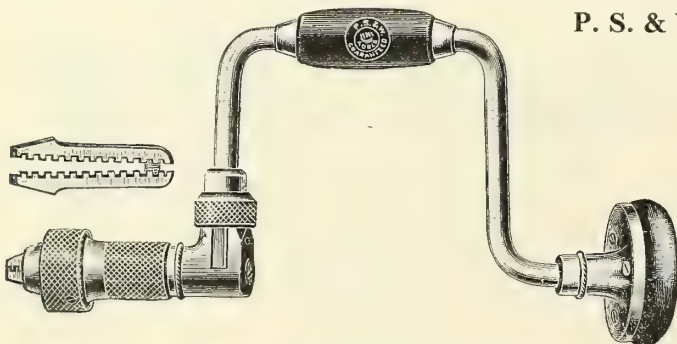
No. 901

Metal-clad ball-bearing head, so called, as under side is completely encased in metal securely screwed to the wood and revolving against a ball thrust bearing.

Universal jaws, for both wood and metal workers, hold round shank bits and drills from $\frac{1}{8}$ to $\frac{1}{2}$ inch, and taper shanks as large as No. 2 Clark's Expansion Bit.

Sweep, inches	8	10	12	14	16
Dozen	\$27.60	\$29.40	\$31.20	\$33.00	\$36.60

P. S. & W. Ratchet



The ball-bearing chuck will hold round, square or taper shank drills. Tenpenny nails held in this chuck have bored through solid oak. Five-sixteenths-inch rods with one end held in a vise, have been twisted to the breaking point.

Though you can tighten it by hand with greater ease and get a firmer grip than you can with any other chuck by aid of a vise, it can be released quickly and freely—even by the mechanic with a weak wrist.

The forged steel alligator jaw is properly tempered, interlocks accurately, adjusts itself perfectly to a parallel or taper position to suit the shape of the drill-shank, and has no complicated spring-connection to get out of order readily.

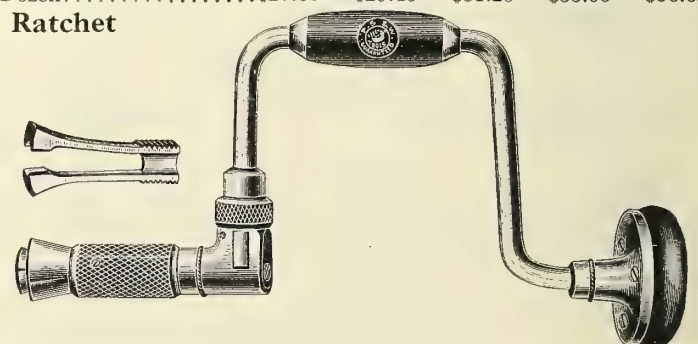
Ratchet: Box ring. At right angle to bit.

Sweep: Extra heavy, highly polished and nickel-plated.

Head: Cocobolo, full steel clad and screw fastened. Dustproof ball-bearings in retaining cup.

Center handle: Cocobolo. Extra jaws, pair \$.50.

Number	8006	8008	8010	8012	8014	8016
Sweep, inches	6	8	10	12	14	16
Dozen	\$48.50	\$48.50	\$52.00	\$55.50	\$59.00	\$62.50



Ratchet: Box ring. At right angle to bit.

Jaws: One piece, self centering, forged steel and spring tempered.

Sweep: Nickel-plated.

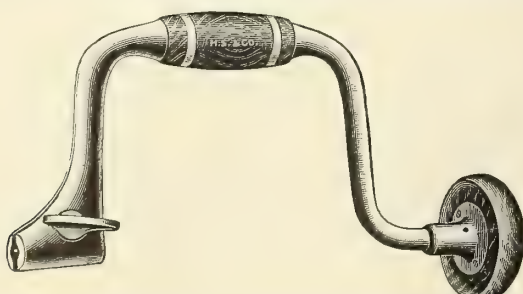
Chuck: Steel, extra knurled, machine cut thread

Head: Lignum-vitæ, full steel clad and screw fastened. Dust-proof ball bearings in retaining cup.

Center Handle: Cocobolo. Extra jaws, pair \$.50.

Number	7006	7008	7010	7012	7014	7016
Sweep, inches	6	8	10	12	14	16
Dozen	\$41.50	\$41.50	\$45.00	\$48.50	\$52.00	\$55.50

Spofford, Plain

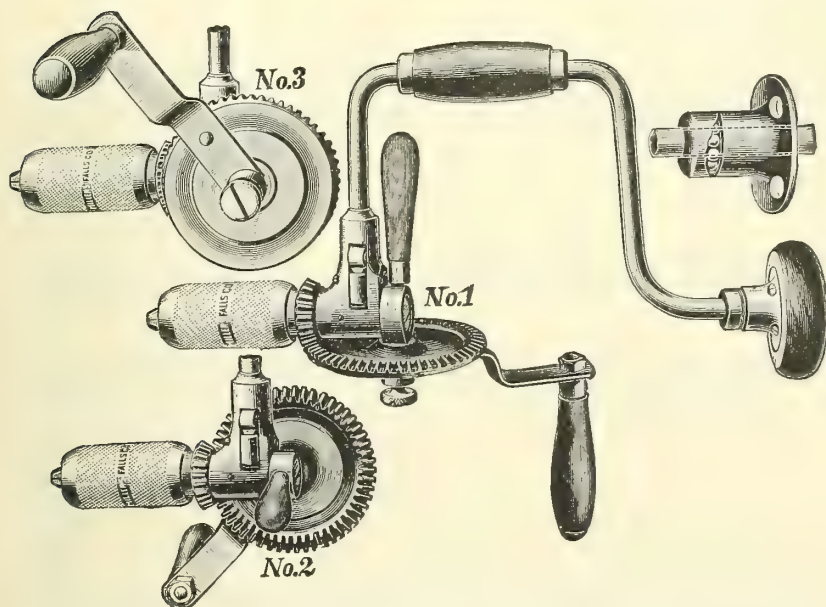


Nickel-plated steel sweep, cocobolo head and handle.

Number	107	108	110	112	114
Sweep, inches	7	8	10	12	14
Each	\$1.75	\$2.00	\$2.25	\$2.50	\$2.75

Combination Brace and Breast Drill

M. F. Co. No. 192



Best grade of ball-bearing ratchet brace with 10-inch sweep and master chuck. Improved ratchet; dogs may be thrown out of mesh simultaneously and permit tool to be used as a breast drill.

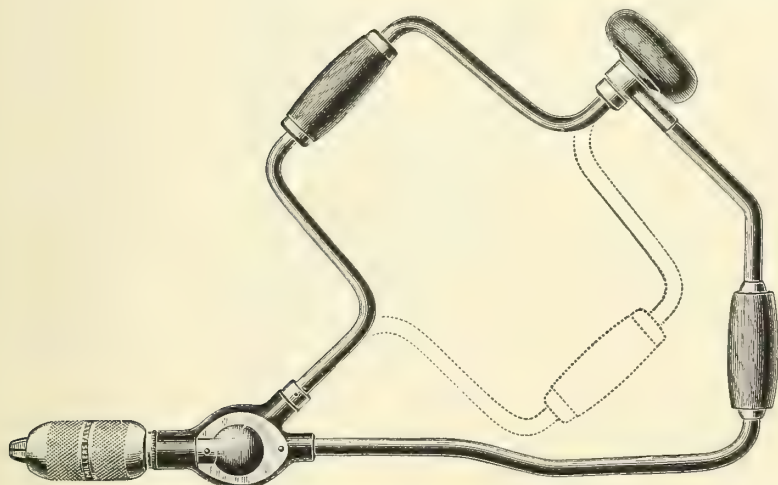
Drilling attachment affixed or detached quickly and with ease; may be swiveled into any one of three positions, Nos. 1, 2 and 3, as shown in illustration.

Dozen..... \$50.00

Packed one in a pasteboard box.

Corner Bit Braces

M. F. Co.



Cocobolo wood; metal parts polished and nicked, except japanned hub casting. Ball-bearing head and adjustable, free acting sweep and steadying handles. Master chuck operated by inclosed gears, protected from dust and dirt. Gears case hardened and steel bushings in frame, practically eliminating wear at bearings.

Number.....	502	503
Size of sweep, inches.....	10	8
Length, inches.....	17 1/2	17 1/2
Dozen.....	\$48.50	\$46.50

Ratchet Corner Bit Braces

Stanley No. 984

This style of Ratchet Bit Brace is designed particularly for electricians, plumbers and gas fitters, but many other mechanics who have occasion to work close up into corners, or in other inaccessible places where there is no room for an ordinary corner brace, find it a very useful tool.

The knurled ring between the head and the ratchet mechanism, operated with the thumb and finger of the hand holding the head, is for the purpose of starting and holding the bit until it is far enough in the wood, so that it will not reverse when the handle is turned back.

The head is ball bearing and both head and handle are of cocobolo. The peculiar shape of the head enables the user to place the Brace close up to horizontal or perpendicular surfaces, a distinct advantage over the old form of head. All metal parts nickel-plated. Alligator jaws.

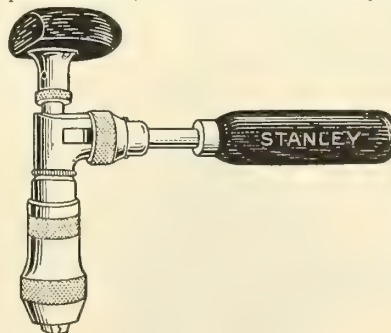
Dozen..... \$18.00

M. F. Co. No. 140

Stained hardwood; metal parts polished and nicked. Steadying handle removable. Fine ratchet teeth to admit short bite. Barber chuck with alligator jaws. Length vertically (placed as cut), 13 1/2 inches. Length horizontally, 5 inches.

Dozen..... \$30.00

Packed one in a pasteboard box.



For Genuine Russell Jennings Precision Braces, see Index

SINCE
1848

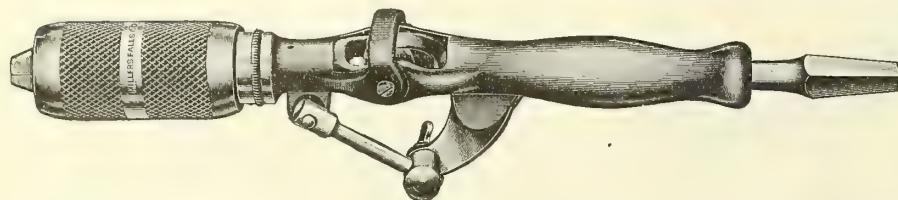
HAMMACHER SCHLEMMER & CO.

NEW
YORK

Universal Angular Bit Stock

M. F. Co. No. 108

With Master Chuck



To be used with a bit brace or a breast drill either as an extension or angular borer.

Adjustable arc varies angle from 180° to 125°.

Length (when at 180°), 12½ inches.

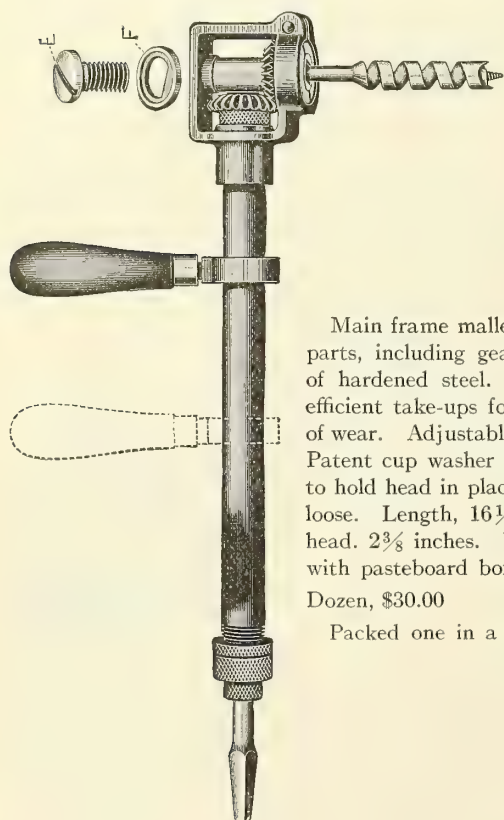
Dozen, \$26.00

Packed one in a pasteboard box.

Sill Borers or Joist Tools

M. F. Co. No. 51

For use in connection with a bit brace or breast drill



Main frame malleable iron; working parts, including gears, bushings, etc., of hardened steel. Ball bearing and efficient take-ups for bushings in case of wear. Adjustable steadying handle. Patent cup washer (F) and screw (E) to hold head in place without working loose. Length, 16½ inches; depth of head, 2⅜ inches. Weight, per dozen with pasteboard boxes, 34½ pounds. Dozen, \$30.00

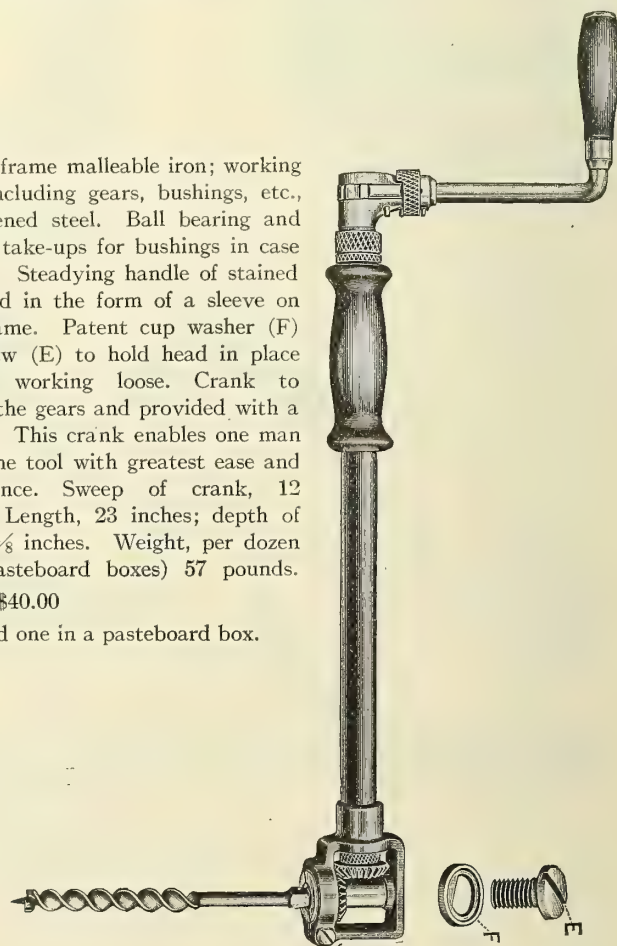
Packed one in a pasteboard box.

M. F. Co. No. 52

For use in cramped quarters where it is necessary to bore at a right angle and for electricians, car builders and wood workers in general

Main frame malleable iron; working parts, including gears, bushings, etc., of hardened steel. Ball bearing and efficient take-ups for bushings in case of wear. Steadying handle of stained hardwood in the form of a sleeve on main frame. Patent cup washer (F) and screw (E) to hold head in place without working loose. Crank to operate the gears and provided with a ratchet. This crank enables one man to use the tool with greatest ease and convenience. Sweep of crank, 12 inches. Length, 23 inches; depth of head, 2⅜ inches. Weight, per dozen (with pasteboard boxes) 57 pounds. Dozen, \$40.00

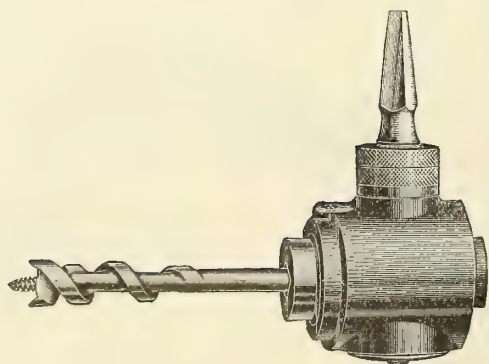
Packed one in a pasteboard box.



Angle Drills

H. S. & Co. No. 99

For Boring at Right Angles



This Tool is for boring with a brace at right angles in close quarters, and will be found valuable not only to Electricians and Carpenters, but to Car builders.

The Electrician finds many places in wiring old buildings where this tool will be indispensable.

The steel gears are encased for safety and to protect them from dust and chips.

Is so small and light that it can be carried in the pocket.

Dozen, \$27.00

SINCE
1848

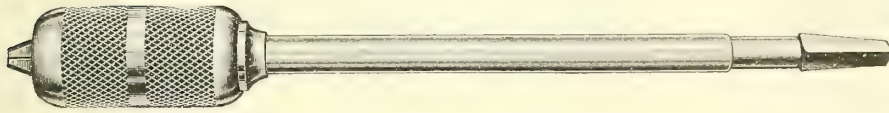
HAMMACHER SCHLEMMER & CO.

NEW
YORK

Extension Bit Holders

M. F. Co.

No. 1 With Master Chuck



To be used in connection with a bit brace or breast drill. Nickeled. Bit shanks tapered exactly to gauge. Master chuck holding round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter, bit stock, expansion and No. 1 Morse taper shanks.

Length, inches.	12	15	18	21	24
Dozen.....	\$12.60	12.80	13.00	13.20	13.40

Packed one in a pasteboard box.

No. 5



Polished and nickel-plated steel. Follows bits $\frac{5}{8}$ inch in diameter and larger into their bores. Four reliably strong, steel jaws, made in one piece, grip firmly over shoulders of bit stock shanks. Bit inserted or released instantly when desired. An unsurpassed tool for the purpose intended.

Length, inches....	12	15	18	21	24	30
Dozen.....	\$14.60	14.80	15.00	15.20	15.40	15.80

Packed one in a pasteboard box.



No. 6 Telescope



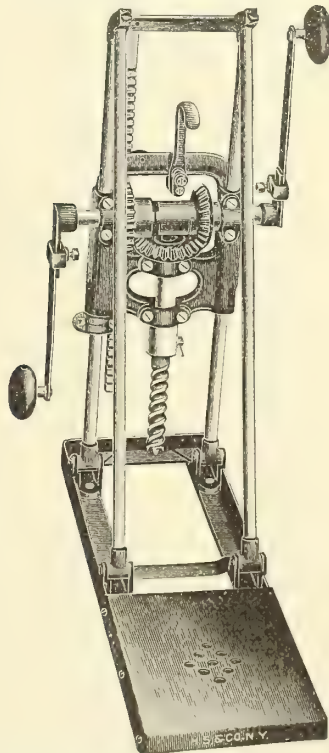
Polished and nickel-plated steel. Outer sleeve, telescoping over, and engaging at $1\frac{1}{2}$ inch intervals upon inner spindle, combining lightness with strength. For description of chuck see extension bit holders No. 5, shown above. Length, collapsed, $16\frac{1}{2}$ inches. Length, extended to the extreme, 24 inches.

Dozen.....	\$24.00
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Packed one in a pasteboard box.

Hand Boring Machines

M. F. Co. No. 146

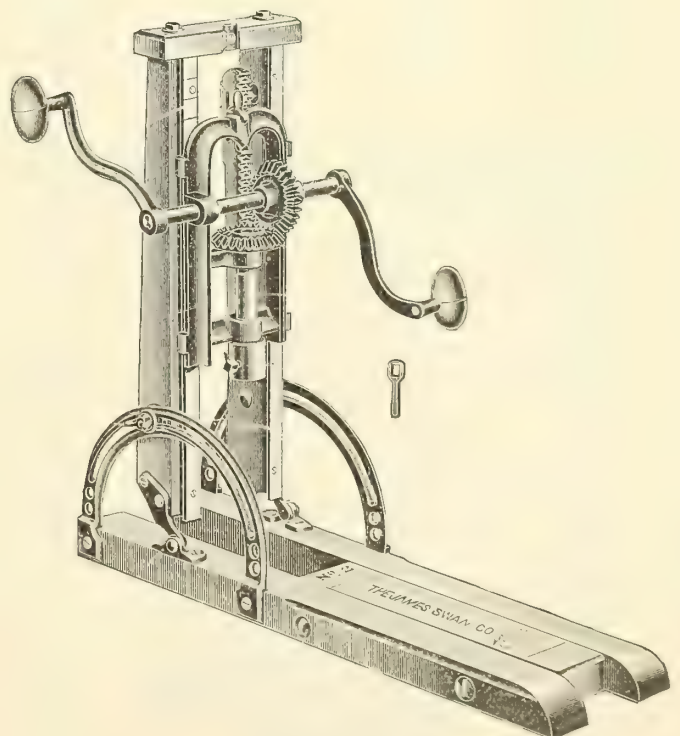


Base, upright and angle rods, spindle and cranks of steel. Bores vertically, or at any angle from the vertical, within an arc of 50 degrees. Depth of hole regulated by adjustable stop. Auger removed from hole by a few backward revolutions of cranks to loosen worm of bit, pressure with cranks to the left, automatically engaging a clutch, and forward revolutions of the cranks. Frame locked in topmost suspension automatically; released by pressure upon a thumb latch. Adjustable cranks regulating speed and power. Regularly made to bore 12 inches, but made to order for greater depths at small additional charge. Height, $25\frac{1}{2}$ inches. Weight, boxed, 49 pounds; net, 31 pounds.

Without augers, each.....	\$10.20
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Packed one in a wooden box.

Swan No. 6702



Wooden frame. Can be tilted to bore at any desired angle. The rack is easily swung into the beveled gear, and by turning the handles in same direction as in boring, the auger is withdrawn. A reverse motion of the handles throws the rack out of gear.

Without augers, each.....	\$6.75
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SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Boring Machine Augers

For Hand-boring Machines

Genuine Russell Jennings Extension Lip

Bates



Length of twist, 8 inches; length of round, 2½ inches.

Turned shank, 1½ inches by ½ inch. Length overall, 12 inches

Length of twist, 7½ inches; length of round, 2½ inches.

Turned shank, 1½ inches by ½ inch. Length over all, 12 inches.

Size in 16ths.....	8	9	10	11	12	13	14	15	16
Dozen.....	\$10.00	10.00	10.00	11.00	11.00	12.00	13.00	14.00	15.00
Size in 16ths.....	18	20	22	24	26	28	30	32	
Dozen.....	\$17.00	19.00	21.00	24.00	26.00	28.00	30.00	32.00	

Sizes not listed can be made to order at special prices, depending upon number of a size ordered

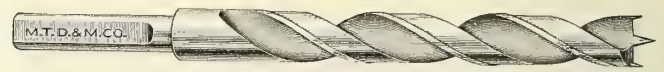
Machine Bits for Wood

Morse



Straight Shanks

No. 108



Shanks ½ Inch Diameter, 2½ Inches Long

No. 108 A

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches
1/8	\$.20	3	1 13/16
5/32	.25	3 1/4	2 3/32
3/16	.30	3 1/2	2 5/16
7/32	.35	3 3/4	2 17/32
1/4	.40	4	2 3/4
9/32	.45	4 1/4	2 31/32
5/16	.50	4 1/2	3 3/16
11/32	.55	4 3/4	3 13/32
3/8	.65	5	3 5/8
13/32	.70	5 1/4	3 27/32
7/16	.75	5 1/2	4 1/16
15/32	.80	5 3/4	4 9/32
1/2	.85	6	4 1/2
17/32	.95	6 1/8	4 19/32
9/16	1.00	6 1/4	4 11/16
19/32	1.10	6 3/8	4 3/4
5/8	1.15	6 1/2	4 7/8
21/32	1.25	6 3/4	5
11/16	1.35	7	5 5/16
23/32	1.50	7 1/4	5 1/2
3/4	1.65	7 1/2	5 11/16
25/32	1.80	7 3/4	5 7/8
13/16	1.95	8	6 1/16
27/32	2.15	8 1/4	6 1/4
7/8	2.30	8 1/2	6 7/16
29/32	2.50	8 3/4	6 5/8
15/16	2.65	9	6 13/16
31/32	2.85	9 1/4	7
1	3.00	9 1/2	7 3/16
1 1/16	3.60	11 1/4	8 1/2
1 1/8	4.00	11 3/4	8 7/8
1 3/16	4.40	12	9
1 1/4	4.80	12 1/2	9 3/8
1 5/16	5.20	12 1/2	9 3/8
1 3/8	5.60	12 1/2	9 3/8
1 7/16	6.00	12 1/2	9 3/8
1 1/2	6.40	12 1/2	9 3/8

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches
1/8	\$.50	4 5/8	1 13/16
5/32	.50	4 7/8	2 3/32
3/16	.60	5	2 5/16
7/32	.60	5 1/4	2 17/32
1/4	.70	6 1/8	3
9/32	.75	6 1/4	3
5/16	.80	6 3/8	3 1/8
11/32	.85	6 1/2	3 1/4
3/8	.90	6 3/4	3 1/2
13/32	.95	7	3 3/4
7/16	1.00	7 1/4	4
15/32	1.10	7 1/2	4 1/4
1/2	1.20	7 3/4	4 1/2
17/32	1.30	8	4 3/4
9/16	1.40	8 1/4	5
19/32	1.50	8 1/2	5 1/4
5/8	1.60	8 3/4	5 1/2
21/32	1.70	9	5 3/4
11/16	1.80	9 1/4	6
23/32	1.90	9 1/2	6 1/4
3/4	2.00	9 3/4	6 1/2
25/32	2.20	9 7/8	6 5/8
13/16	2.40	10	6 3/4
27/32	2.50	10 1/4	7
7/8	2.60	10 1/2	7 1/4
29/32	2.80	10 5/8	7 3/8
15/16	3.00	10 3/4	7 1/2
31/32	3.20	10 7/8	7 5/8
1	3.40	11	7 3/8
1 1/16	3.60	11 1/4	7 5/8
1 1/8	4.00	11 3/4	8
1 3/16	4.40	12	8 1/4
1 1/4	4.80	12 1/2	8 5/8
1 5/16	5.20	12 1/2	8 5/8
1 3/8	5.60	12 1/2	8 1/2
1 7/16	6.00	12 1/2	8 1/2
1 1/2	6.40	12 1/2	8 3/8

Set No. 12

1/8 to 1/2-inch machine bits, mounted, varying by 32nds.... \$7.00

Machine Bits for Wood

Genuine Russell Jennings

Crucible Tool Steel

The Standard Double Thread Screw Point gives the best result on general work, and unless otherwise specified will be furnished up to $\frac{1}{8}$; over that with single thread screw point. Certain requirements, however, demand special threads or points, and in case of any trouble, we request full information as to its nature and the kind of wood used, when we will be pleased to advise fully.

For illustrations and descriptions of threads, see page 401.

Extension Lip, with Turned Round Shanks



These Bits are listed in accordance with the manufacturers standard price list for machine bits. The following shows the regular sizes of the several lengths of twist and sizes of shanks and we suggest that they be used wherever possible, though we will supply any special sizes needed, at special prices.

Length of twist, 2 inches; turned shank, $2\frac{1}{4} \times 3\frac{3}{8}$ inches. Carried in stock $\frac{3}{16}$ to $\frac{1}{2}$ by 32nds. $\frac{1}{8}$ to $\frac{1}{4}$ by 16ths.

Length of twist, 4 inches; turned shank, $2 \times 1\frac{1}{2}$ inches. Carried in stock $\frac{3}{16}$ to $\frac{1}{4}$ by 32nds. $\frac{1}{8}$ to $\frac{3}{8}$ by 16ths.

Length of twist, 6 inches; turned shank, $2 \times 1\frac{1}{2}$ inches. Carried in stock $\frac{3}{16}$ to $\frac{1}{4}$ by 32nds. $\frac{1}{8}$ to $\frac{3}{8}$ by 16ths.

Size in 16ths	3	4	5	6	7
Dozen	\$8.40	7.80	8.40	9.00	9.90
Size in 16ths	8	9	10	11	12
Dozen	\$10.80	12.00	13.20	14.40	15.60
Size in 16ths	13	14	15	16	17
Dozen	\$16.80	18.00	19.20	20.40	21.60
Size in 16ths	18	19	20	21	22
Dozen	\$22.80	24.00	25.20	26.40	27.60
Size in 16ths	23	24	25	26	27
Dozen	\$28.80	30.00	31.50	33.00	34.50
Size in 16ths	28	29	30	31	32
Dozen	\$36.00	37.50	39.00	40.50	42.00

Price of intermediate sizes the same as the next regular size larger.

When ordering machine bits, always state length of twist, and length and diameter of shank.

Machine bits of sizes or dimensions not carried in stock can be made to order at special prices, depending on the number of bits ordered.

Extension Lip. Square Shank Dowel



Square shank machine dowel bits can be made to order in special lengths and with shanks of special dimensions at special prices, depending upon the number of bits ordered.

Shanks not threaded, $4\frac{1}{2}$ inches long overall. Carried in stock. $\frac{3}{16}$ to $\frac{9}{16}$ by 32nds. $\frac{9}{16}$ to $\frac{3}{4}$ by 16ths.

Size in 16ths	3	4	5	6	7	8
Dozen	\$4.50	4.00	4.00	4.00	4.50	5.00
Size in 16ths	9	10	11	12	13	14
Dozen	\$5.50	6.00	7.00	7.00	8.00	8.00
Size in 16ths	15	16	17	18	19	20
Dozen	\$9.00	9.00	10.50	10.50	12.00	12.00

Shanks on these bits are $\frac{1}{2}$ -inch square

Length of shank $\frac{3}{16}$ to $\frac{1}{8}$ = 1 inch.

Length of shank, $\frac{1}{4}$ and up = $1\frac{3}{4}$ inches.

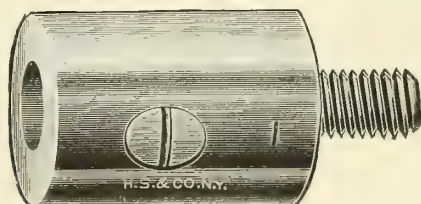
When shanks have to be threaded to fit special machines we recommend that whenever possible this threading be done by the maker, as they have facilities for doing this work so that bits will run perfectly true. We can furnish any thread if given the diameter and number of threads to the inch or a sample to work from, at same prices.



Shanks threaded, $\frac{7}{16} \times 14$ thread. (For Prybil or Clement Machines.) $4\frac{1}{2}$ inches long over all. Add for threading to net price of Not Threaded \$1.75 per dozen for six or more, and for less than six, 18 cents each, net.

For users of old style machines requiring bits threaded $\frac{5}{8}$ inch diameter with 20 threads per inch, we advise the use of the special steel attachment listed below, which makes it possible to use the regular ($\frac{7}{16} \times 14$ thread) Bits.

Chuck for Boring Machines



No. 1

This Chuck has a $\frac{1}{2}$ -inch hole which enables the use of bits with a $\frac{1}{2}$ -inch shank in the boring machines requiring threaded bits. In ordering, state thread desired.

Each.....\$1.00

Steel Attachment for Boring Machine



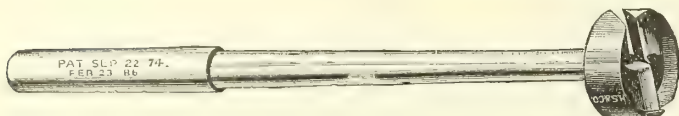
Full Size Cut

For enabling use of $\frac{7}{16} \times 14$ threaded machine bits on old style machines made to use $\frac{5}{8} \times 20$ bits

Each.....\$.75

Special Machine Bits

Forstner



Round shanks $\frac{1}{8}$ and $\frac{3}{8}$ inches in diameter, $\frac{1}{2}$ -inch being regular on sizes up to 2 inches. Machine bits larger than 2 inches have $\frac{3}{4}$ -inch round shanks unless otherwise specified.

For smooth, round or square boring, scroll or twist work. Bores any arc of a circle. Especially adapted for hardwood working. Guided by its circular rim instead of its center, consequently can be guided in any direction regardless of grain or knots.

$\frac{3}{8}$ x2x5 inches. $\frac{3}{8}$ x2-inch shank, 5 inches long overall.

Size, inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Each.....	\$.85	.85	.90	.90	.95

$\frac{1}{2}$ x2x5 inches. $\frac{1}{2}$ x2-inch shank, 5 inches long overall up to $1\frac{7}{16}$ -inches.

$\frac{1}{2}$ x2-inch shank, $6\frac{3}{4}$ inches long overall, $1\frac{1}{2}$ up to 2 inches.

Machine bits larger than 2 inches in diameter are regularly 9 inches overall.

Sizes, inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$
Each.....	\$.85	.85	.90	.90	.95	.95	1.00
Sizes, inches.....	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	1	
Each.....	\$1.00	1.05	1.05	1.10	1.20	1.25	
Sizes, inches.....	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{5}{16}$	$1\frac{3}{8}$	
Each.....	\$1.25	1.30	1.30	1.45	1.45	1.55	
Sizes, inches.....	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	
Each.....	\$1.75	2.00	2.25	2.50	2.75	3.00	
Sizes, inches....	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{5}{8}$	$2\frac{3}{4}$	3
Each.....	\$10.00	12.00	14.00	16.00	18.00	20.00	24.00

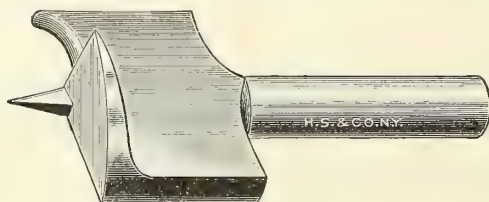
In Sets

Packed in neat, compact boxes, and attention is called to the reduced prices for complete sets, making it advantageous to buy them in this way.

9 Machine Bits, $\frac{3}{8}$ to $\frac{1}{2}$ in 8ths.....	\$9.25
11 Machine Bits, $\frac{3}{8}$ to $\frac{1}{2}$ in 16ths.....	10.50
17 Machine Bits, $\frac{1}{4}$ to $\frac{1}{2}$ in 16ths.....	17.50

Sets of 17 do not contain $1\frac{3}{16}$ and $1\frac{5}{16}$ -inch sizes.

Center



Style No. 22

Suitable for all kinds of shallow boring and will not split light stock. Sizes over 3 inches up to 12 inches at special prices. In ordering, state complete dimensions as to size of shank, etc.

Diameter of Bit Inches	Dozen	Diameter of Bit Inches	Dozen
$\frac{1}{2}$	\$.60	$1\frac{1}{2}$	\$2.30
$\frac{5}{8}$	.85	$1\frac{3}{4}$	2.65
$\frac{3}{4}$	1.10	2	3.00
$\frac{7}{8}$	1.35	$2\frac{1}{4}$	3.35
1	1.60	$2\frac{1}{2}$	3.70
$1\frac{1}{4}$	1.95	$2\frac{3}{4}$	4.05
		3	4.40

Screw Shank Dovetail Cutters

For Dodd Machines

Also made with one-half inch Straight Shank

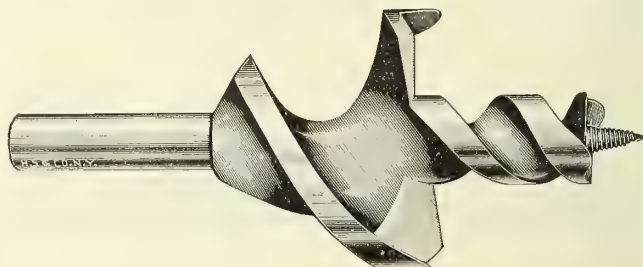


Style No. 30

Dozen.....	\$6.00
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Caster

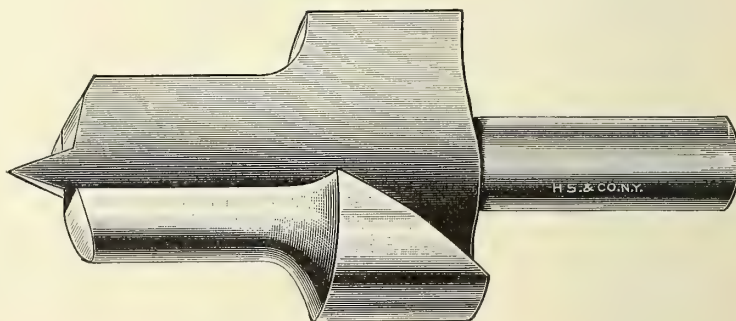
Genuine Russell Jennings Crucible Tool Steel,
with Extension Lip



For H. S. & Co. No. 61 $\frac{1}{2}$ casters; turned round shank, $2x\frac{1}{2}$ -inch. Length of twist, 4 inches; small twist, $\frac{1}{16}$ -inch; large, $\frac{3}{16}$ -inch.

Each.....	\$10.00
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Hand Hole Router



Style No. 24

Suitable for boring and finishing at one operation the hand holes in beer and pop-bottle boxes.

Large, diameter $1\frac{3}{4}$ inches; small, diameter $\frac{7}{8}$, 1 or $1\frac{1}{8}$ inches

Each.....	\$3.75
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Other sizes supplied to order

Brad Point Boring



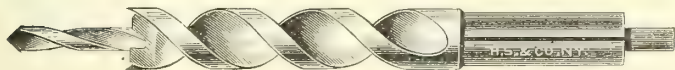
Style No. 50

Where it is desired to bore a smooth hole through several pieces of stock at once, this bit will be found to do the work properly. Point is removable and can be easily replaced when broken. Standard length 5 inches over all. Shanks, $4x\frac{1}{2}$ -inch.

Size Inches	Each	Size Inches	Each	Size Inches	Each
$\frac{5}{8}$	\$1.45	$1\frac{1}{4}$	\$2.45	$2\frac{3}{8}$	\$4.50
$\frac{3}{4}$	1.65	$1\frac{1}{2}$	2.65	$2\frac{1}{2}$	4.80
$\frac{7}{8}$	1.85	$1\frac{3}{4}$	3.00	$2\frac{5}{8}$	5.10
1	2.05	2	3.60	$2\frac{3}{4}$	5.40
$1\frac{1}{8}$	2.25	$2\frac{1}{4}$	4.20	3	6.00

Special Machine Bits

Countersinks



Style No. 5

Made of tool steel, tempered by special process.
Center drills may be adjusted as desired. When set screw, in boring machine spindle, is tightened on split shank, center drill is held firmly in place.

Stock lengths: Countersink, including shank 4½ inches. Shanks ½ inch diameter by 1½ inches long. Center drills 6 inches long. Also with Morse No. 1 taper shank.

Diameter ⅜ inch, with ⅝ or ¾ Drills	Each
Diameter ⅞ inch, with ⅝ or ¾ Drills	\$1.50
Diameter 1½ inch, with ⅞, ¾ or ½ Drills	1.50
Diameter 1⅞ inch, with ⅞, ¾ or ½ Drills	1.50
Diameter 2⅞ inch, with ⅞, ¾ or ½ Drills	1.75
Diameter 3⅞ inch, with ⅞, ¾ or ½ Drills	1.85
Diameter 4⅞ inch, with ⅞, ¾ or ½ Drills	2.10
Diameter 5⅞ inch, with ⅞, ¾ or ½ Drills	2.25
Diameter 6⅞ inch, with ⅞, ¾ or ½ Drills	2.40
Diameter 1 inch, with ⅞, ¾ or ½ Drills	2.65
Diameter 1⅞ inch, with ⅞, ¾ or ½ Drills	3.00
Diameter 1¼ inch, with ⅞, ¾ or ½ Drills	3.50
Diameter 1⅜ inch, with ⅞, ¾, ½ or ⅓ Drills	4.00
Diameter 1½ inch, with ⅞, ¾, ½ or ⅓ Drills	4.75

Router



Style No. 44

Will stand up to the most severe strain. Shanks 1½x½-inch
Cutting part 1½ inches long. Length over all, 3 inches.

Diameter of Bit, ¼ inch	Dozen
Diameter of Bit, ⅝ inch	\$5.40
Diameter of Bit, ¾ inch	5.40
Diameter of Bit, ⅞ inch	6.00
Diameter of Bit, 1 inch	7.20
Diameter of Bit, 1½ inch	8.40
Diameter of Bit, 2 inch	10.80
Diameter of Bit, 2½ inch	12.00
Diameter of Bit, 3 inch	13.80
Diameter of Bit, 3½ inch	15.60
Diameter of Bit, 4 inch	18.00

Vibrating Mortise

Used for Chair Mortising



Style No. 6

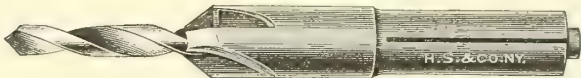
Made from best tool steel, with special tempering which insures a tool suitable for the heaviest work. Shanks 2x½ inches.

Length of cut, 2½ inches.

Special sizes at special prices.

Diameter, ⅝ inch	Dozen
Diameter, ¾ inch	\$9.00
Diameter, ⅞ inch	9.00
Diameter, 1 inch	9.00
Diameter, 1½ inch	9.00

Taper



Style No. 8

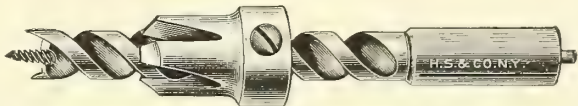
Made to bore for the screw and to countersink for screw head in one operation.

Stock lengths: Countersink 3 inches long including shank. Center drills 4½ inches total length. Shank ½ inch diameter by 1½ inches long. Also in stock with Morse No. 1 Taper Shank. Special lengths or sizes at special prices.

Diameter ½ inch, with ⅞, ¾, ½ or ⅓ Drills	Each
Diameter ⅞ inch, with ⅞, ¾, ½ or ⅓ Drills	\$1.50
Diameter 1 inch, with ⅞, ¾, ½ or ⅓ Drills	1.50
Diameter 1½ inch, with ⅞, ¾, ½ or ⅓ Drills	1.65

Taper Shell

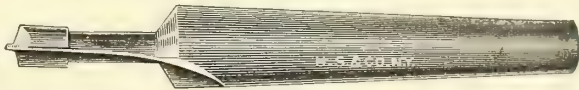
For Boring Bits



The above cut represents boring bit with a taper shell countersink. This shell countersink will be found a very useful tool for boring bits, to countersink the edge of holes. It can be adjusted for any depth of hole.

Size	Each
⅝ inch	\$.75
¾ inch	.75
⅞ inch	.75
1 inch	.75

Escutcheon or Key Hole

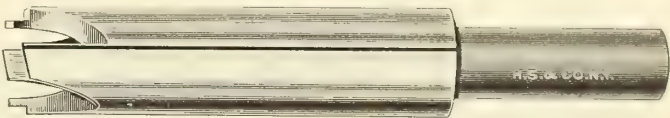


Style No. 34

Made with straight or taper shanks. Send sample or drawing, with complete dimensions, with order.

Each \$.75

Plug Cutter



Style No. 9

Used to cut plugs to put over screw heads, etc. Lumber should be cut full of plugs, then ripped off on the band saw. Special sizes or styles at special prices.

Sizes	Each
⅞ inch	\$1.25
1 inch	1.40
1½ inch	1.50
2 inch	1.75
2½ inch	2.00



Bits with Precision Shanks

Genuine Russell Jennings Crucible Steel

Extension Lip Auger Bits

Size in 16ths.....	3	4	5	6	7
Dozen.....	\$4.50	4.00	4.00	4.00	4.50
Size in 16ths.....	8	9	10	11	12
Dozen.....	\$5.00	5.50	6.00	7.00	7.00
Size in 16ths.....	13	14	15	16	17
Dozen.....	\$8.00	8.00	9.00	9.00	10.50
Size in 16ths.....	18	19	20	21	22
Dozen.....	\$10.50	12.00	12.00	13.50	13.50
Size in 16ths.....	23	24	25	26	27
Dozen.....	\$15.00	15.00	17.00	17.00	19.00
Size in 16ths.....	28	29	30	31	32
Dozen.....	\$19.00	21.00	21.00	23.00	23.00

Length over all varies from 8 inches to 10 inches, depending on size.

Sizes in 32nds from $\frac{7}{32}$ to $\frac{31}{32}$ furnished at the price of next larger size. Standard extension lip auger bits are not carried in stock by 32nds above $\frac{31}{32}$, nor in 16ths above $\frac{31}{16}$, but can be made to order, at special prices, which depend on the number of bits ordered.

Furnished in regular lengths from $8\frac{1}{2}$ to 10 inches long, depending on size. Also furnished from $\frac{3}{16}$ to $\frac{1}{8}$; in long dowel from $4\frac{1}{2}$ to 6 inches long. In short dowel about 3 inches long.

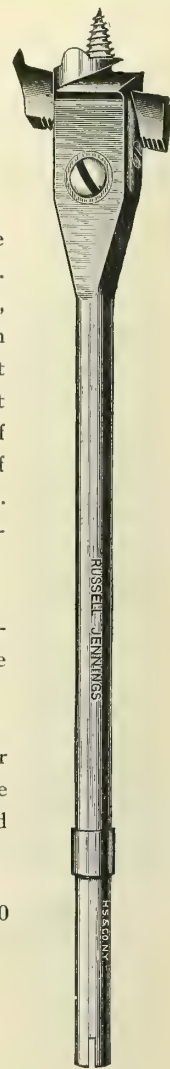
Expansive

The strongest expansive bit on the market. The head is solid and designed for maximum strength. A passageway formed in the solid head, takes the cutter, which is adjusted by a worm in mesh with the threads on the cutter, which form a rack. Precise adjustment to size is remarkably easy, for the worm gives perfect control over very slight movement. The pitch of the adjusting screw is such that one complete turn of this screw changes the diameter of the hole $\frac{1}{8}$ inch. One-half turn of the adjusting screw changes the diameter $\frac{1}{16}$ inch, and so on.

"Creeping" of the expansive bit cutter is absolutely prevented by a clamping screw, which holds the worm and cutter firmly in position.

It is of special value to steam and hot water fitters, for it saves time in placing and removing the bit, also in adjusting to size, as explained above, and gives a tight grip with little effort.

No. 70 Dozen..... \$20.00



Styles of Thread

Regular lengths supplied in any of the three threads illustrated below. Long and short dowel and expansive bits supplied in regular thread only



Double Thread. Unsurpassed for accurate work in seasoned wood which is not extremely gummy or hard. Preferred by cabinet makers.

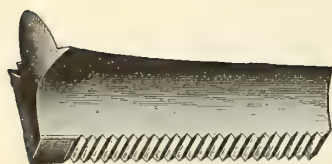


Quick Boring Thread. Especially adapted for hard or gummy woods, and grain boring, mortising doors, etc.

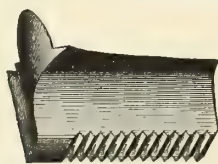


Double Quick Thread. For rapid work in soft woods only. Not practical for hard woods.

Parts for Expansive Bits



No. 72 Large Cutter



No. 73 Small Cutter



No. 74 Adjusting Screw



No. 75 Clamp Screw



No. 76 Washer

No. 72 Large Cutter.....	Dozen	\$5.40
No. 73 Small Cutter.....		4.80
No. 74 Adjusting Screw.....		.96

No. 75 Clamping Screw.....	Dozen	\$.72
No. 76 Beveled Washer.....		1.20

See page 400 for Braces for above

Tools With Precision Shanks

Genuine Russell Jennings

German Pattern Gimlet Bits



Made from tool steel. Hardened and tempered.

Sizes $\frac{2}{32}$ to $\frac{10}{32}$.

Dozen..... \$3.00

Forstner Bits in Sets



Set contains thirteen Bits, one each $\frac{1}{16}$ to $\frac{1}{8}$ by 16ths.

Set..... \$16.50

Countersink for Wood

The Russell Jennings Countersink for Wood is made from the same material that has given the Russell Jennings Bit its reputation, and carries the same guarantee.

No. 90 Dozen..... \$5.00

Countersink for Metal

The Russell Jennings Countersink for Metal is made from twist drill stock and tempered for metal cutting purposes, and is also backed by the Russell Jennings guarantee.

No. 94 Dozen..... \$3.50

Screwdriver Bits

Russell Jennings Screw driver Bits are made from a special tool steel carefully tempered and designed for maximum strength. These screwdriver bits are of such a superior quality that Russell Jennings stamp their name on each one and back them with the Russell Jennings guarantee.

Screwdriver Bits with Precision Shank are made for use in the Precision or Universal Precision Brace Chuck. As in the case of boring bits, these screwdrivers are held fast with no possibility of turning, and without tendency to work loose. Quickly inserted and removed.

No. 82 Width, $\frac{5}{16}$ inch, dozen..... \$3.00
No. 86 Width, $\frac{7}{16}$ inch, dozen..... 3.50

See page 400 for braces for above

Auger Bit Extension No. 60

Inches	Dozen
16	\$12.75
18	13.50
24	15.00
30	16.50
36	18.00



For electricians and steam fitters we recommend the use of these extensions in combination with the Precision Bit Brace and extension lip bits having Precision Shank. Perfect alignment is secured from the brace head to the screw point.

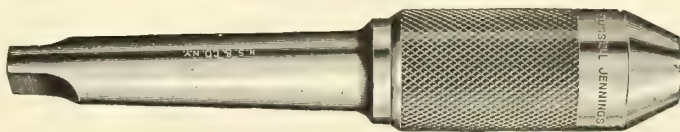
The extension has the turned shank at one end and a small Precision Chuck at the other, which holds the bit as securely as does the Precision Brace Chuck.

The reverse taper on the shank makes it impossible for the bit to pull out of the extension.



Special Precision Chuck

With No. 2 Morse Taper Shank



No. 502

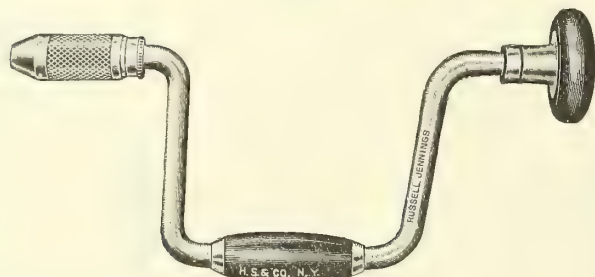
This Chuck takes the regular Russell Jennings Precision Shank tools with $\frac{3}{8}$ -inch shanks. It can be used in drill presses or in tail stock of speed lathes on light work. In this way Precision Shank Bits may be used both for hand work and light machine work.

Each..... \$2.00

Tools With Precision Shanks

And Braces for Same
Genuine Russell Jennings

Precision Bit Braces Sleeve

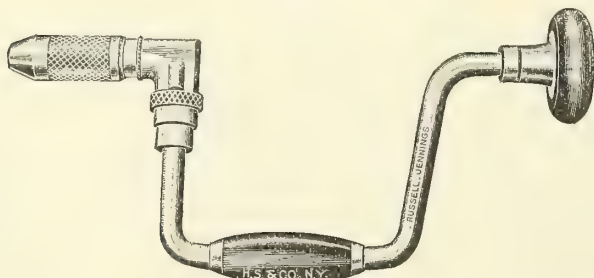


No. 30

The vulcanized Fibre Grip and Head are practically non-breakable. Ball-bearing Head. Takes bits with Precision Shanks only.

With 8-inch sweep, dozen.....	\$24.00
With 10-inch sweep, dozen.....	25.00

Ratchet

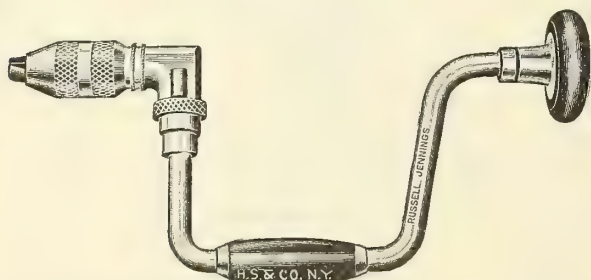


No. 50

The vulcanized Fibre Grip and Head are practically non-breakable. Ball-bearing Head. Enclosed Ratchet. Takes bits with Precision Shanks only.

With 8-inch sweep, dozen.....	\$33.00
With 10-inch sweep, dozen.....	34.00
With 12-inch sweep, dozen.....	35.00
With 14-inch sweep, dozen.....	36.00

Universal Ratchet



No. 40

This Brace is fitted with ball-bearing head, vulcanized fibre grip and head, enclosed ratchet, etc. Vulcanized fibre, which is practically non-breakable, has demonstrated its worth in other lines, but in these Russell Jennings Braces is applied for the first time to a bit brace.

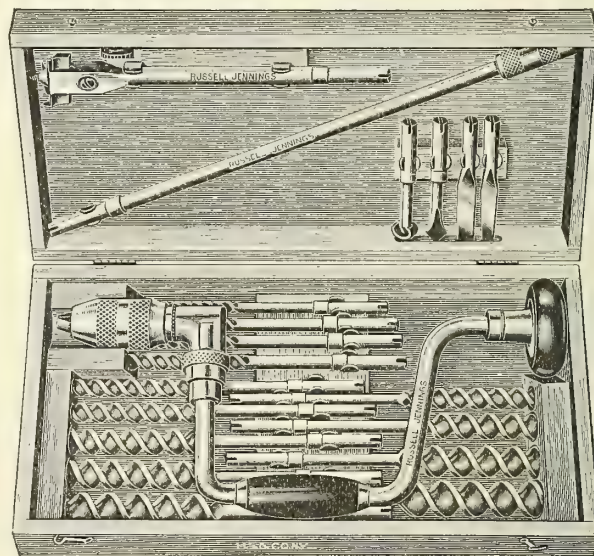
It will take either the Russell Jennings Precision Shank or the ordinary bit shank. With this chuck, a carpenter may purchase from time to time bits having the Precision Shank and yet use his ordinary shank tools as long as they last.

In the construction of this chuck no castings are used. All parts are forged and accurately machined.

With 8-inch sweep, dozen.....	\$44.00
With 10-inch sweep, dozen.....	45.00
With 12-inch sweep, dozen.....	46.00
With 14-inch sweep, dozen.....	47.00

Brace and Bit Sets

Precision Shanks on all Tools



Set No. 1

Each set contains one Russell Jennings Precision Brace and a variety of tools with Precision Shank. The box is of bass wood, finely finished, strong and durable, provided with clips and other devices for holding the tools securely in place. Sets are made up as follows:

Set No. 1 With Universal Ratchet Brace No. 40.....	\$15.00
Set No. 11 With Ratchet Brace No. 50.....	14.00

Thirteen Extension Lip Bits, one each, $\frac{1}{16}$ inch to $\frac{1}{8}$ inch, inclusive.

One Expansive Bit with large and small cutters (bores from $\frac{7}{8}$ inch to $2\frac{1}{2}$ inches).

One Auger Bit Extension, 16 inches long.

Two Screw Driver Bits, $\frac{5}{16}$ and $\frac{7}{16}$ inch.

One Countersink for Wood.

One Countersink for Metal.

Set No. 2 Same as No. 1, except only ten bits are included, sizes $\frac{1}{16}$ to $\frac{1}{8}$ inch.....	\$13.50
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Set No. 13 Same as No. 11, except only ten Bits are included, sizes $\frac{1}{16}$ to $\frac{1}{8}$ inch.....	12.00
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Set No. 3 One Universal Ratchet Brace, No. 40, thirteen Extension Lip Bits, one each, $\frac{1}{16}$ to $\frac{1}{8}$ inch, inclusive.....	11.75
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Set No. 15 One Precision Brace No. 50, thirteen Extension Lip Bits, 1 each, $\frac{1}{16}$ to $\frac{1}{8}$ inch, inclusive.....	10.50
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Set No. 4 One Universal Ratchet Brace No. 40, ten Extension Lip Bits, one each, $\frac{1}{16}$ to $\frac{1}{8}$ inch, inclusive, one Expansive Bit with large and small cutters, bores from $\frac{7}{8}$ to $2\frac{1}{2}$ inches.....	11.50
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Set No. 17 One Precision Brace No. 50; 10 Extension Lip Bits, 1 each, $\frac{1}{16}$ to $\frac{1}{8}$ inch, inclusive; 1 Expansive Bit with large and small cutters, bores from $\frac{7}{8}$ to $2\frac{1}{2}$ inches.....	10.25
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Electricians Sets

Electricians will find that the Fig. 50 Pattern Brace with one Expansive Bit, two bit extensions and auger bits (with either quick boring or double quick thread) in the sizes used on their work, makes an ideal combination.

Prices vary with the number of bits furnished.

Auger Bits for Brace

Genuine Russell Jennings

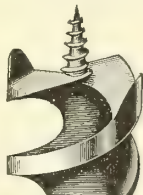
Crucible Tool Steel

The manufacture of the best Auger Bits requires steel made by the crucible process, and in order to secure uniform temper, the analysis must be kept uniform. Russell Jennings Bits are of genuine crucible tool steel. Made to order, never bought in the open market. It is high in carbon, and while a softer quality of steel would be more easily worked, the Bits would not retain their cutting edges. The forging must be done very carefully in order that the bits may be of uniform density. The steel must not be burned or cooled suddenly. In forming the head every precaution is taken to insure strength at this point. The process of tempering is also very important and the baths for hardening and for drawing temper are especially prepared for this work, the temperature being determined accurately by pyrometer. The Bits are so ground that they will bore the exact size and not bind in the wood. Lips, spurs and throats are filed to such form that the cutting edges will not wear quickly and there will be clearance for chips. The easy boring qualities of bits depend largely upon the screw threads, which have differences similar to saws. A cross-cut saw can be used with the grain, but it cuts slowly. An Auger Bit with a double thread can be used for practically all work, but it bores more slowly than the Bit with a coarse single thread screw point. The quick-boring Bit is simply a standard Auger Bit with a coarse single thread screw point. The double quick thread is still coarser and is for rapid work in soft wood. The square point is for power with a forced feed.

Unless otherwise ordered, the standard thread will be supplied. For Russell Jennings Machine Bits, see page 395.



Double Thread. Unsurpassed for accurate work in seasoned wood, not extremely gummy or hard. Preferred by cabinetmakers.



Quick Boring. Especially adapted for hard or gummy woods, end grain boring, mortising doors, etc.



Double Quick Thread. For rapid work in soft woods only. Not practical for hard woods.



Square Point for Power Boring with Forced Feed.

Extension Lip



Length over all varies from 8½ inches to 10 inches, depending on size. Size in 32ds from 7⁄32 to 3⁄8 furnished at the price of next larger size. Standard extension lip auger bits are not carried in stock by 32ds above 1⁄8, nor in 16ths above 3⁄8, but can be made to order, at special prices, which depend on the number of bits ordered. Carried in stock, 3⁄16 to 1⁄8 inclusive by 32ds; 1⁄8 to 3⁄8 inclusive by 16ths.

Size in 16ths.....	3	4	5	6	7	8	9	10	11	12
Dozen.....	\$4.50	4.00	4.00	4.00	4.50	5.00	5.50	6.00	7.00	7.00
Size in 16ths.....	13	14	15	16	17	18	19	20	21	22
Dozen.....	\$8.00	8.00	9.00	9.00	10.50	10.50	12.00	12.00	13.50	13.50
Size in 16ths.....	23	24	25	26	27	28	29	30	31	32
Dozen.....	\$15.00	15.00	17.00	17.00	19.00	19.00	21.00	21.00	23.00	23.00

Extension Lip Dowel

This form of bit was originally designed for boring holes for dowel pins, but can be used wherever a bit shorter than standard is desired.

Long

Length over all varies from 4½ to 6 inches, as follows:

1⁄8 to 1⁄8, inclusive, 4½ inches. 3⁄8 to 1⁄2, inclusive, 5 inches. 1⁄2 to 1⁄2, inclusive, 5½ inches. 3⁄4 to 3⁄4, inclusive, 6 inches.

Carried in stock, 1⁄8 to 1⁄8 by 32ds. 1⁄2 to 3⁄4 by 16ths.

Short

Length over all, 3 inches.

Carried in stock, 1⁄8 to 1⁄8 by 32ds. 1⁄8 to 1⁄2 by 16ths. Not made above 1⁄2. Similar to the long dowel bit except in overall length. The twist is carried up to the shank.

Sizes in 32ds when carried in stock will be furnished at the price of the next larger size. Sizes not carried in stock can be made to order at special prices, which depend upon the number of bits ordered.

When ordering, be sure to specify whether the long or short forms are desired. Long are always furnished unless short are specified.

For Sets of Bits, see page 405.

Auger Bits for Brace

Genuine Russell Jennings, Oil-Finish, Open Hearth Steel

These Bits have the workmanship and construction of the better grade of Russell Jennings, but are made of open hearth steel instead of crucible steel and are not so highly finished. Made in quick boring or double quick boring, single thread, the latter for electricians use. For illustrations and descriptions of threads, see preceding page.

Extension Lip



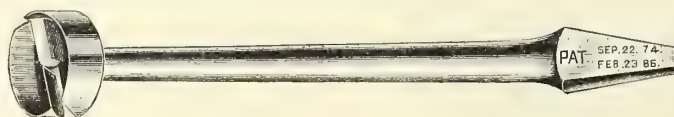
No. 121

Length over all varies from 8½ to 10 inches, depending on size

Carried in stock in 16ths, from ¼ to 1½.

Size in 16ths.....	4	5	6	7	8	9	10	11	12	13	14	15	16
Dozen.....	\$4.00	4.00	4.00	4.50	5.00	5.50	6.00	7.00	7.00	8.00	8.00	9.00	9.00

Forstner



Approximate lengths over all:

¼ to 7/16 inch, 6¼ inches	1 to 1 3/16 inches, 7¾ inches
½ to 1 1/16 inch, 6¾ inches	1¼ to 1 5/8 inches, 8¼ inches
¾ to 1 3/8 inch, 7¼ inches	1¾ to 2 inches, 8¾ inches

Larger than 2 inches in diameter are regularly about 9 inches over all

For smooth, round or square boring, scroll and twist work. Bores any arc of a circle. Especially adapted for hardwood working.

Is guided by its circular rim instead of its center, consequently it will bore any arc of a circle and can be guided in any direction regardless of grain or knots, leaving a true, polished surface. It is more expeditious than chisel, gouge, scroll saw or lathe tool combined, for core boxes, fine and delicate patterns, veneers, screen work, scalloping, fancy scroll twist columns, newels, ribbon moulding and mortising, etc.

Sizes, inch.....	¼	5/16	¾	7/16	½	9/16	5/8	11/16	¾	13/16	7/8	15/16	1
Each.....	\$.65	.65	.70	.70	.75	.75	.80	.80	.85	.85	.90	1.00	1.05
Sizes, inches.....	1 1/16	1 1/8	1 3/16	1 ¼	1 5/16	1 ¾	1 7/8	1 15/16	1 ½	1 5/8	1 ¾	1 7/8	2
Each.....	\$1.05	1.10	1.10	1.25	1.25	1.35	1.75	2.00	2.25	2.50	2.75	3.00	3.00
Sizes, inches.....	2 1/8	2 1/4	2 3/8	2 ½	2 5/8	2 ¾	2 7/8	3					
Each.....	\$10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00					

Carpenters Nut Augers

Genuine Russell Jennings Crucible Steel

Extension Lip



Length of twist, 8 inches; length of round, 7 inches.

Made regularly in standard thread only. Other threads made to order.

Length of square, 5 inches; length over all, 20 inches.

For illustrations and descriptions of threads, see preceding page

Size in 16ths.....	8	10	12	14	16	18	20	22	24	26	28	30	32
Dozen.....	\$8.25	9.50	10.75	12.00	13.25	15.00	17.00	19.00	22.00	24.00	26.00	28.00	30.00

Sizes not listed can be made to order at special prices, depending upon the number of a size ordered.

The shanks are fitted with a nut. We do not furnish wooden handles.

Snell-Jennings Pattern

Cast steel, well finished. Length over all, from 15 to 20 inches depending upon size

Same list prices as above

For sets of Bits see page 405

Car Bits

Genuine Russell Jennings Crucible Steel

Extension Lip



Length of twist, 12 inches; length over all, 20 inches. $\frac{1}{8}$ to $\frac{3}{8}$ inclusive by 16ths. Made regularly in standard thread only, other threads made to order. For illustrations and descriptions of threads see page 401

Size in 16ths.....	4	5	6	7	8	9	10	11	12	13
Per dozen.....	\$9.00	9.00	9.00	10.00	11.25	12.50	13.75	15.00	16.25	17.50
Size in 16ths.....	14	15	16	17	18	19	20	21	22	23
Per dozen.....	\$19.00	20.50	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00
Size in 16ths.....				24		26		28	30	32
Per dozen.....				\$38.00		42.00		46.00	50.00	54.00

All orders for car bits which do not specify length will be filled with bits of the standard length, given above. Sizes not listed can be made to order at special prices, depending upon the number of a size ordered.

In Sets

Car bits are put up in sets 32½ quarters—13 bits (one each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16). \$15.50 per set.

Genuine Russell Jennings, Oil-Finish, Crucible Steel

No. 218

These Bits can be supplied in sizes listed above, length overall 18 inches, in quick boring single thread only. See page 401 for illustrations and descriptions of threads. List prices are the same as above.

Irwin Crucible Steel
Extension Lip Double Cutter, No. 65T



Twist, about 12 inches. Shank, about 6 inches. Total length, 18 inches
Same list as above

Snell Star Pattern
Extension Lip



12-inch twist. About 18 inches overall. Regular Car Bits are designed for fine work and deep boring; warranted not to choke boring entire length of twist. Concave twist is especially valuable in these tools on account of their extra length. Will bore perfectly smooth, and leave the wood without splintering. Made from $\frac{1}{8}$ to $\frac{3}{8}$ only. List same as above

Ship Augers

Snell



With Screw



Without Screw

$\frac{1}{16}$, 10-inch twist, entire length 14 inches. $\frac{6}{16}$ and $\frac{8}{16}$, 12-inch twist, entire length 16 inches. $\frac{12}{16}$, 14-inch twist, entire length 19 inches. $\frac{14}{16}$, 15-inch twist entire length 20 inches. Adapted to ship, dock, bridge and car building.

Warranted not to clog or bind in boring the full length of the twist. Screw Augers will not drift.

Sizes in 16ths.....	8 and under	9	10	11	12	13	14	15	16	17	18	19	20	21
Dozen.....	\$7.50	9.00	9.00	10.50	10.50	12.00	12.00	13.50	13.50	15.00	15.00	16.50	16.50	18.00
Sizes in 16ths.....	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Dozen.....	\$18.00	21.00	21.00	24.00	24.00	27.50	27.50	31.50	31.50	38.00	38.00	57.00	57.00	72.00
Sizes in 16ths.....		36	37	38	39	40	41	42	43	44	45	46	47	48
Dozen.....		\$72.00	86.00	86.00	101.00	101.00	115.00	115.00	130.00	130.00	144.00	144.00	158.00	158.00

Expansive Bits for Brace

Genuine Russell Jennings Crucible Tool Steel



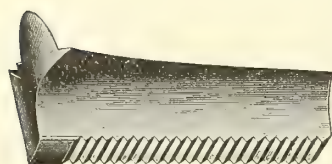
The strongest expansive bit on the market. The head is solid and designed for maximum strength. A passageway formed in the solid head takes the cutter which is adjusted by a worm in mesh with threads on the cutter, which form a rack. Precise adjustment to size is remarkably easy, for the worm gives perfect control over very slight movement. The pitch of the adjusting screw is such that one com-

plete turn of this screw changes the diameter of the hole $\frac{1}{8}$ inch. One-half turn of the adjusting screw changes the diameter $\frac{1}{16}$ inch, and so on.

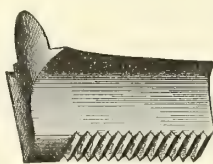
Creeping of the expansive bit cutter is absolutely prevented by a clamping screw, which holds the worm and cutter firmly in position.

No. 71 With ordinary bit shank Dozen \$20.00

Parts



Large Cutter



Small Cutter



Adjusting Screw



Clamp Screw



Washer

No. 72 Large Cutter.....	Dozen \$5.40
No. 73 Small Cutter.....	4.80
No. 74 Adjusting Screw.....	.96

No. 75 Clamping Screw.....	Dozen \$.72
No. 76 Beveled Washer.....	1.20

Wright



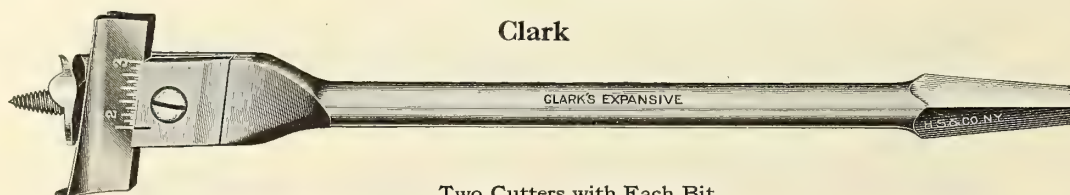
Made of a special cast steel. Finish and workmanship are of the best. The cutter absolutely cannot creep or slip. Each bit and cutter is warranted.

No. 10 or Large Bit has Nos. 3 and 4 cutters, bores from $\frac{7}{8}$ to 3 inches.....	Dozen \$26.00	No. 20 or Small Bit has Nos. 1 and 2 cutters, bores from $\frac{5}{8}$ to $1\frac{3}{4}$ inches.....	Dozen 22.00
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Parts

No. 1 Cutter, bores $\frac{5}{8}$ to $1\frac{1}{8}$ inches.....	Dozen 3.00	No. 4 Cutter, bores $1\frac{3}{4}$ to 3 inches.....	Dozen \$6.00
No. 2 Cutter, bores $1\frac{1}{8}$ to $1\frac{3}{4}$ inches.....	3.75	No. 5 Cutter, bores 3 to 4 inches.....	9.00
No. 3 Cutter, bores $\frac{7}{8}$ to $1\frac{3}{4}$ inches.....	5.25	Cap with adjusting screw.....	6.00

Clark



Two Cutters with Each Bit

Small. Cutting from $\frac{1}{2}$ to $\frac{7}{8}$ inches, and $\frac{7}{8}$ to $1\frac{1}{2}$ inches....	Dozen \$18.00	Large. Cutting from $\frac{7}{8}$ to $1\frac{3}{4}$ inches and $1\frac{3}{4}$ to 3 inches....	Dozen \$26.00
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Parts

Cutters		Screws	
	Dozen		Dozen
No. 1 $\frac{1}{2}$ to $\frac{7}{8}$ inch.....	\$3.00	Small.....	\$.60
No. 2 $\frac{7}{8}$ to $1\frac{1}{2}$ inches.....	3.75	Large.....	.70
Large		Caps	
No. 3 $\frac{7}{8}$ to $1\frac{3}{4}$ inches.....	5.25	Small.....	1.44
No. 4 $1\frac{3}{4}$ to 3 inches.....	6.00	Large.....	1.80
No. 5 3 to 4 inches.....	9.00		
No. 6 4 to 5 inches.....	12.00		

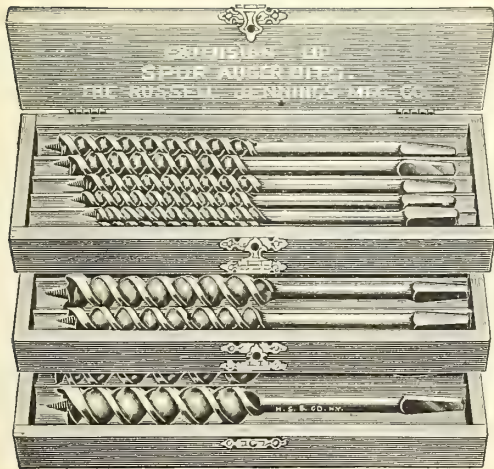
Auger Bits for Brace

In Sets

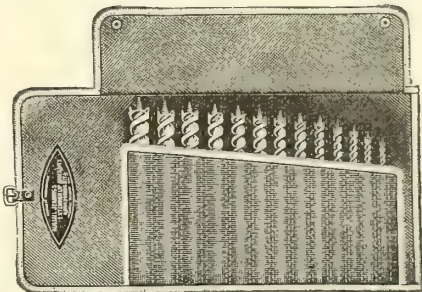
Genuine Russell Jennings Crucible Tool Steel

Extension Lip

See page 401 for illustrations and descriptions of threads



In Hardwood Tool Box



In Canvas Roll

Furnished regularly in hardwood box or in canvas roll at same price, if desired. Supplied regularly with standard screw thread, but the quick boring thread will be furnished at the same price, if so specified in order.

Standard set of 32½ Quarters: Consists of 13 bits (1 each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 sixteenths).
Each..... \$7.00

18 Quarters. Consists of 9 bits (1 each 4, 5, 6, 7, 8, 9, 10, 11 and 12 sixteenths) and gives a full range of sizes from ¼ to ¾ inch by 16ths.
Each..... \$4.35

20½ Quarters: Consists of 9 bits (1 each 4, 5, 6, 7, 8, 10, 12, 14 and 16 sixteenths) and gives a range of sizes from ¼ to 1 inch by 8ths, with ⅝ and ⅞ inch added.
Each..... \$4.75

17½ Quarters. Consists of 7 bits (1 each 4, 6, 8, 10, 12, 14 and 16 sixteenths) and gives a range of sizes from ¼ to 1 inch by 8ths.
Each..... \$4.00

Genuine Russell Jennings, Oil Finish, Open Hearth Tool Steel

See page 401 for illustrations and description of threads

Standard set of 32½ Quarters: Supplied regularly in Bartlet box and quick boring thread, but will be furnished, at same price, in canvas roll, if so specified in order. Consists of 13 bits (1 each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 sixteenths).
Each..... \$7.00

Bartlet Box for Auger Bits

No. 13 11x6¾x2⅛ inches, holds 13 bits.
Each..... .90

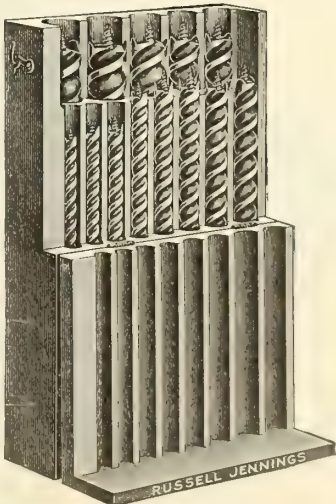
Canvas Rolls for Auger Bits

Will hold 13 bits.
Each..... .90

Forstner

These sets are packed in neat, compact boxes, and attention is called to the reduced prices for complete sets, making it advantageous to buy them in this way.

9 Brace Bits, ⅜ to 1⅛ in 8ths, in neat case..... \$7.50
11 Brace Bits, ⅜ to ⅞ in 16ths, in neat case..... 8.50
17 Brace Bits, ¼ to 1⅛ in 16ths, in neat case..... 14.50
Sets of 17 do not contain 1⅜ and 1⅝ inch sizes.



Bartlet Box

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Twist Bits For Wood

Specially tempered and pointed for wood, but not injured by contact with nails, plaster, etc.
The numbers indicate the sizes in 32nds of an inch

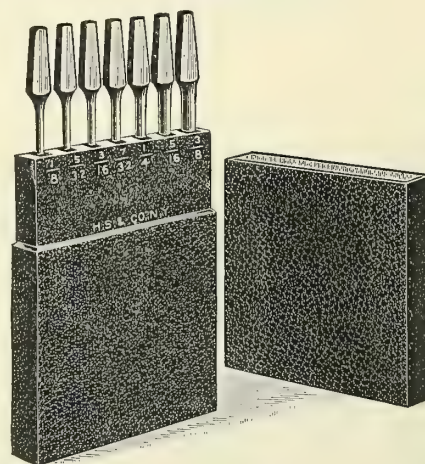


No. 109A Carbon Steel

Size of Shank $\frac{1}{16}$ inch x $\frac{3}{8}$ inch x $1\frac{1}{4}$ inches long

Number	Length Over all Inches	Length Twist Inches	Dozen	Each
2	3 $\frac{1}{2}$	1 $\frac{1}{4}$	\$1.60	\$.15
3	4	1 $\frac{1}{2}$	1.60	.15
4	4 $\frac{1}{2}$	2 $\frac{1}{4}$	1.60	.15
5	5	2 $\frac{1}{2}$	1.75	.18
6	5 $\frac{1}{2}$	2 $\frac{3}{4}$	2.00	.20
7	6	3	2.50	.22
8	6 $\frac{1}{2}$	3 $\frac{1}{4}$	3.00	.25
9	7	3 $\frac{1}{2}$	3.50	.30
10	7 $\frac{1}{2}$	3 $\frac{3}{4}$	3.50	.30
11	7 $\frac{3}{4}$	3 $\frac{7}{8}$	4.00	.35
12	8	4	4.00	.35
13	8 $\frac{1}{4}$	4 $\frac{1}{8}$	4.50	.40
14	8 $\frac{1}{2}$	4 $\frac{1}{4}$	4.50	.40
15	8 $\frac{3}{4}$	4 $\frac{3}{8}$	5.00	.45
16	9	4 $\frac{1}{2}$	5.00	.45
17	9 $\frac{1}{4}$	4 $\frac{5}{8}$	5.50	.50
18	9 $\frac{1}{2}$	4 $\frac{3}{4}$	5.50	.50
19	9 $\frac{3}{4}$	4 $\frac{7}{8}$	6.00	.55
20	10	5	6.00	.55
22	10 $\frac{1}{2}$	5 $\frac{1}{4}$	6.50	.60
24	11	5 $\frac{1}{2}$	7.00	.65

In Sets



No. 13B

Flat leatherette case, containing one each, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ inch drills

Each \$1.90

Extra Length

For Bell Hangers and Electricians Use

No. 109B Carbon Steel

Size of Shank $\frac{1}{16}$ inch x $\frac{3}{8}$ inch x $1\frac{1}{4}$ inches long

Number	12-Inch		18-Inch		24-Inch		30-Inch		36-Inch	
	Dozen	Each	Dozen	Each	Dozen	Each	Dozen	Each	Dozen	Each
6	\$5.00	\$.50	\$7.00	\$.70	\$9.00	\$.90	\$11.00	\$1.10	\$13.00	\$1.30
8	5.00	.50	7.00	.70	9.00	.90	11.00	1.10	13.00	1.30
10	5.50	.55	7.50	.75	9.50	.95	12.00	1.20	13.00	1.30
12	6.00	.60	8.00	.80	10.00	1.00	12.00	1.20	13.00	1.30
14	7.00	.70	9.00	.90	11.00	1.10	13.00	1.30	14.00	1.40
16	8.00	.80	10.00	1.00	12.00	1.20	14.00	1.40	15.00	1.50
18	9.00	.90	11.00	1.10	13.00	1.30	15.00	1.50	16.00	1.60
20	10.00	1.00	12.00	1.20	14.00	1.40	15.00	1.50	16.00	1.60
22	11.00	1.10	13.00	1.30	15.00	1.50	16.00	1.60	17.00	1.70
24	12.00	1.20	14.00	1.40	16.00	1.60	17.00	1.70	18.00	1.80
26	13.00	1.30	15.00	1.50	17.00	1.70	18.00	1.80	18.00	1.80
28	14.00	1.40	16.00	1.60	18.00	1.80	19.00	1.90	19.00	1.90
30	15.00	1.50	17.00	1.70	19.00	1.90	20.00	2.00	20.00	2.00
32	16.00	1.60	18.00	1.80	20.00	2.00	20.00	2.00	20.00	2.00
34	17.00	1.70	19.00	1.90	20.00	2.00	20.00	2.00	20.00	2.00
36	18.00	1.80	20.00	2.00	21.00	2.10	21.00	2.10	21.00	2.10

Bright Spoon Bits



Inch.	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$
Dozen	\$2.35	2.35	2.35	2.35	2.35	2.75	2.75
Inch.	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
Dozen	\$3.00	3.00	3.15	3.15	3.95	5.50	7.50
Inch.	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$				
Dozen	\$7.50	8.00	9.25				

Center Bits



Bright Cast Steel

Inch.	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$
Dozen	\$2.10	2.10	2.10	2.25	2.25	\$2.35	2.35	2.55
Inches	$\frac{7}{8}$	$\frac{15}{16}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$
Dozen	\$2.55	2.75	2.75	3.05	3.50	3.85	4.40	4.95
Inches	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$			
Dozen	\$5.60	6.40	7.20	12.80	16.00			

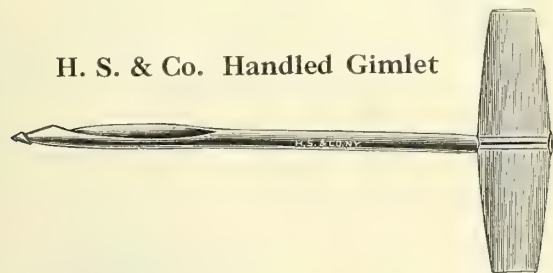
Bits for Wood

German Gimlet



Size, 32nds.....	2	3	4	5	6	7
Dozen.....	\$1.20	1.20	1.20	1.20	1.20	1.20
Size, 32nds.....	8	9	10	11	12	
Dozen.....	\$1.20	1.20	1.50	1.65	1.80	
12 Inches Long						
Size, 32nds.....		6	8	10	12	
Dozen.....		\$3.45	3.45	3.75	3.90	

H. S. & Co. Handled Gimlet



No. 762 $\frac{4}{32}$, $\frac{5}{32}$, $\frac{6}{32}$, $\frac{7}{32}$ and $\frac{8}{32}$ -inch diameter, dozen \$1.00

Countersink Gimlet



Number.....	0	1	2	3	4
Diameter of bit, inch.....	$\frac{5}{32}$	$\frac{6}{32}$	$\frac{7}{32}$	$\frac{8}{32}$	$\frac{9}{32}$
Bores, inches.....	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$
Dozen.....	\$2.00	2.00	2.00	2.00	2.00

Bright Taper



Inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Dozen.....	\$8.50	9.50	10.50	11.25	12.25

Plug Cutters



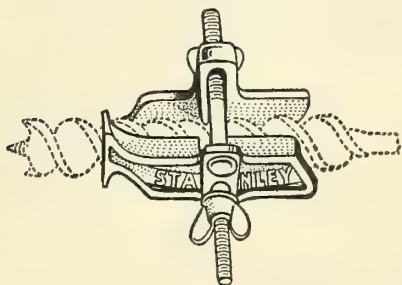
Inch.....	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$
No. 6080 Polished, dozen	\$4.80	4.80	4.80	4.80	4.80

Auger Bit Gauges



For bits up to 1 inch

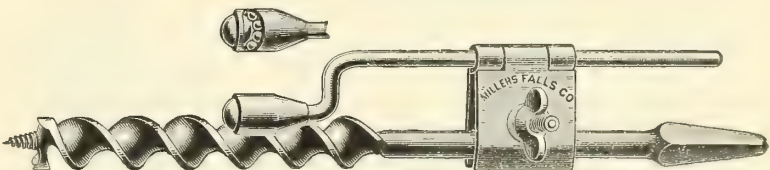
No. 1 Japanned. Polished Rods and Screws, dozen..... \$4.00



Stanley Adjustable

This Gauge can be attached to bits of any size up to one inch in diameter. Two projections engage with the twist of the bit, so that it can be accurately set for the bit to bore to any depth required. Stops on both sides of the bit insure it remaining upright when the desired depth is reached, thus preventing the worm being bent or broken.

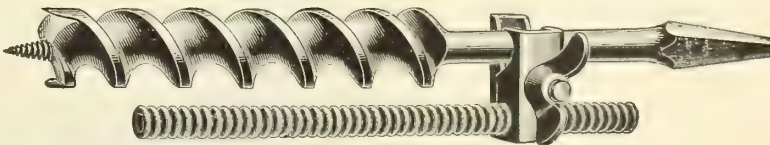
No. 49 2 $\frac{1}{2}$ inches long, nickel-plated, dozen..... \$6.00



M. F. Co. Anti-Friction

Clamps to auger bit of any size.
Tightens on bit and gauge spindle at same time.
Ball in end, running on six smaller balls, to prevent defacing delicate material when in contact with gauge.
Length, 5 $\frac{3}{4}$ inches.

No. 2 Polished and nickeled, dozen..... \$5.00



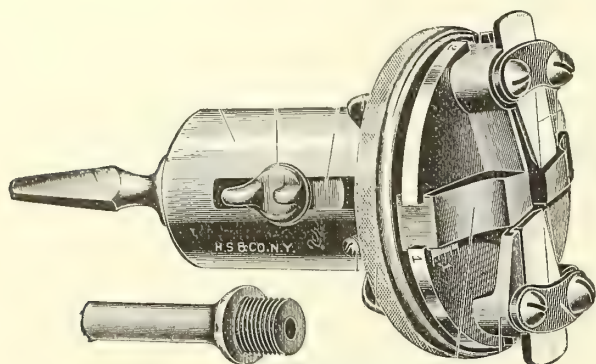
Sargent Peerless Flexible

Easily attached, detached and adjusted. It fits any size Auger Bit, Twist Drill, etc., and the single thumb-screw holds it firmly in place.
It will accurately gauge a hole of any depth to within $\frac{3}{4}$ inch of the chuck of the brace. Will not mark the wood, will not slip upwards and will not interfere with the chips. It is the lightest Bit Gauge made.

No. 100 To fit any size Bit, nickel-plated, dozen..... \$4.00

Hollow Augers

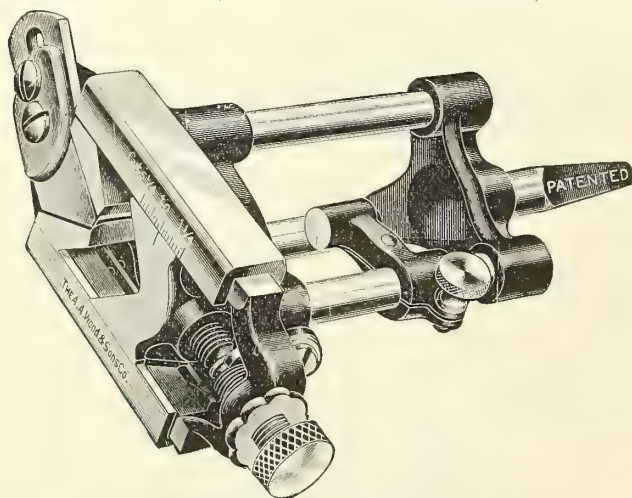
Adjustable



Swan Universal Improved No. 6001

Has a depth gauge to regulate length of tenon. The face is graduated so it can be readily adjusted to any required size.

Cuts from $\frac{3}{8}$ to $1\frac{1}{2}$ inches, each. \$4.50
Machine shanks for same, each. \$.50 Extra cutters, set.50

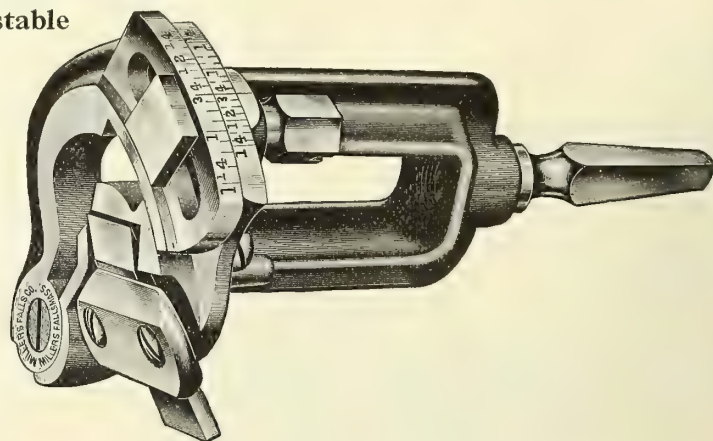


No. B1 Universal

Cuts a tenon any size from $\frac{1}{4}$ -inch to $1\frac{1}{4}$ inches, any length up to 4 inches. The knife will cut any desired thickness of chip, without changing set of Auger in size. An extra knife accompanies each tool.

By turning the thumb screw, it is the work of a second to set the Auger to cut any size tenon to suit the bit being used. There is no "cutting and trying"—the adjustments are instantly made exact.

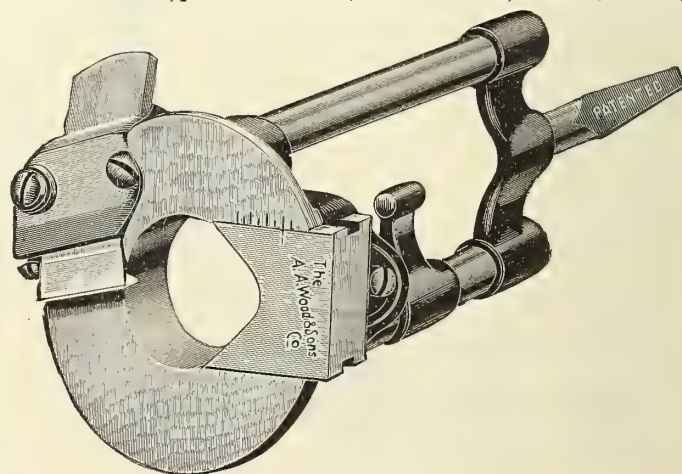
Every part of this tool is steel; all screws are milled from steel bars; all wearing parts and all screwdriver screws are hardened. Furnished with $\frac{1}{2}$ -inch round shank, when so ordered, without extra charge.
Each. \$4.50 Extra Cutters, each. \$.25
Extra shanks, each.50



M. F. Co. No. 3

Castings are made of iron, enameled black and red; steel adjusting screw; knife carefully tempered and sharpened. Adjustable to cut tenons from $\frac{1}{4}$ to $1\frac{1}{4}$ inches, with a graduated index. Stop gauge to regulate the length of tenons. A bit stock shank is furnished to fit into the chuck of a bit brace. Packed one in a pasteboard box.

Dozen. \$46.00 Extra shanks, dozen. \$6.00
Furnished with $\frac{1}{2}$ -inch round shank, when so ordered, without extra charge.



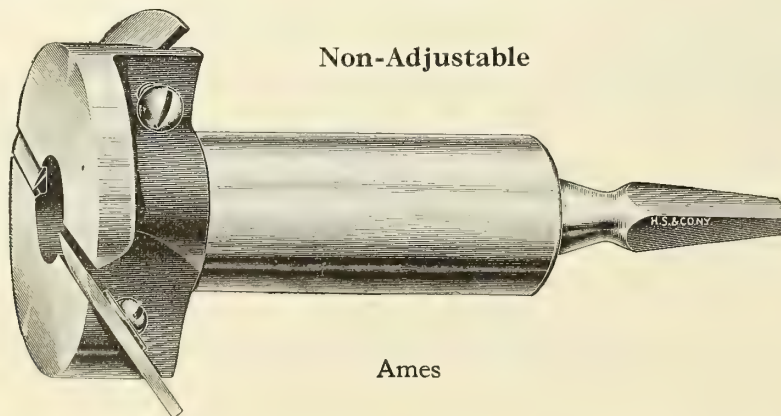
No. A4 Ideal

Adjustable from $1\frac{1}{8}$ inches to $1\frac{1}{2}$ inches full. Does not cut smaller than $1\frac{1}{8}$ inches nor larger than $1\frac{1}{2}$ inches full.

Easily and quickly adjusted. Screws and wearing parts hardened. Patent Stop and Knife Clamp. Simple, durable and accurate.

Each. \$2.00
Extra Cutters, each.25

Non-Adjustable

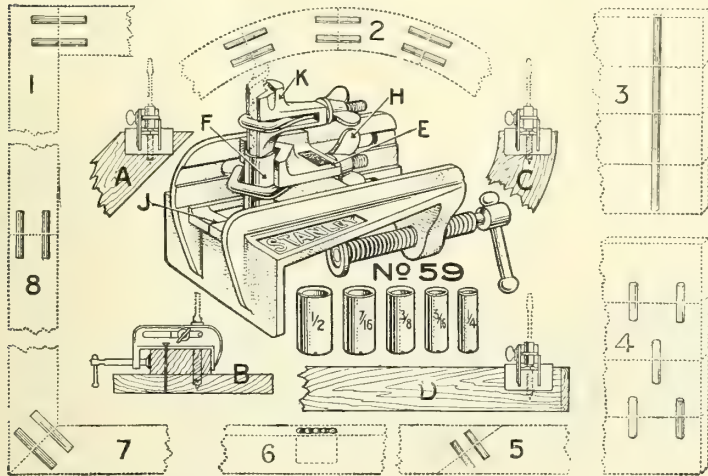


Ames

Size, inches.	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
No. 6002 With Cook auger bits, dozen.	\$12.00	12.00	12.00	14.00	14.00	14.00	16.00	16.00	20.00	20.00	24.00	24.00
No. 6003 Without bits.	8.00	8.00	8.00	9.00	9.00	9.00	12.00	12.00	14.00	14.00	16.00	16.00
$\frac{1}{2}$ -inch round Shanks, for machine, each.	\$.50			Extra Cutters, each. \$.25								

Doweling Jig

Stanley



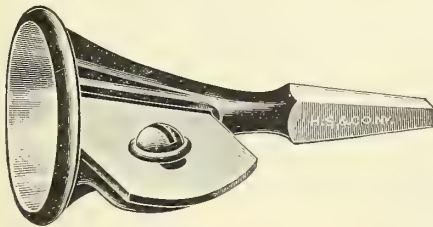
This tool is for the purpose of enabling the user to bore dowel holes in the edge, end or surface of work with ease and accuracy. It will take any thickness of material up to three inches. It is also an excellent bit guide for mortising. Five steel guides $1\frac{1}{4}$ inches long are furnished: One each $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$ and $\frac{1}{2}$ -inch. To allow for variations in size of bits the guides are made $\frac{1}{100}$ inch larger than the sizes given.

A depth gauge is also furnished which can be used with or without the Jig. Where used without the Jig, the gauge should be set with the large end towards the point of the bit, but in using same with the Jig it should be set with the small end down, as shown in the cut.

Made entirely of metal, and working parts are milled true. A thoroughly practical tool.

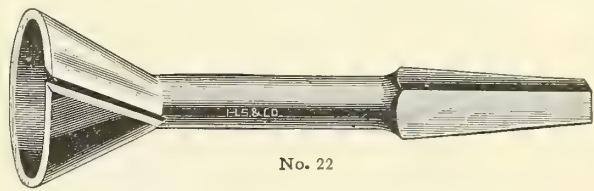
No. 59 Nickel-plated, each \$1.75

Dowel Pointers



No. 1

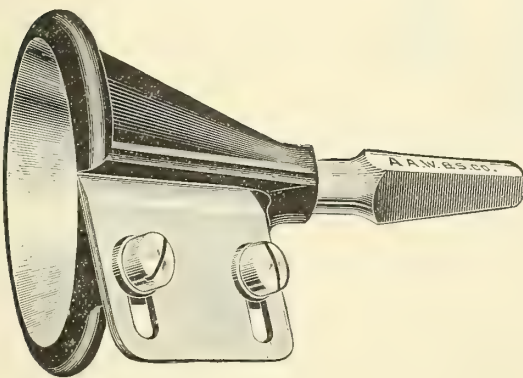
No. 1 $\frac{3}{4}$ -inch, dozen \$4.50



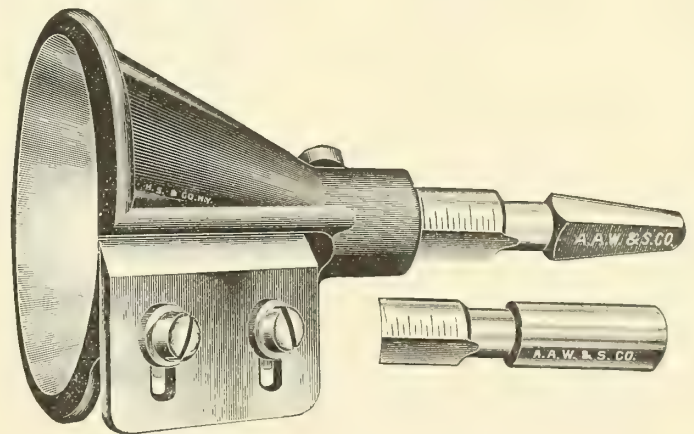
No. 22

No. 22 $\frac{3}{4}$ -inch, dozen \$3.00

Spoke Pointers



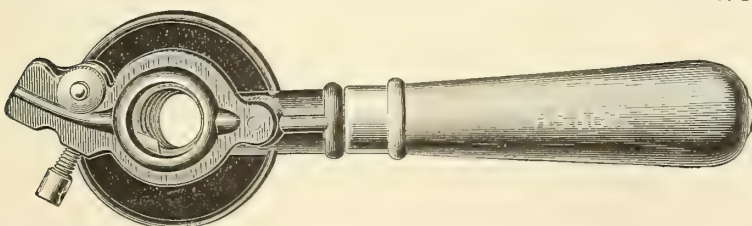
No. C1 $\frac{1}{4}$ inch to $2\frac{1}{2}$ inches. Steel Screws hardened. Milled inside to a perfectly smooth finished surface, dozen \$9.00



No. C2 With bit shank $\frac{1}{4}$ inch to $2\frac{3}{4}$ inches. Has a graduated adjustable shank, which acts as a depth gauge, dozen \$15.00
No. C3 With $\frac{1}{2}$ -inch round shank, otherwise same as No. C2, dozen 15.00
Shanks only either style, dozen 3.00

Iron Screw Boxes

For Wood

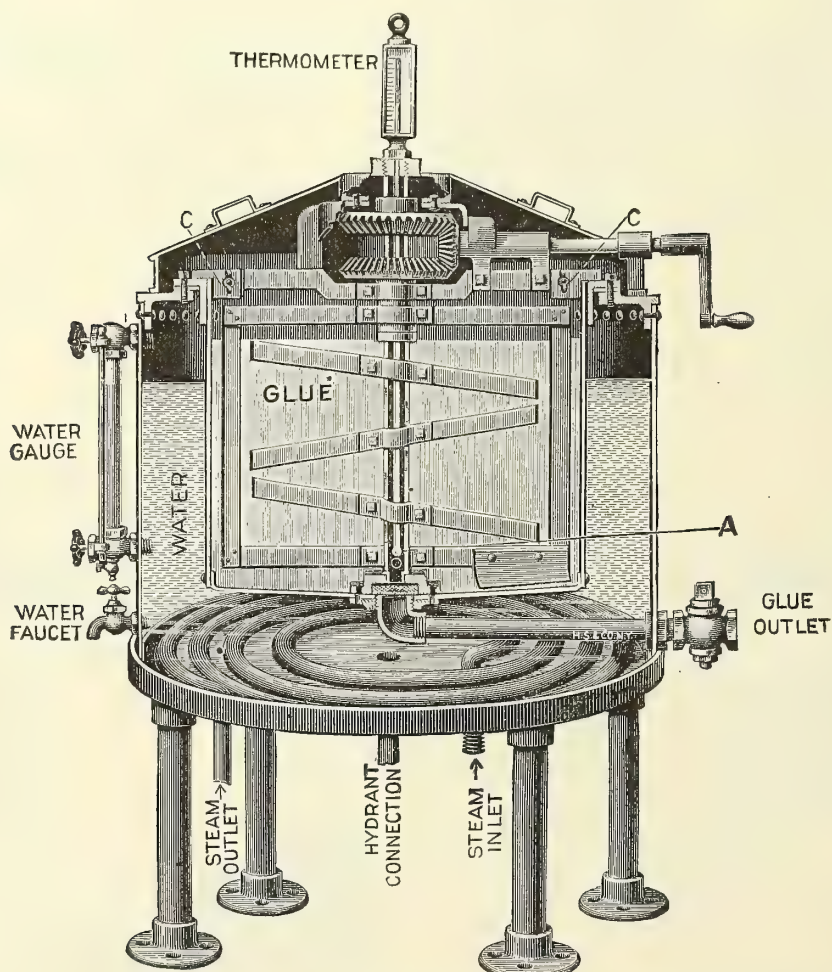


Cutting threads, inches . . .	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
French, with 1 tap, each	\$2.55	2.55	2.78	3.23	3.60	3.83	4.13	4.58
Extra Cutters, each . . . .	.15	.15	.18	.18	.24	.24	.24	.24

Glue Heaters or Cookers

Francis

Fitted with Reliable Thermometers



Type A—Figure 7

These Cookers are manufactured in five types.

First. Both tanks made of heavy iron plates, carefully riveted together and then heavily galvanized both inside and out.

Second. Outside tank of heavy iron plate, galvanized, and inside tank of heavy and durable copper.

Third. Both tanks of cast iron with inside tank galvanized.

Fourth. Outside tank cast iron and inside tank of heavy and durable copper.

Fifth. Both tanks of heavy copper.

The bottom of each Cooker is equipped with a coil of heavy copper tubing, through which the steam circulates, thus avoiding actual contact with the water in Cooker and preventing its pollution by the impurities in the steam. This method makes a safety valve unnecessary. It does away with escaping vapor and sloppy floors. The double-acting stirrer is simple, easily removable and may be fitted for power at slight additional cost. The glue is drawn from the center of tank, and a reliable thermometer is placed directly over the outlet (as illustrated) thus giving temperature at desired location. The thermometer is connected through the hollow shaft of the stirrer and is readable at top. The water gauge accurately shows the height of water in tank. To retain the moisture in the glue tank and keep out the dirt, a cover is supplied which is instantly removable without interfering with thermometer or stirrer.

It can be fitted with automatic steam temperature controller (See page 416) instead of or in addition to glue thermometer, but thermometer is usually preferred. Unless otherwise specified, both tanks are made of heavy galvanized plates riveted, as mentioned above under "First." Each Cooker is regularly furnished complete with thermometer, hand crank stirrer, cover and 18-inch stand, but can be supplied without any or all of these extras, if desired. Extra high stand at extra charge. Can be fitted with gas or electric heating attachment at special prices.

Number.....	50S	51S	52S	53S	54S	55S	56S	57S
Capacity, gallons.....	4	6	13	20	27	40	53	75

Can be supplied with belt-driven stirrer at extra cost, if specially ordered.

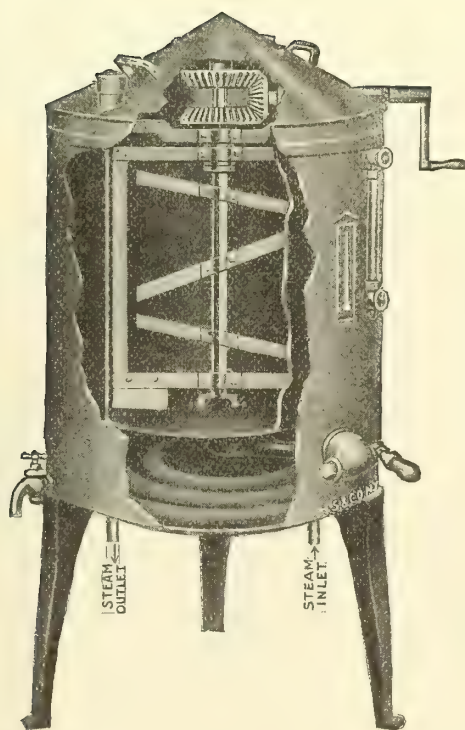
For Gas Heaters and Temperature Controllers, see page 416

Glue Heaters or Cookers

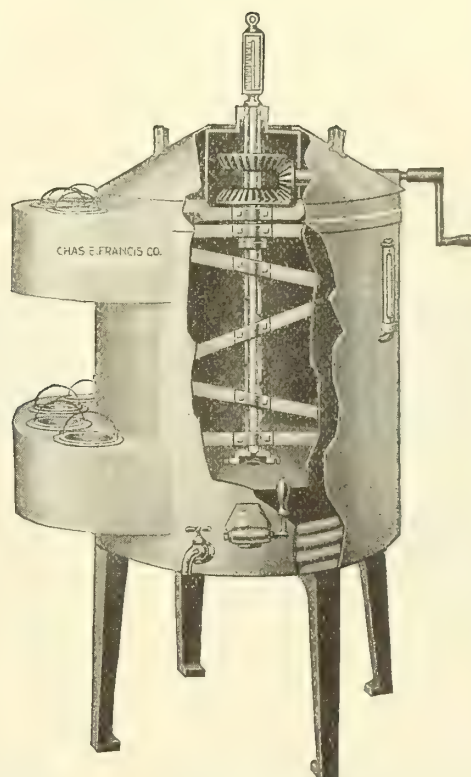
Francis

Copper and Brass

(With or Without Small Portable Pots)



Type K
Without Portable Pots



Type H
With Portable Pots, Showing Thermometer Attached

These Heaters are regularly made of copper and brass throughout—tanks, warming chambers with portable pots, coil (or pure water chamber) and covers are copper; stirrer and all other parts coming in contact with glue and water are brass, including water gauge, glue valve and faucet.

The tanks are heavy copper, strongly lapped, double seamed and reinforced. Particular attention is directed to the fact that the top of each tank, where the two tanks fit together, is riveted inside of a heavy flanged brass ring, which protects the copper and makes the tanks exceptionally strong and durable.

Glue Thermometer Attachment, Stirrer and Copper Steam Coil are recommended as desirable and valuable additions, but may be omitted to reduce price of Heater when desired. Can be fitted with Pure Water Chamber, but we recommend the Copper Steam Coil, which keeps the steam confined, prevents impurities from steam boiler from contaminating water, thus leaving it pure to use for purpose of

thinning glue if desired, and the use of the coil heats water and prepares glue more quickly than the ordinary method of heating, and consumes a minimum amount of steam, also overcomes annoyance of cloud of vapor and wet sloppy floor.

The Stirrer is geared and double-acting, which is necessary to thoroughly agitate the glue.

The Thermometer registers temperature of glue at point where it is drawn from tank for actual use. Automatic temperature controller can be furnished if desired (illustrated and described on page 416).

Type H Heaters are regularly made in sizes of 5, 10, 15, 20, 25 and 30 gallon capacity, with either 2, 4, 6 or 8 small pots of one or two quarts capacity.

Type K Heaters are regularly made in sizes ranging from 5 to 100 gallons and larger if desired.

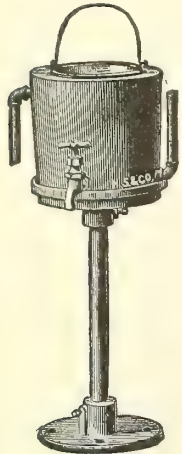
Can be furnished for steam, gas or electricity. Steam furnished regularly.

SINCE
1848

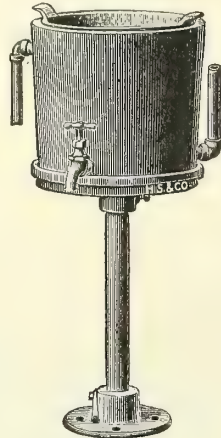
HAMMACHER SCHLEMMER & CO. NEW YORK

Steam Glue Heaters

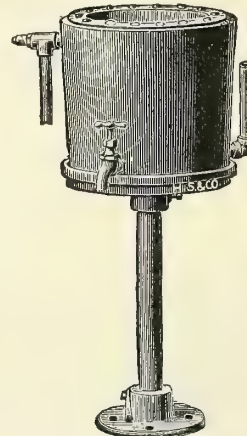
Francis



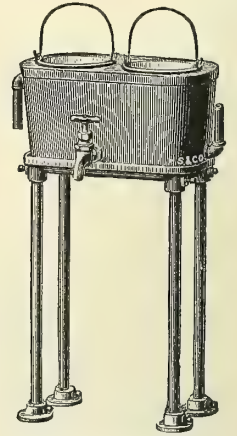
Style Nos. 1 to 4



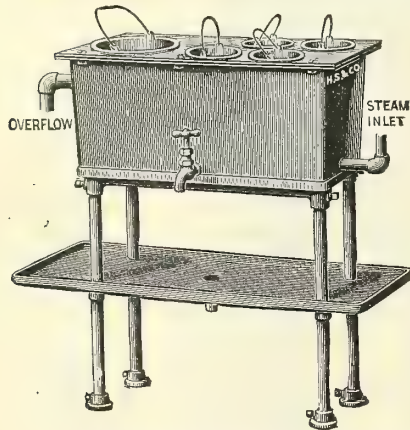
Style Nos. 5, 6, 7 and 8



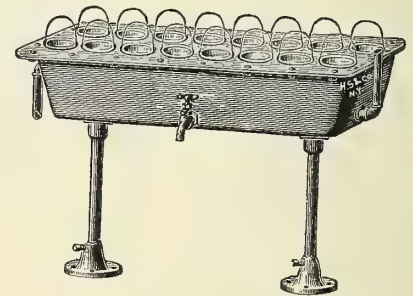
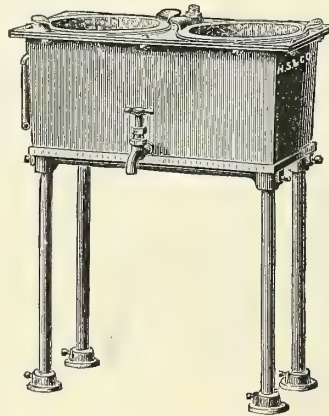
Style Nos. 5½ and 6½ (steam tight)



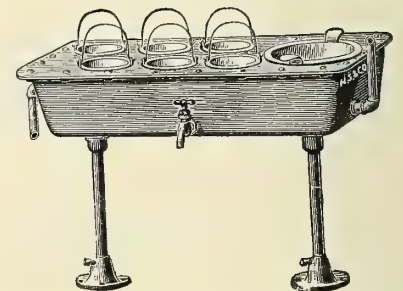
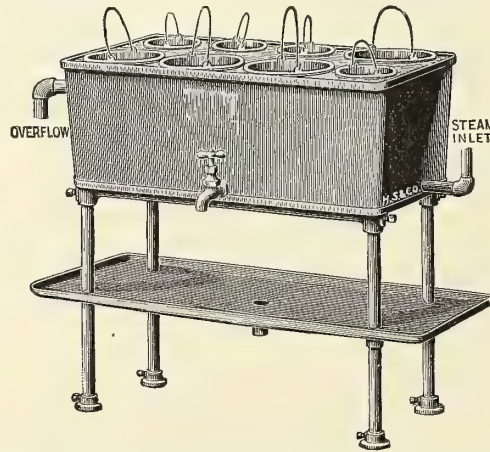
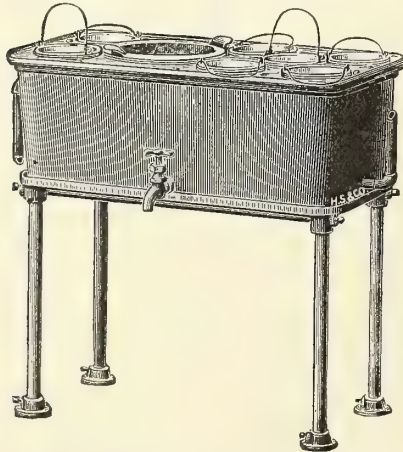
Style Nos. 9 and 10



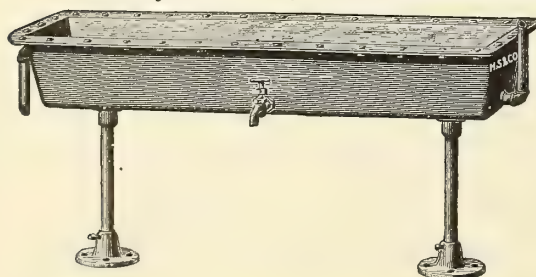
Style Nos. 11 to 15, which are furnished with or without stand and drip-pan as desired



Style No. 34



Style Nos. 31, 32, 33 and 35



Style Nos. 16 to 29, which are furnished with or without stand and drip-pan as desired



Style Nos. 36, 38 and 40, with Bevel Glue Tank without partition

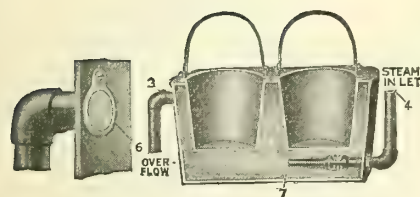
Detailed description on following page

Style Nos. 37, 39 and 41, with Bevel Glue Tank with partition

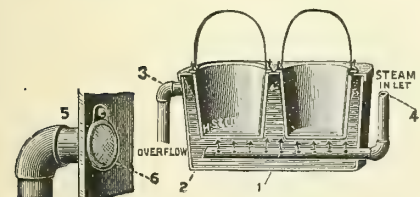
Steam Glue Heaters

Francis

(Illustrated on preceding page)



Sectional View of Steam Mixer



Sectional View of Perforated Pipe Method of Heating

Steam Glue Heaters Nos. 1 to 41 are supplied either with steam mixer or with the perforated pipe method of heating (as shown).

The steam mixer is supplied unless otherwise ordered. Either method heats the water very quickly and prevents it splashing over, but the steam injector or mixer arrangement has a tendency to overcome the knocking and pounding when steam is turned into the tank. The overflow pipe (3) carries off the surplus water. This pipe is always larger than the inlet or steam pipe. Shavings, chips, etc., are kept out of the pipe by a brass wire screen (6) placed over the end of the pipe. We recommend the use of live steam, as it is much more satisfactory and reliable than exhaust. The tank should be filled with water before turning on the steam; after that the condensation of steam will keep the water supplied. The tanks are regularly of cast iron with carefully fitted pipe connections, and glue pots are of enameled cast iron in the sizes smaller than one gallon and of galvanized cast iron in sizes of one gallon capacity and larger. Copper glue pots are furnished if desired, at extra charge.

These Heaters can be fitted with copper steam coil system of heating on the principle of Francis Glue Cookers, shown on another page.

Gas or electric heating attachments can be supplied, at special prices, for use where no steam is available.

Number	Number and Capacity of Glue Pots
1	One 2-quart
2	One 3-quart
3	One 4-quart
4	One 6-quart
5	One 2-gallon
5½	One 2-gallon
6	One 2½-gallon
6½	One 2½-gallon
7	One 4-gallon
8	One 6-gallon
9	Two 2-quart
10	Two 3-quart
11	Six 1-quart
12	One 1-gallon and three 1-quart
12A	One 1½-gallon and three 1-quart
12B	One 1-gallon and four 1-quart
12C	One 1½-gallon and four 1-quart
13	Two 2-gallon
14	One 2-gallon and two 2-quart
15	Four 2-quart
16	Two 4-gallon
17	Two 2½-gallon and two 2-quart
18	Six 2-quart
19	Four 3-quart and four 2-quart
20	One 2-gallon and seven 1-quart
21	One 1½-gallon and six 1-quart
22	One 2½-gallon and four 2-quart
23	One 4-gallon and four 2-quart
24	One 4-gallon and six 1-quart
25	Two 1½-gallon and five 1-quart
26	Nine 3-pint
27	Eight 2-quart
28	One 4-gallon, one 1-gallon and two 2-quart
29	One 2½-gallon and four 1-quart

Above heaters are regularly furnished with iron pots. Sizes up to and including 3-quart capacity are enameled, and the larger sizes are galvanized.

Copper pots furnished at extra charge.

Stand is furnished unless otherwise ordered. Drip-pan can be furnished if specified in order.

Number	Number and Capacity of Glue Pots
31	Two 2½-gallon and nine 1-quart
32	Two 2½-gallon and six 2-quart
33	One 2½-gallon and ten 1-quart
34	Sixteen 1-quart
35	One 2½-gallon and six 2-quart

Above heaters are furnished regularly with iron pots. Sizes one and two-quart capacity are enameled, the one and two and a half gallon capacity are galvanized.

Copper pots furnished at extra charge.

Stand is furnished unless otherwise ordered. Drip-pan can be furnished if specified in order.

Long Tank Type

Number	Length of Glue Tank
36	3 feet 9 inches, Plain
38	4 feet 9 inches, Plain
40	5 feet 9 inches, Plain
37	3 feet 9 inches, Divided
39	4 feet 9 inches, Divided
41	5 feet 9 inches, Divided

Above heaters are not intended to stand any steam pressure, and are not represented as steam tight; the joints between the water tank and the glue tank are not ground or planed. They are bolted together and packed with hemp merely to keep the vapor from escaping and are fitted with safety valves. Furnished regularly with galvanized cast iron inside or glue tanks. Copper glue tanks, if desired, at extra cost.

For Gas Heaters and Temperature Controllers, see pages 415 and 416

SINCE
1848

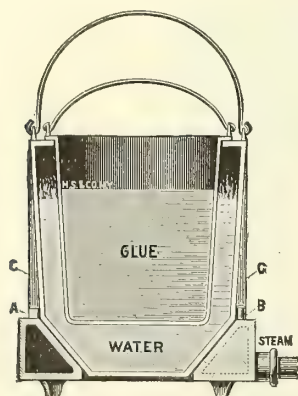
HAMMACHER SCHLEMMER & Co.

NEW
YORK

Contact Steam Glue Heaters

Francis

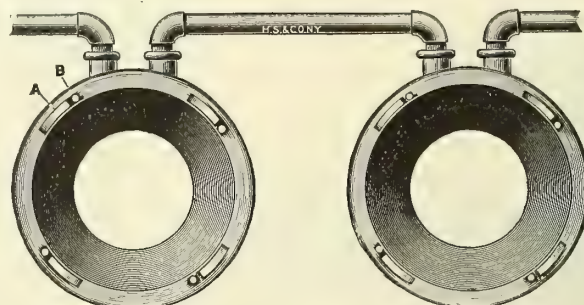
For Bench or Individual Use



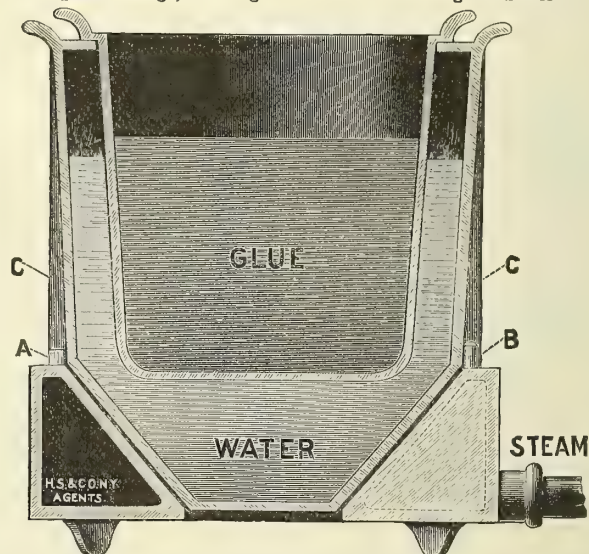
Styles A, B, BB and C

The object of these heaters is to have the glue at each bench constantly ready for use. This not only prevents loss of time, but avoids frequent chilling of the glue, which destroys its holding power. As shown in illustrations, this style of heater operates by bringing the water-jacket (in which the glue-pot hangs) in contact with the steam ring. The temperature is regulated by raising or lowering the jacket on the incline of the steam ring, which is governed by four stops and ribs. The piping is done in series (see illustration) and only one steam pipe is necessary. Two valves are required, one in front of the first heater, to control the steam, and one after the last heater to draw off the condensed water. Sizes A and B are regularly equipped with enameled glue pots, and the larger sizes with galvanized iron. Copper pots will be supplied at special prices. For individual bench use, the 1 and 2 quart capacity, sizes A and B, are most suitable.

Sizes.....	A	B	BB	C	D	E
Capacity, quarts.....	1	2	4	6	8	10



Steam-Rings, Showing Manner of Connecting "in Series"



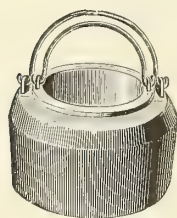
Styles D and E

Above cuts show water-jackets raised out of contact with steam coils A, four inclines; B, four stops; C, four ribs which slide on inclines

Prices on application

Glue Pots

H. S. & Co.
Water-Jacketed



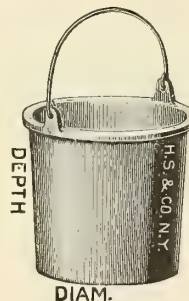
Cast Iron Inside Pot Tinned Inside

Number.....	000	00	0	1	2	3	4	5	6
Capacity, pints....	$\frac{3}{4}$	1	$1\frac{1}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$4\frac{1}{2}$	5
Complete, dozen..	\$5.00	5.50	6.00	6.75	8.40	10.26	12.42	14.58	16.94
In side pots only,									
Dozen.....	\$2.50	2.75	3.00	3.38	4.20	5.13	6.21	7.29	8.47

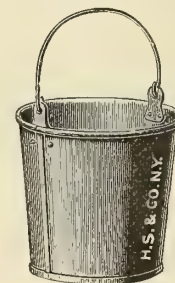
Francis
Inside, for Glue Heaters

Capacity	Diameter Inches	Depth Inches	Cast Iron	Extra Heavy Copper
1 quart	5	$4\frac{3}{8}$	\$.31	\$.70
3 pints	$5\frac{1}{4}$	$4\frac{3}{4}$	.37	.85
$\frac{1}{2}$ gallon	$5\frac{7}{8}$	$5\frac{3}{8}$	.44	1.00
$\frac{3}{4}$ gallon	$6\frac{5}{8}$	$6\frac{1}{4}$	.60	1.40
1 gallon	8	$6\frac{1}{2}$	1.20	1.75
$1\frac{1}{2}$ gallons	8	$8\frac{1}{2}$	1.45	2.25
2 gallons	9	$8\frac{1}{2}$	1.75	2.75
$2\frac{1}{2}$ gallons	$10\frac{1}{4}$	8	2.00	3.25
$2\frac{1}{2}$ gallons, Qs.	$11\frac{3}{8}$	$6\frac{1}{4}$	2.00	3.25
4 gallons	13	8	3.00	4.00
6 gallons	$13\frac{1}{4}$	11	5.00	5.00

Cast-Iron Pots up to and including $\frac{3}{4}$ gallon are enameled; the larger sizes galvanized. All pots up to and including $1\frac{1}{2}$ gallons have bails as shown; the $2\frac{1}{2}$ gallons Qs. also has bails; the 2, $2\frac{1}{2}$ (regular), 4 and 6-gallon pots have handles.



Cast Iron



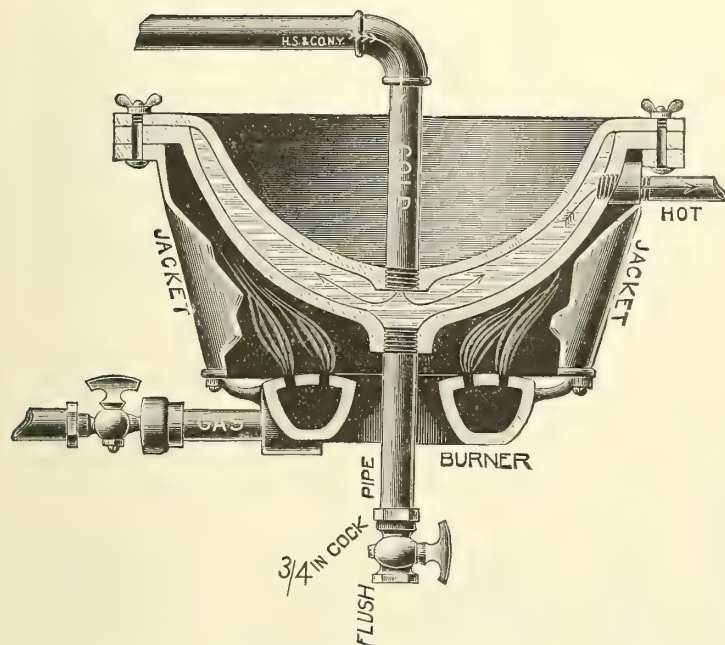
Extra Heavy Copper

Diameter—Outside of pot directly under the flange
Depth—Distance from outside of flange to bottom of pot

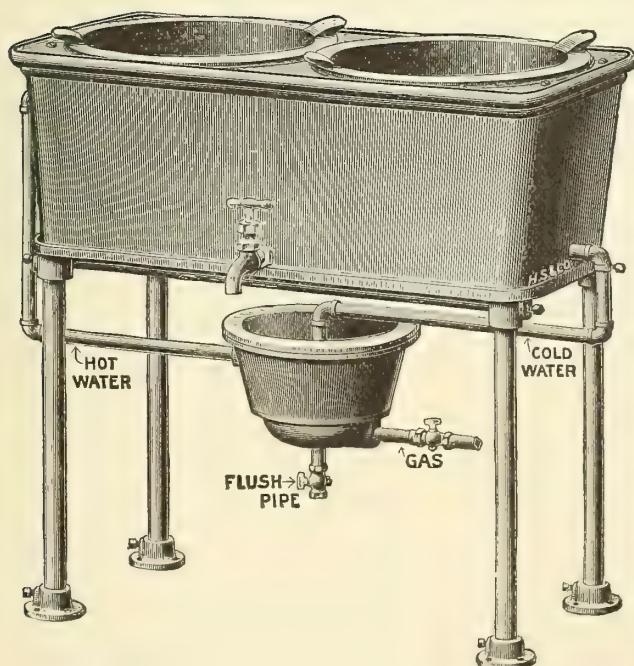
Gas Water Heater

(For Glue Heaters)

Francis



Style A Gas Water Heater



Style A Gas Water Heater Fitted to No. 16 Glue Heater

This style of Heater is particularly suitable for use in connection with Heaters Nos. 1 to 29, shown on page 412. Its comparatively small size and style of construction allow it to be used directly under the Heater, as shown in lower illustration. It is surrounded by a cast iron casing, which prevents the flame being affected by draughts of air, and also causes the heat to be evenly and quickly distributed over the entire surface. This feature utilizes the full value of the gas consumed, thereby preventing any waste of heat. As circulation of the hot water causes the cooking of the glue, there is no danger of burning, nor is extremely close attention demanded, as in cases of direct application of heat.

Many shops and factories have no steam supply available except in winter, which makes it necessary to have some independent heating device, such as gas or electricity.

This Heater is provided with a powerful atmospheric burner attached to the casing by screws, directly under the bowl.

In lighting, the gas should be turned on for a few seconds before applying the light; this clears the air from the mixer and burner and prevents back-burning, which causes a white flame accompanied by a hissing sound. Never allow the gas to burn in this way, as it causes no heat and coats the Heater thickly with soot, preventing the proper utilization of the heat.

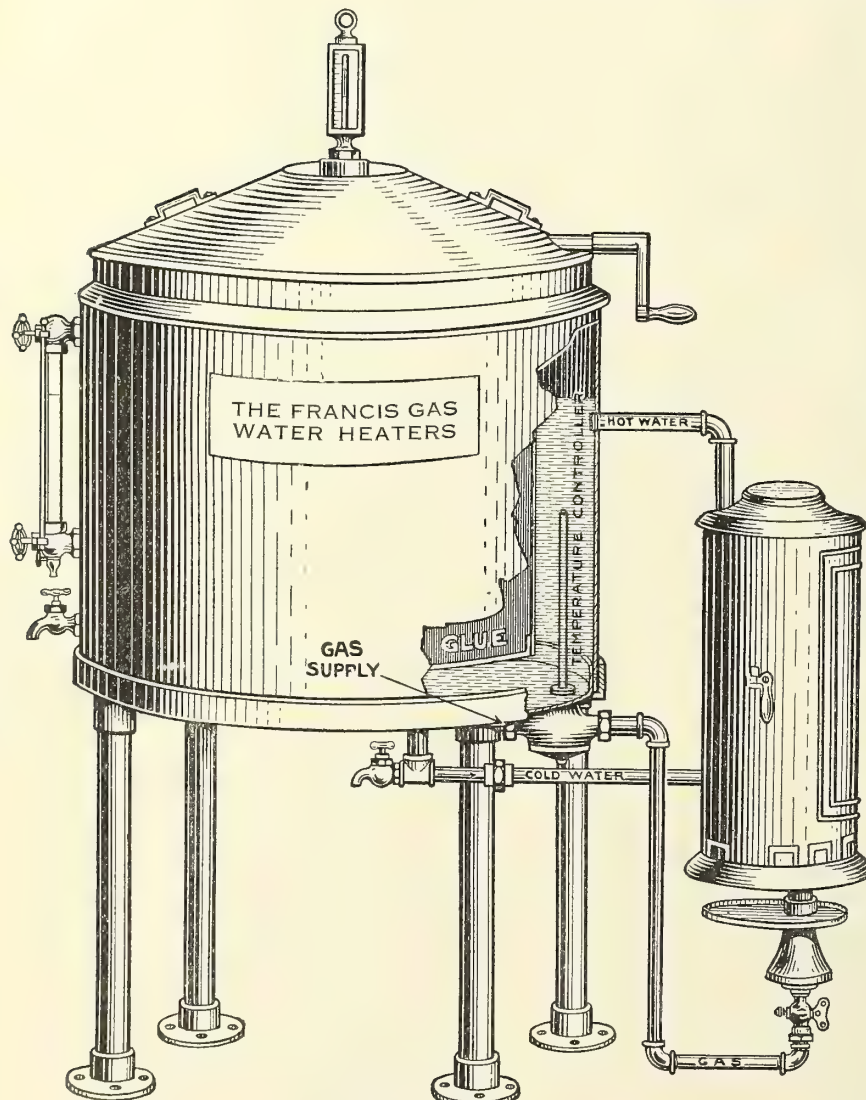
Care should be taken to see that the Heater is properly connected, correctly operated and kept free from soot and other dirt.

In ordering any type of gas burner, it should be specified whether for natural or artificial gas, and with what cooker it is to be used.

Gas Water Heater And Automatic Gas Temperature Controller

For Glue Heaters, Glue Cookers and Glue Spreaders

Francis



Type A—Figure 9

This illustration shows a Glue Cooker fitted with Double Copper Coil Gas Water Heater and Automatic Gas Temperature Controller.

These Copper Coil Heaters are furnished in three types: Single, Double (as shown) and Triple.

The Gas Temperature Controller is automatic and may be set to any degree desired. The gas will then burn at full capacity until that degree of temperature is reached, when the gas supply is cut down just enough to maintain the desired heat.

When ordering any type of gas water heater, specify whether wanted for natural or artificial gas, and if Gas Temperature Controller and connections are wanted.

Automatic Steam Temperature Controller

For Glue Heaters or Cookers and Glue Spreaders

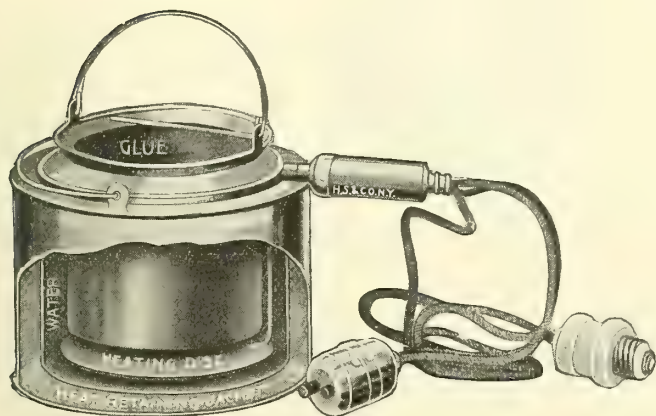
Francis

In the cooking and using of glue, accurate temperature safeguards are essential, and the controller shown in illustration on this page, is automatic, keeping the water constantly at any given temperature. Between 150 and 160 degrees is best, as the water temperature is always higher than that of the glue, sometimes as much as 20 degrees. While the controller illustrated above is for use with a gas heater, we are in position to supply them for use in connection with a steam heating system, or any other type or system of heater or cooker. The illustration shows a Cooker with heavy, galvanized plate-iron tanks; Double-Acting, Hand-power Glue Stirrer; the Water Temperature Controller, described herein, and a Glue Thermometer, which gives the actual temperature of the glue itself at the exact spot where it is to be drawn for use.

In ordering the Temperature Controller, always specify the size, capacity and make of Cooker with which it is to be used, as well as heating system.

Electric Glue Pots and Heaters or Cookers

Francis

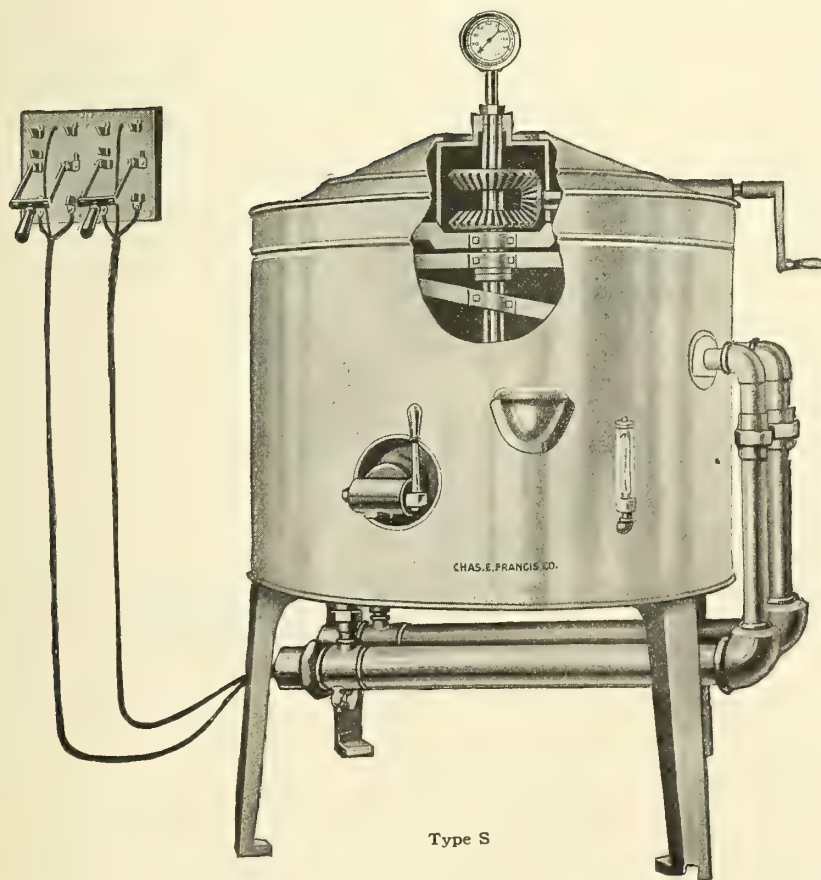


Pots With or Without Heat-retaining Jacket

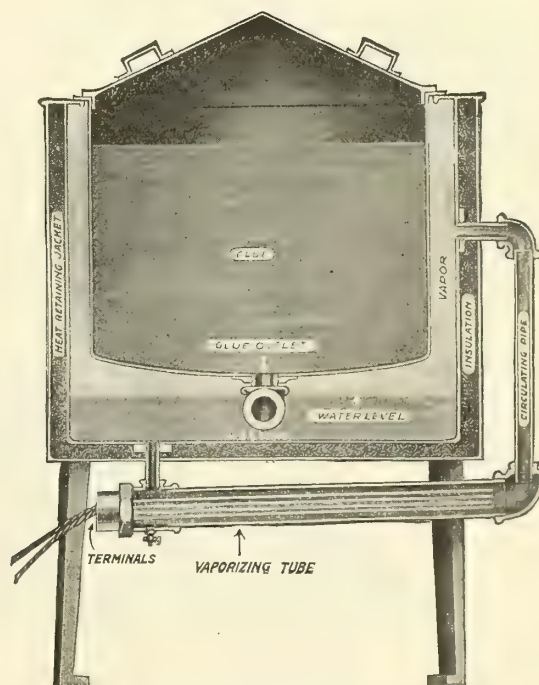
It is recommended that these electric glue pots, or heaters, be fitted with heat-retaining jackets, packed with suitable insulating material, as they greatly reduce the consumption of electricity. They are furnished either with or without these jackets, and are made in the following sizes:

Single Pot Capacity	Double Pot Capacity of Each Pot
1 pint	1 pint
1 quart	1 quart
2 quarts	2 quarts
3 quarts	3 quarts
4 quarts	4 quarts
6 quarts	6 quarts
8 quarts	8 quarts

Heaters or Cookers



Type S



Sectional View
Illustrating Heat-retaining Jacket and
Circulation System of Heating

Construction

All copper and brass; or Glue Pot only of copper, and Water Jacket and Heat-retaining Jacket of iron; or all iron. Heat-retaining Jacket greatly reduces the consumption of current. Fitted with Glue Thermometer Attachment. Double-acting Stirrer. Bayonet Electric Heating System (vaporizing water instantly by circulation and preparing glue in comparatively short time). Made in sizes: 5, 10, 15, 20, 25, 30, 40 and 50 gallons capacity, and larger. When ordering state actual voltage.

Send for descriptive circular

Electric Glue Pots

The Electric Glue Pot is one of the most successful and important applications of electricity to the mechanical arts. It is efficient, practical and rapid; is portable and permits of extremely flexible arrangement. Under correct working conditions, it gives an absolutely even, steady heat that keeps the glue in perfect working condition for any length of time. Being independent of any stationary heating system, and connected as readily as an electric light, it can be used anywhere. Hence, the electric pot has been adopted in many book binderies, piano factories, pattern shops, etc. They are non-inductive, consequently equally effective on direct or alternating circuits. It is very important that the actual voltage of the circuit be given when ordering.

General Electric

General Electric Pots are manufactured in two distinct types, distinguished by their method of heating the glue. The heating elements in both types are practically indestructible. Aluminum is used in both types for the glue container, both on account of its remarkable power as a heat distributor and because its unctuous surface prevents the glue from sticking to it.

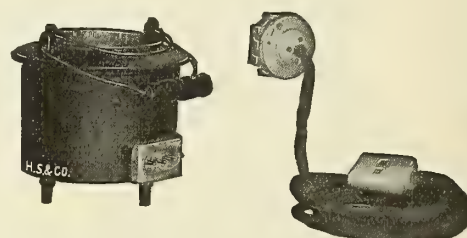
Jacketless

This type has no water jacket and heats the glue by direct thermal contact with the walls of the pot. It is designed only for continuous operation, as it requires from $\frac{1}{2}$ to 1 hour to bring the glue to a perfect working temperature. As the current is applied direct, there is a saving of approximately one-half that used by the water-jacketed type. The circuit must be reasonably constant for the successful operation of the jacketless type, as a high heat will burn the glue and a low heat allow it to cool.



Water-Jacketed

This type employs the usual water jacket for heating the glue and permits the use of a "high starting heat" to cause a rapid melting of the glue, as is often required for sudden, intermittent service. The water-jacket is made of cast iron. These pots are also especially applicable on circuits where extreme voltage fluctuations are liable to occur, for the water-jacket automatically compensates, by its increased evaporation, for any excess current due to voltage variations as well as to the "high heat."



With Cartridge Units

Capacity	Watts	Voltage	Each
$\frac{1}{2}$ pint	20	95-125	\$4.00
1 quart	70	95-125	10.00
1 quart	70	200-250	12.50
2 quarts	90	95-125	12.00
2 quarts	90	200-250	14.00
4 quarts	140	95-125	15.00
4 quarts	140	200-250	17.00
8 quarts	250	95-125	22.00
8 quarts	250	200-250	24.00

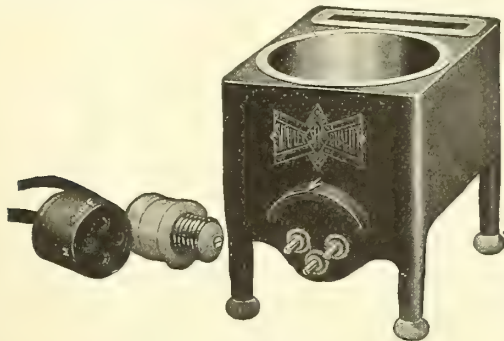
With Cartridge Units—Three Heats

Capacity	Watts	Voltage	Each
1 pint	85-170-340	95-125	\$11.00
1 quart	110-220-440	95-115	12.00
1 quart	110-220-440	200-250	13.25
2 quarts	170-340-680	95-125	13.00
2 quarts	170-340-680	200-250	14.25
4 quarts	275-550-1100	95-125	15.00
4 quarts	275-550-1100	200-250	16.25

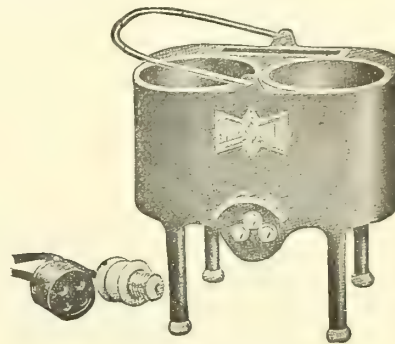
Electric Glue Pots

Simplex

Made for standard voltages up to 120 but will be furnished for 220 volts at regular prices. Furnished to order for higher voltages at special prices. Supplied with Flexible Conductor and Lamp Socket Plugs unless otherwise specified.



No. 1722



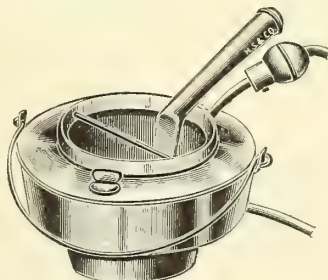
No. 1723

Where glue is used in small quantities and where two kinds are used by the same workman, these pots will be found useful. In each pot is a separate copper vessel for brushes where they may be kept in hot water. The outer pot, or water-jacket, is of japanned iron, with the heater enameled on the bottom. The glue vessels are of spun copper without seams. Very well suited for home as well as factory use. They use very little current and cost of operation is nominal at any price for current.

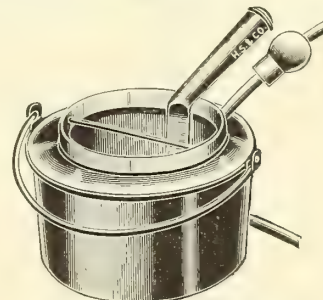
Complete with cord, three heat connector and plug.

Number		Watts		Each
		Minimum	Maximum	
1722	Single glue vessel (½ pint) and brush holder. Three heats. Six feet conductor cord, connector and lamp socket plug.	50	300	\$7.50
1723	Two glue vessels (1 pint each) and brush holder. Three heats. Six feet conductor cord, connector and lamp socket plug.	85	500	11.00

Number		Watts		Each
		Minimum	Maximum	
1724	Two glue vessels (1 quart each) and brush holder. Three heats. Six feet conductor cord, connector and plug switch.	160	800	\$16.00
1725	Two glue vessels (2 quarts each) and brush holder. Three heats. Six feet conductor cord, connector and plug switch.	225	1100	20.50



No. 403 With Reservoir



No. 408 Without Reservoir

Made throughout of burnished copper, practically indestructible

With Reservoir

In three parts, the glue pot, the spiral tube coil heater, and the water vessel. The upper part of this latter forms a reservoir which feeds water into the well as fast as it evaporates. Thus the well itself is always full, but as it holds only a little water at a time, it heats quickly and little current is required to keep the water hot, so that the reservoir type glue pot can be run cheaper than any other style.

Frequently these pots are permanently located on a bench, by cutting a hole to let the smaller diameter project through and allow the reservoir to rest on a low circular iron stand fastened to the bench. Cast Iron Stands \$.50

Number		Minimum	Watts Medium	Maximum	Each
403	1 pint. With reservoir. Three heats. Four feet of cord and plug switch.....	85	175	330	\$13.50
404	1 quart. With reservoir. Three heats. Four feet of cord and plug switch.....	100	220	440	14.50
405	2 quarts. With reservoir. Three heats. Four feet of cord and plug switch.....	170	330	660	16.00
406	1 gallon. With reservoir. Three heats. Four feet of cord and plug switch.....	275	550	1100	22.25

Number		Minimum	Watts Medium	Maximum	Each
407	2 gallons. With reservoir. Three heats. Four feet of cord and plug switch.....	360	720	1440	\$41.00
410	5 gallons. With reservoir. Three heats. Four feet of cord and plug switch.....	625	1250	2500	78.00

Without Reservoir

With this pot it requires from sixteen to twenty minutes to have the glue ready for use, starting with everything cold. Much less time is required by the reservoir types which are more economical in current consumption, but in no other particular are they superior, while the price of those listed below is lower. In all glue pots the minimum current is sufficient to maintain the glue in proper condition for work. Cast iron stand, each, 50 cents.

Cast iron stand, each, 50 cents.					
Number		Minimum	Watts Medium	Maximum	Each
407½	1 pint. Three heats. Four feet of cord and plug switch. . . .	110	220	440	\$11.00
408	1 quart. Three heats. Four feet of cord and plug switch. . . .	170	330	660	12.00
409	2 quarts. Three heats. Four feet of cord and plug switch. . . .	220	440	880	13.50

See preceding page for general talk on Electric Glue Pots

Glue Spreaders

Francis

General Description

With the exception of those for the 53, 60 and 84-inch Power Feed Spreaders, all tanks are regularly made of cast iron, the inside or glue tank being galvanized. In the three large sizes mentioned above tanks for the lower glue roll are regularly made of heavy galvanized plate iron. Copper tanks will be supplied if specially ordered but we recommend the regular equipment, as above, which will be found most durable and satisfactory.

Copper steam coils are supplied with all copper and plate iron tanks, but are not required with those of cast iron, though will be supplied at extra prices if specially ordered.

The cast iron glue tank is regularly fitted into the steam tank, so as to make an absolutely steam tight joint. All types and sizes of these tanks are arranged so they may be easily and quickly drained and cleaned.

While these Spreaders may be used for actually cooking the glue, it is not economical nor good practice to use them for that purpose. In most cases it is advisable to have the heater or cooker directly connected to the spreader, thereby eliminating all handling of the glue, which necessarily cools it somewhat and which unavoidably injures to some extent its adhesive qualities.

With the large Power Feed Spreaders it is best to have two heaters, mounted at heights to properly feed the glue into the tanks of the Spreaders—one heater to prepare the glue, allowing it to flow to the second cooker, from which it may be fed to the spreader as needed. This method insures a constant store of properly cooked glue, and allows it to be fed slowly into the spreader glue tank. The latter is most important, as any over supply of glue will cause foaming, which prevents its proper application due to the presence of the tiny air bubbles.

The rolls on the Power Feed Spreaders are corrugated and made of a specially prepared metal which is more durable than the steel formerly used. The corrugations are such as have been found most suitable for all ordinary requirements.

Various forms of fabric-covered rolls, iron rolls, brushes and combinations of the above are supplied on the Hand Feed Machines as listed in the following pages.

Corrugated metal rolls will be supplied for these later if ordered, but are generally recommended only for the Power Feed Spreaders.

All Francis Rolls are so mounted that they may readily be removed, allowing every facility for frequent thorough cleaning.

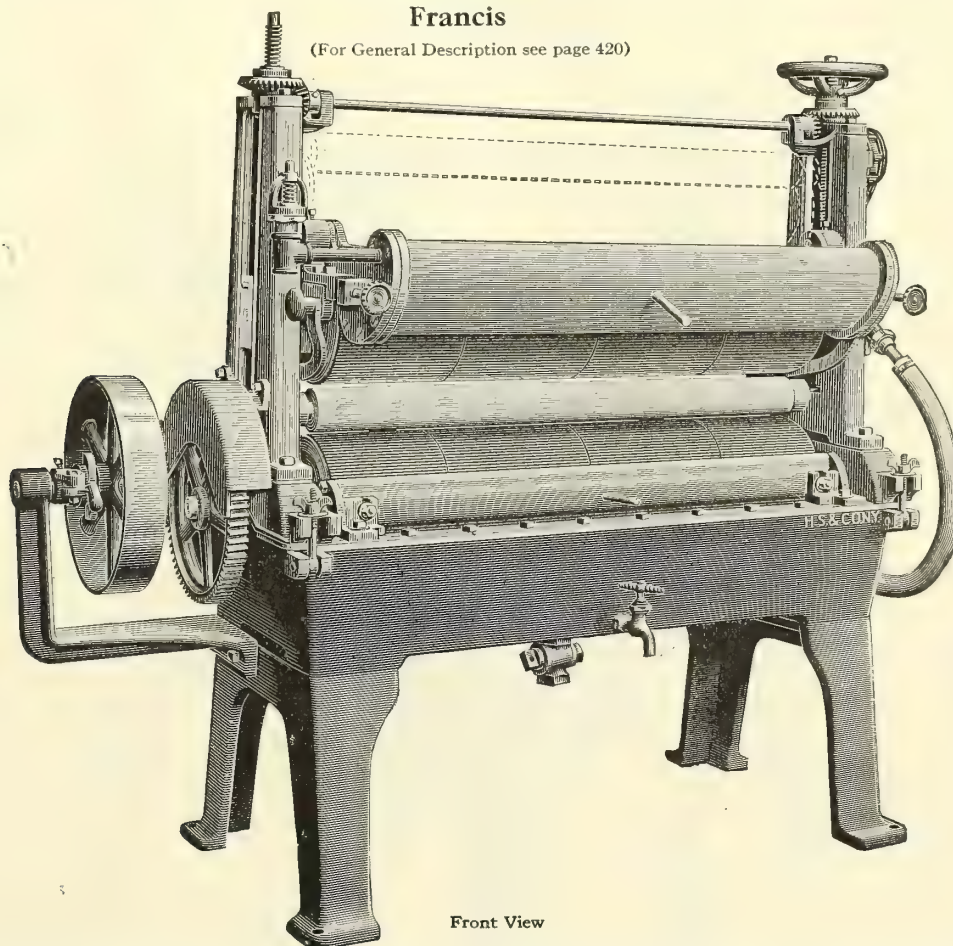
The cast-iron steam tanks of glue spreaders and boilers are not made to stand any steam pressure whatever and in their erection the utmost care should be taken that pipes are free from all obstructions so as to avoid any possible back pressure. The safety valves furnished for the overflow pipes must be in position and should be tested frequently and see that they work easily. By following this rule in setting up the equipment much trouble will be avoided.

Power Feed Combination Glue Spreaders

(Power Driven)

Francis

(For General Description see page 420)



Front View

The Idler Feed Roll is easily and quickly swung between the rolls to do single gluing, and can also be used in position over the upper glue roll for thin stock, which is a convenience when the machine is set for double gluing, and an occasional piece of stock must be glued on one side, which is thus done without rearranging or disturbing the glue rolls. The idler roll is attached to extensions on roll boxes, the same as the glue trough for the upper glue roll. These boxes are supported by adjusting screws, so no weight but that of roll itself comes on its bearings. The idler roll comes directly over the center of glue roll, and holds the stock firmly against the glue roll, so that it keeps stock flat to spread glue evenly all over.

Model D With Cast Iron Tanks

12-Inch
Floor space occupied, 3 feet 6 inches x 2 feet 3 inches.
Approximate weight, 680 pounds.
Approximate weight, crated for shipment, 740 pounds.

18-Inch
Floor space occupied, 4 feet x 2 feet 3 inches.
Approximate weight, 760 pounds.
Approximate weight, crated for shipment, 830 pounds.

25-Inch
Floor space occupied, 4 feet 7 inches x 2 feet 3 inches.
Approximate weight, 875 pounds.
Approximate weight, crated for shipment, 940 pounds.

31-Inch
Floor space occupied, 5 feet 1 inch x 2 feet 3 inches.
Approximate weight, 950 pounds.
Approximate weight, crated for shipment, 1060 pounds.

37-Inch
Floor space occupied, 5 feet 7 inches x 2 feet 3 inches.
Approximate weight, 1150 pounds.
Approximate weight, crated for shipment, 1225 pounds.

44-Inch
Floor space occupied, 6 feet 2 inches x 2 feet 3 inches.
Approximate weight, 1350 pounds.
Approximate weight, crated for shipment, 1430 pounds.

75-Inch
Floor space occupied, 8 feet 9 inches x 2 feet 3 inches.
Approximate weight, 2500 pounds.
Approximate weight, crated for shipment, 2700 pounds.

Model E With Heavy Iron Plate Galvanized Tanks and Fitted with Copper Coils

53-Inch
Floor space occupied, 34 x 78 inches.
Approximate weight, 1280 pounds.
Approximate weight, crated for shipment, 1375 pounds.

60-Inch
Floor space occupied, 34 x 85 inches.
Approximate weight, 1475 pounds.
Approximate weight, crated for shipment, 1600 pounds.

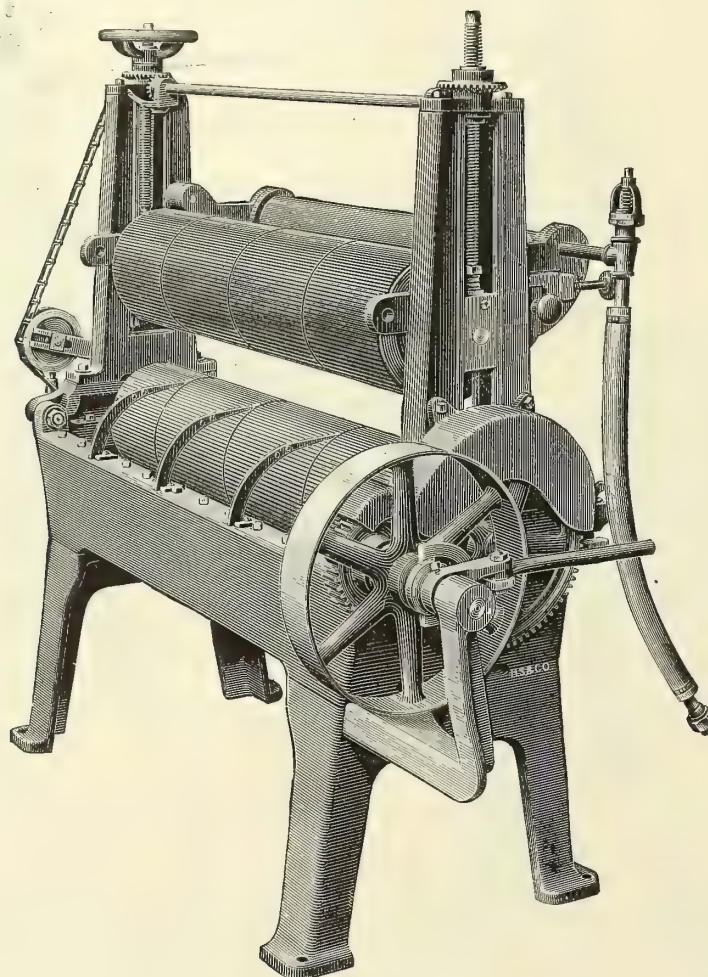
84-Inch
Floor space occupied, 34 x 109 inches.
Approximate weight, 2100 pounds.
Approximate weight, crated for shipment, 2250 pounds.

Power Feed Double Glue Spreaders

(Power Driven)

Francis

(For General Description see page 420)



Back View

Model D

With Cast Iron Tanks

12-Inch

Floor space occupied, 3 feet 6 inches x 2 feet 3 inches.
Approximate weight, 670 pounds.
Approximate weight, crated for shipment, 730 pounds.

18-Inch

Floor space occupied, 4 feet x 2 feet 3 inches.
Approximate weight, 750 pounds.
Approximate weight, crated for shipment, 820 pounds.

25-Inch

Floor space occupied, 4 feet 7 inches x 2 feet 3 inches.
Approximate weight, 850 pounds.
Approximate weight, crated for shipment, 910 pounds.

31-Inch

Floor space occupied, 5 feet 1 inch x 2 feet 3 inches.
Approximate weight, 925 pounds.
Approximate weight, crated for shipment, 1030 pounds.

37-Inch

Floor space occupied, 5 feet 7 inches x 2 feet 3 inches.
Approximate weight, 1125 pounds.
Approximate weight, crated for shipment, 1210 pounds.

44-Inch

Floor space occupied, 6 feet 2 inches x 2 feet 3 inches.
Approximate weight, 1320 pounds.
Approximate weight, crated for shipment, 1400 pounds.

75-Inch

Floor space occupied, 8 feet 9 inches x 2 feet 3 inches.
Approximate weight, 2450 pounds.
Approximate weight, crated for shipment, 2650 pounds.

Model E

With Heavy Iron Plate Galvanized Tanks and Fitted with Copper Coils

53-Inch

Floor space occupied, 34 x 78 inches.
Approximate weight, 1220 pounds.
Approximate weight, crated for shipment, 1300 pounds.

60-Inch

Floor space occupied, 34 x 85 inches.
Approximate weight, 1400 pounds.
Approximate weight, crated for shipment, 1535 pounds.

84-Inch

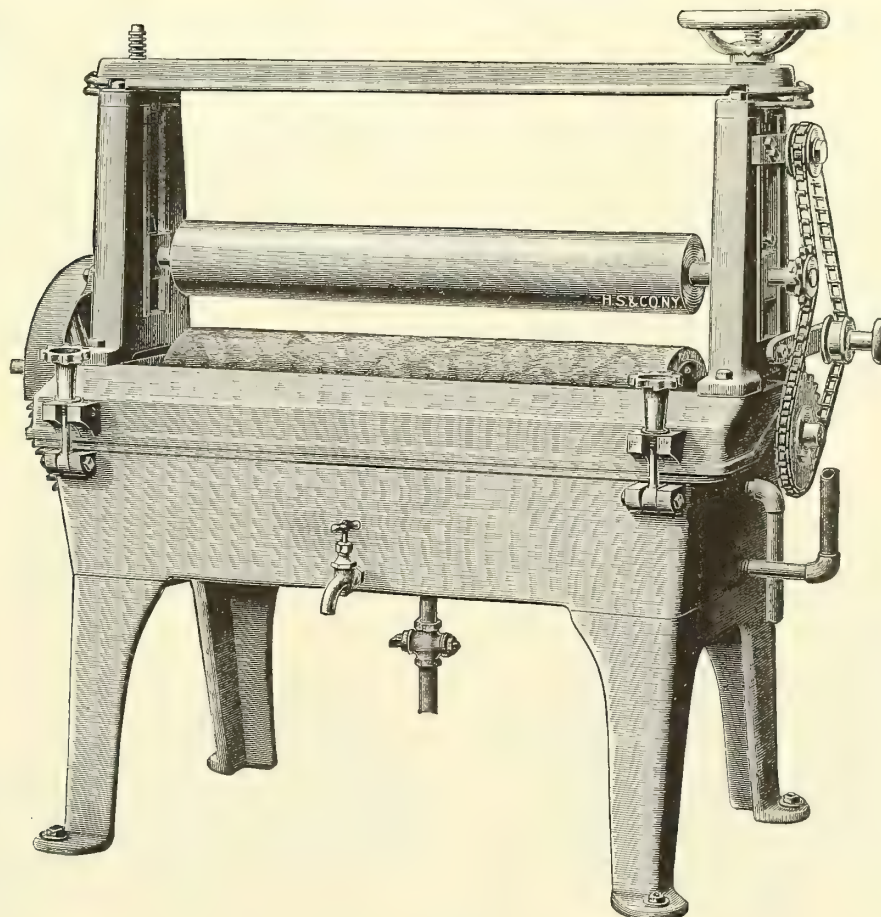
Floor space occupied, 34 x 109 inches.
Approximate weight, 1975 pounds.
Approximate weight, crated for shipment, 2100 pounds.

Power Feed Single Glue Spreaders

(Power Driven)

Francis

(For General Description see page 420)



Front View

Model D

With Cast Iron Tanks

12-Inch

Floor space occupied, 3 feet 6 inches x 2 feet 3 inches.
Approximate weight, 540 pounds.
Approximate weight, crated for shipment, 580 pounds.

18-Inch

Floor space occupied, 4 feet x 2 feet 3 inches.
Approximate weight, 600 pounds.
Approximate weight, crated for shipment, 650 pounds.

25-Inch

Floor space occupied, 4 feet 7 inches x 2 feet 3 inches.
Approximate weight, 640 pounds.
Approximate weight, crated for shipment, 710 pounds.

31-Inch

Floor space occupied, 5 feet 1 inch x 2 feet 3 inches.
Approximate weight, 760 pounds.
Approximate weight, crated for shipment, 840 pounds.

37-Inch

Floor space occupied, 5 feet 7 inches x 2 feet 3 inches.
Approximate weight, 900 pounds.
Approximate weight, crated for shipment, 1000 pounds.

44-Inch

Floor space occupied, 6 feet 2 inches x 2 feet 3 inches.
Approximate weight, 1040 pounds.
Approximate weight, crated for shipment, 1140 pounds.

75-Inch

Floor space occupied, 8 feet 9 inches x 2 feet 3 inches.
Approximate weight, 1800 pounds.
Approximate weight, crated for shipment, 2000 pounds.

Model E

With Heavy Iron Plate Galvanized Tanks and Fitted with Copper Coils

53-Inch

Floor space occupied, 34 x 78 inches.
Approximate weight, 950 pounds.
Approximate weight, crated for shipment, 1025 pounds.

60-Inch

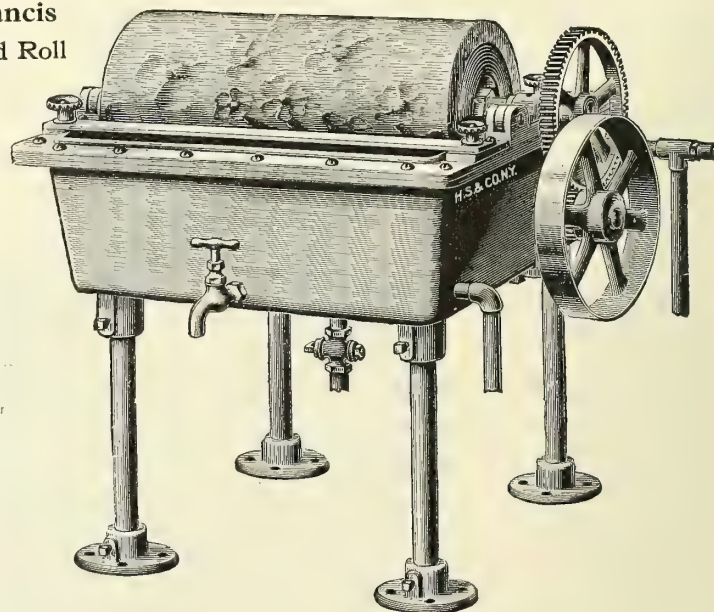
Floor space occupied, 34 x 85 inches.
Approximate weight, 1100 pounds.
Approximate weight, crated for shipment, 1200 pounds.

84-Inch

Floor space occupied, 34 x 109 inches.
Approximate weight, 1475 pounds.
Approximate weight, crated for shipment, 1575 pounds.

Hand-Feed Glue Spreaders

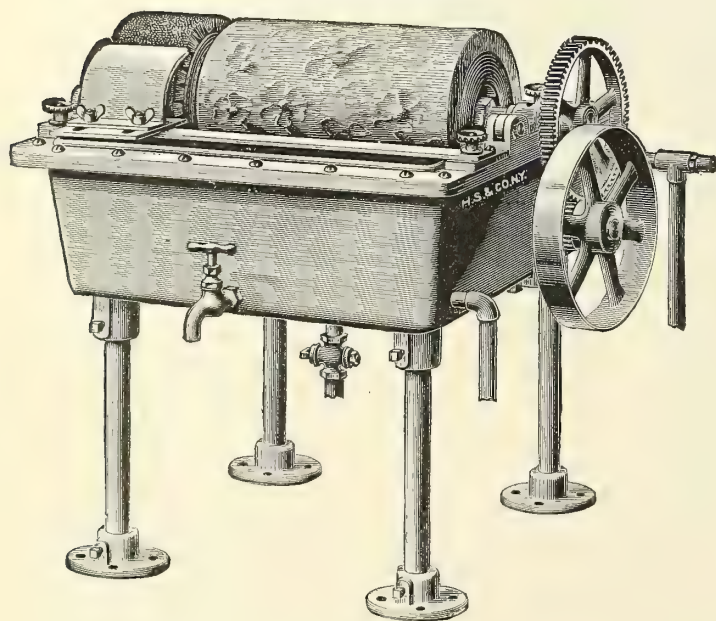
(Power Driven)

Francis
Solid Roll

Designed to rapidly spread glue on edges and for narrow stock in general. The glue roll is of iron, substantially covered with fabric, which is inexpensive and easily applied. The roll may be removed and the glue prepared in tank. But we recommend the use of a connected cooker, which will be found more economical and satisfactory.

No.	Length of Roll Inches	Approximate Weight Pounds Gross	Pounds Net	Size of Pulley Inches	Speed
2	8	310	260	12x2¼ Drive	125 R.P.M.
3	12	310	260	12x2¼ Drive	125 R.P.M.
4	18	365	300	12x2¼ Drive	125 R.P.M.
8	25	575	500	14x2½ Clutch	80 R.P.M.

Combination Roll



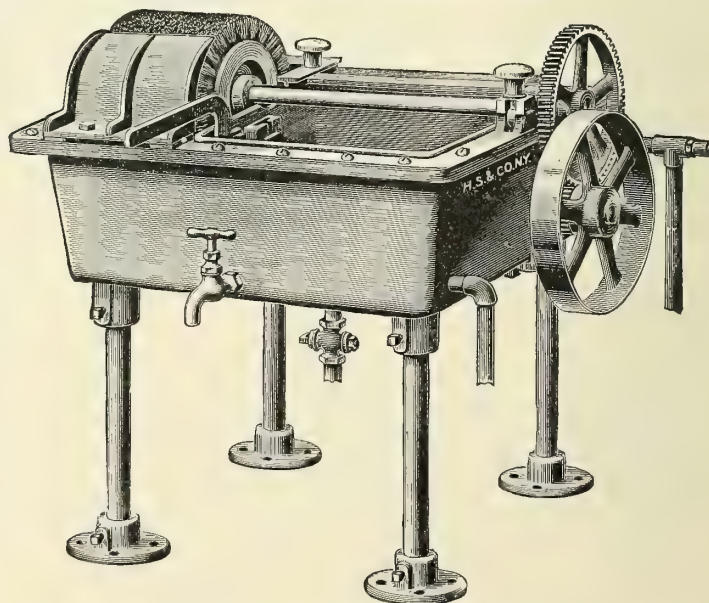
This Spreader is of the same general design as others on this page, but has a combination roll containing both solid and brush sections.

This combination makes it possible to do much of the work, as described on other two spreaders, and it is an excellent machine for use where there is a great variety of small work to be handled rapidly and economically.

An adjustable Scraper is supplied to scrape surplus glue back into the tank, the scraper for the Brush Roll being adjustable independently of the other. A Guard, as shown, is furnished to relieve the Brush of the weight of the stock.

No.	Width of Brush Roll Inches	Width of Solid Roll Inches	Approximate Weight Pounds Gross	Pounds Net	Size of Pulley Inches	Speed
5	3½	12	365	300	12x2¼ Drive	125 R.P.M.
9	6	10	365	300	12x2¼ Drive	125 R.P.M.
10	6	18	575	500	14x2½ Clutch	80 R.P.M.

Brush Roll and Divided Tank



This Spreader is designed for gluing tongue and groove or V-joints and all other small work with an uneven surface, where a brush is necessary to rub the glue into position. The brush is drawn with copper wire into a brass ring and protected with a coating of shellac. When worn out, the brass ring may be refilled at slight expense. A scraper in supplied as described on this page. The divided glue tank is an excellent feature, as it permits the glue to be cooked and fed to the brush through a gate.

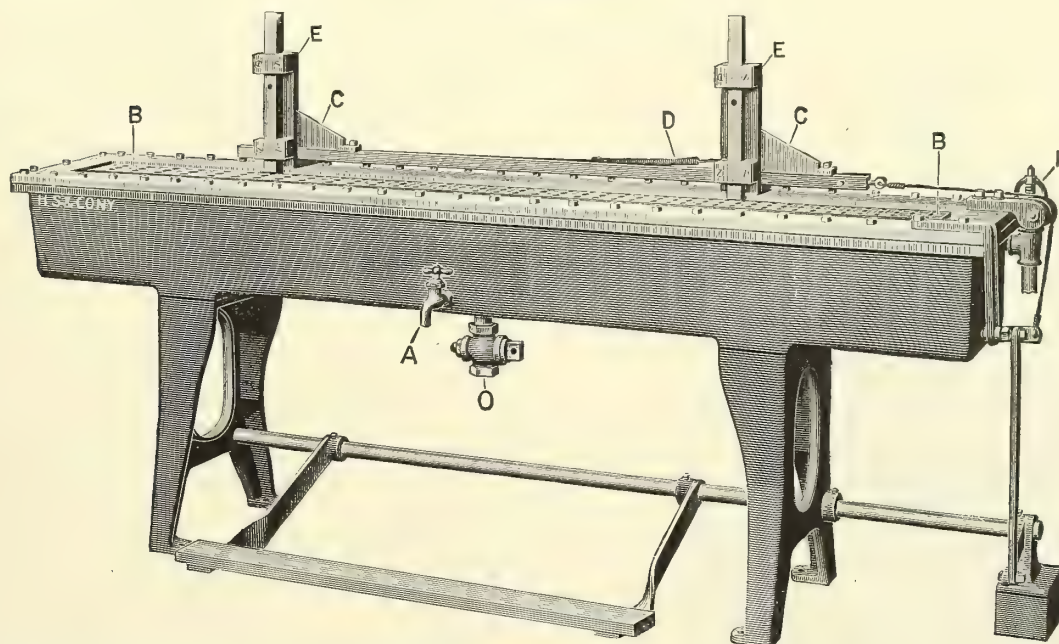
No.	Width of Brush Roll Inches	Capacity Reservoir Gallons	Approximate Weight Pounds Gross	Pounds Net	Size of Pulley Inches	Speed
6	6	2½	365	300	12x2¼ Drive	125 R.P.M.
11	12	3½	575	500	14x2½ Clutch	80 R.P.M.

These Spreaders will also be supplied with solid rolls, either corrugated or fabric covered, when specially ordered.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Joint Glue Spreaders Long Tank with Perforated Plate Francis



These machines are designed for gluing the straight edges of long stock used in the manufacture of pianos, furniture, coffins, and panels as well as in general woodworking. They are clean, rapid and economical in operation. They may be used for shallow tongue and groove joints of thick or thin stock (singly or several pieces at a time) of any length; or for the taped edges of face veneer.

The method of operation is clearly shown in illustration. The operator folds veneer at the taped joint, and in other edge work grasps what stock he can handle. Then presses the foot lever which brings up the perforated plate (almost full length of glue tank).

The perforations in plate are of proper size and spacing to allow surplus glue to drip back into tank, leaving enough between perforations to coat stock evenly and without waste. By resting the edge on top of plate, and moving stock slightly back and forth, the joint is thoroughly and evenly coated. This method also prevents the glue running over the sides of stock and saves much time and glue as compared with the use of the brush.

The rise and fall of the perforated plate keeps the glue stirred and prevents formation of scum, while the steam-jacketed tanks keep the glue hot and ready for constant use. The fitted cover on the glue tank automatically rises and falls with each movement of the perforated plate.

The tanks are regularly made of heavy iron castings, the inner or glue tank galvanized (or may be solid copper, if specified). The joints between tanks are machined true and steam packed so as to prevent wet and sloppy floors and the annoyance of escaping vapor.

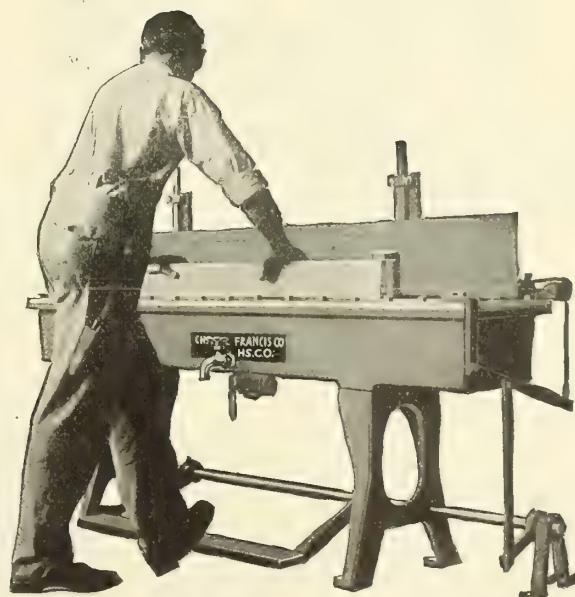
Fitted with water faucet, and pop safety valve, the latter to prevent back pressure if overflow pipe should get stopped up. (This valve is not needed if fitted with Copper Glue Tank, in which case machine has Plate Iron Outside Tank and Copper Steam Coil). Glue valve is provided for drawing glue out of tank.

The perforated plate is regularly 4 inches wide for the regular sizes mentioned below, which provide for all ordinary requirements. Special sizes made to order.

The self-acting cover, as shown in illustration, is a valuable addition and will be supplied when ordered.

No. 290, inside length of glue tank, 5 feet 11 inches.

No. 300, inside length of glue tank, 7 feet 11 inches.



With self-acting cover which rises and closes automatically as perforated plate rises and falls. This cover prevents exposure of the glue to the air for any length of time, preventing formation of scum and also keeping it free from dust and dirt.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Power Feed Double Glue Spreaders

Power Driven

Francis

For Vegetable Glue

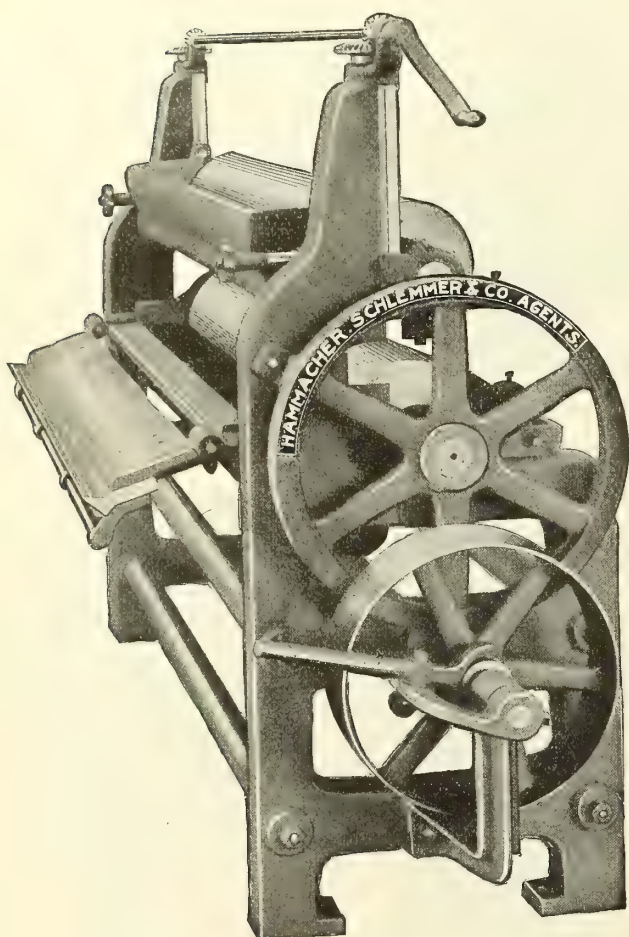
Specially designed for use with cold vegetable glue, but has heating chambers for both upper and lower rolls, which allows heat to be used when desired, and permits using hot glues—either animal, silicate of soda, casein, etc.

An extra heavy, nicely-designed machine of high-grade construction, equal to all the peculiar requirements of cold vegetable glues.

Being equipped with heating device and thereby made suitable for hot glues there is no need of a double equipment.

Cast-iron Tanks, Corrugated Rolls of a specially prepared metal.

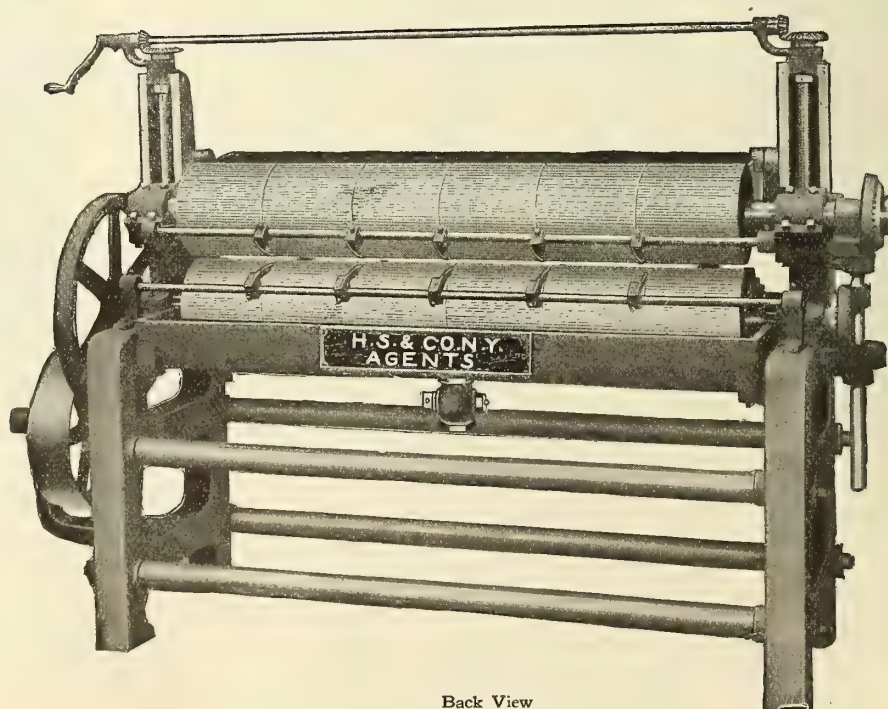
If desired, the Idler Feed Roll used on Combination Spreaders, described on page 421, can be supplied.



[End and Front View
Showing scraper thrown away from roll

Made regularly in following widths: 31, 38, 45, 53 and 60 inches.

Suitable Mixer or Converter can be furnished according to nature or requirements of particular adhesive to be used.



Back View

Modern Glue-Room Equipment

Francis

A. Large Glue Cooker for preparing glue. This Cooker is fitted with Power Stirrer and with Glue Thermometer C with stem extending down through Stirrer Shaft close to the point where glue is drawn from the Cooker.

B. Cooker used as reservoir or supply tank. Into this Cooker the glue is drawn from Cooker A as soon as properly prepared, and then drawn from this to Spreader as needed. This Cooker is fitted with Angle Thermometer D so operator can see that glue is kept at proper temperature.

E. Double Glue Spreader fitted with Glue Thermometer F. The Glue Thermometer in Spreader shows the operator when glue is in working condition.

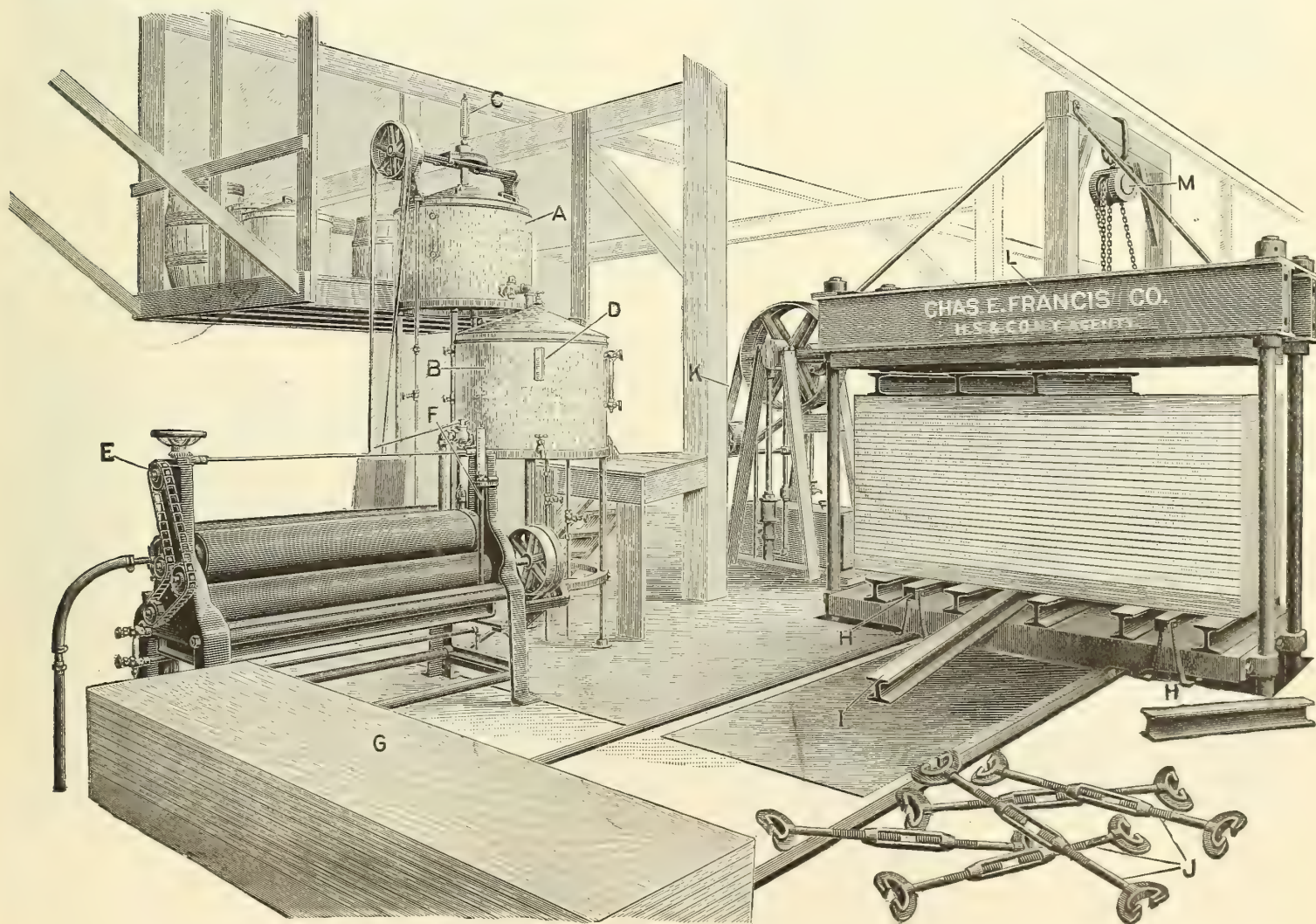
G. Truck to handle stock to press. After passing through Spreader the stock is placed on this truck, which is then pushed to Press L. The top of the truck and steel trestles H are fitted with rollers, which permit the pile of stock to be pushed from the truck to the press. The truck is pushed back to the Spreader, the operator places the I-Beams and retaining clamps, binds the load and pushes it on another truck, which carries it to the proper position. For illustrations see page 429.

H. Roller Equipped Trestles which receive stock from truck. These Trestles hold the stock high enough from platen to allow the Retaining Clamp Beams I to slip in easily, and when platen rises the Trestles drop down so that pressure comes on the I-Beams, and after stock is clamped and platen is down the Trestles again carry the load and it can be easily removed from the Press.

K. Large Double Power Pump for Press. This Pump is built in strong frame of iron and steel, and a tank for water or oil, whichever may be used in operating the Press, is fitted in bottom of the Pump Frame.

L. Large Hydraulic Veneer Press. Press shown is Open Side Hydraulic Type, built to order to meet requirements of size, capacity and strength.

M. Chain Block for removing stock from Press. Placed so the stock, while held by the Retaining Clamps, can be lifted to any ordinary Truck, or by use of Trolley Block it can be run away from Press and stock left in clamps until thoroughly dry. This is sometimes more convenient than the truck method mentioned under G.



Hydraulic Veneer Presses

Francis

Designed and constructed especially for Veneered and Built-up work. Particularly adapted for use in Piano, Furniture, Panel, Desk, Door and other wood-working shops where Built-up or Veneer work is used in quantity.

The preceding page illustrates a complete outfit of Hydraulic Veneer Press Equipment, Glue Spreader and Glue Cookers. It shows hoist arrangement of removing stock from the press, which is desired in some cases, but the patented unloading arrangement, shown on following page and described below, has been found to be a big improvement and is given the preference over all other methods of handling the stock.

Each press is substantially made with a heavy steel frame, solidly bolted into perfect rigidity. No wooden parts are used in the press nor for the clamps.

The lower platen for the presses of ordinary size for the usual pressure requirements is heavily and strongly built of cast-iron, planed smooth and true and guided by polished steel strain rods, insuring smooth and accurate movement.

The upper platen consists of sections of heavy steel beams placed cross-wise and faced with a rolled steel plate. The pressure is evenly distributed over the whole surface and is regulated and protected by pressure gauge and safety valve.

The platen trestles, equipped with rollers (as illustrated on following page), facilitate handling and eliminate entirely all danger of jamming the press or disturbing stock while moving. The presses are built for any required pressure, but the general run of veneering and built-up work for the industries mentioned almost invariably requires our Heavy Duty Press, guaranteed for pressure up to 100 pounds per square inch of platen surface. Presses can be built of lighter construction for less pressure or constructed for considerably heavier pressure, according to any special requirements. They are regularly supplied with either single, double or four-plunger power pump, according to size and capacity of press, and are complete with safety valves, pressure gauge and all connections. The Belt Power Pump is regularly furnished and usually preferred, but Steam Power Pump can be furnished if required.

The Single Beam Retaining Clamps, shown on page 438, are used in connection with these presses. These clamps are easily handled, quickly placed, readily adapt themselves to different widths of stock, are quickly tightened, hold the stock securely, are quickly released, and they practically overcome all trouble and expense with repairs. The clamps of course are extra, according to the number and size of clamps wanted.

New Unloading Device

This is a patented feature, and while the Hydraulic Veneer Press can be furnished without it, it may certainly be recommended. It handles the stock out of and away from the press much more quickly than the overhead track and trolley hoist arrangement, saves rehandling of the stock after it is dry, and is indeed a big improvement over all other arrangements of handling the stock to and from the press.

When the bale of stock in the clamps is ready to remove from the press, the pressure of the press is released; the platen then lowers itself and the roller trestles again rest on the floor stands holding the bale of stock upon the rollers of trestles high enough for clamp beams to clear platen of press. The bale of stock is then easily rolled out of press until it is over the regular floor truck (placed in position for it), and by pulling the lever of the unloading device the bale of stock is instantly lowered on to this truck, and the weight resting on the clamp beams, it releases the roller trestles, which are pushed (on roller floor stands) toward front of press and the truck carrying the bale of stock is then free to be taken to any part of the building desired. Thus a factory truck is used for each bale of stock if desired, and the bale is usually left on it until thoroughly dry, thus saving rehandling. The ordinary factory truck is used without stakes and preferably with two swivel casters at each end instead of only one.

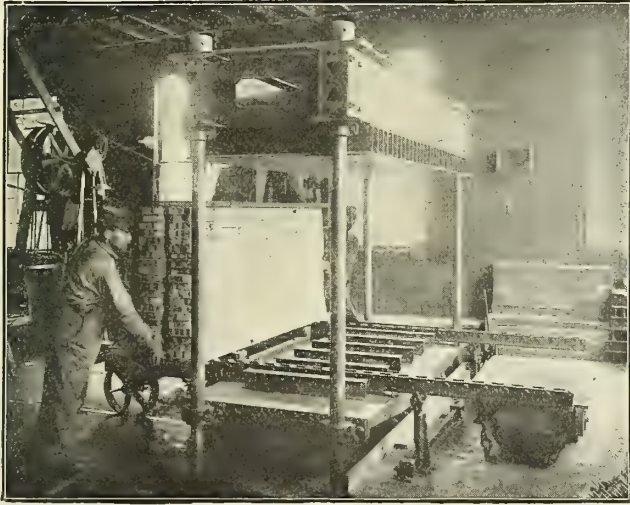
Size of Platen

Inches	Inches	Inches	Inches
30 x 40	36 x 108	42 x 84	30 x 72
24 x 60	42 x 108	48 x 84	36 x 72
30 x 60	48 x 108	24 x 96	42 x 72
36 x 60	24 x 120	36 x 96	48 x 72
42 x 60	36 x 120	42 x 96	24 x 84
48 x 60	42 x 120	48 x 96	30 x 84
24 x 72	48 x 120	24 x 108	36 x 84

Open Side Hydraulic Veneer Press

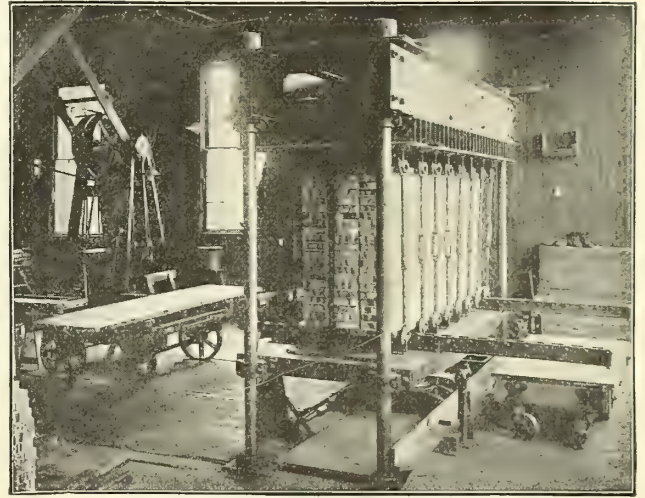
Francis

With Loading and Unloading Device



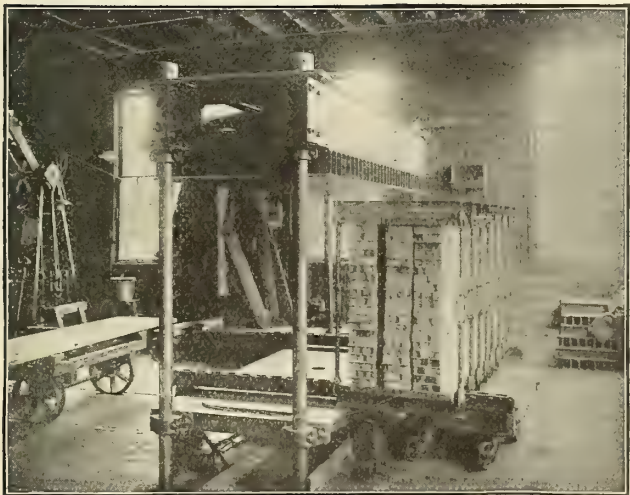
Rolling Stock into Press

The Rollers on trestles permit rapid handling with no danger of disturbing stock



Pressure Applied, Retainers Tightened

Load is removed from trestles and applied to heavy smooth platen



Stock in Retainers Being Lowered onto Ordinary Factory Truck

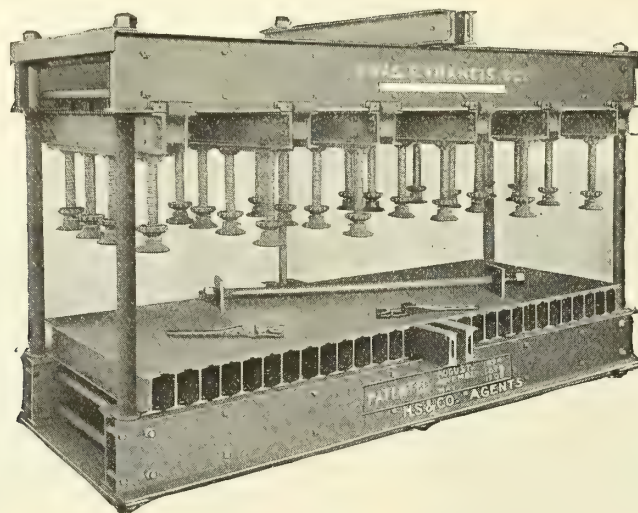


Press Ready for Next Load

For general description, see pages 427 and 428

Large Complete Steel Veneer Presses

Francis



Style C

Accessible From Both Sides and Ends

Both Center Rods Removable

Designed for all the large and heavy work in furniture manufacture and allied trades. Particularly suitable for veneering plain one panel sanitary flush doors. All of the distinctive features of the iron presses illustrated on next page are embodied in these presses. As shown, the upright rods do not extend through the base plate and therefore do not prevent the use of its full surface. The dimensions of the base plate are given in the clear, so that stock of those sizes may be clamped without trouble. These presses are necessarily strong and substantial in construction and have 2x24-inch screws adjustable both ways, with heavy, square-cut threads and malleable iron nuts. The pressure

is easily applied with the 20-inch ratchet wrenches furnished with each press. One wrench is supplied with each press Nos. 150 to 155; two with Nos. 156 to 166; three with Nos. 167 to 178.

The adjusting screws are operated from roller slides, attached to outside of frame, so as to permit pressure at extreme edges. Extra roller slides, adjusting screws and wrenches may be secured at any time. All presses are regularly made to take 26 inches under screws, but height may be changed if desired.

Special designs of Glue Presses will be furnished, either in accordance with drawings, or to meet special conditions.

Can be made any size desired. Regular sizes are as follows:

Style D

Number	Dimensions of Base Plates	Regular Number of Cross Sections	Regular Number of Screws in each Cross Section
150	20 inches x 6 feet	4	2
151	20 inches x 7 feet	5	2
152	25 inches x 6 feet	4	2
153	25 inches x 7 feet	5	2
154	30 inches x 5 feet	4	2
155	30 inches x 6 feet	4	2

This style the same as C (illustrated) except smaller and has no center upright rods

Style C

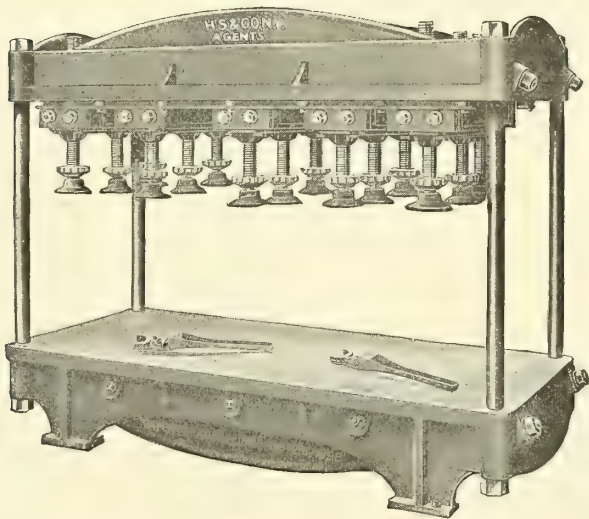
Number	Dimensions of Base Plates	Regular Number of Cross Sections	Regular Number of Screws in each Cross Section
156	30 inches x 8 feet	5	2
157	30 inches x 10 feet	6	2
158	30 inches x 12 feet	7	2
159	36 inches x 8 feet	5	3
160	36 inches x 10 feet	6	3
161	36 inches x 12 feet	7	3
162	36 inches x 16 feet	9	3

Style C

Number	Dimensions of Base Plates	Regular Number of Cross Sections	Regular Number of Screws in each Cross Section
163	42 inches x 8 feet	5	4
164	42 inches x 10 feet	6	4
165	42 inches x 12 feet	7	4
166	42 inches x 16 feet	9	4
167	48 inches x 8 feet	5	4
168	48 inches x 10 feet	6	4
169	48 inches x 12 feet	7	4
170	48 inches x 16 feet	9	4
171	54 inches x 8 feet	5	4
172	54 inches x 10 feet	6	4
173	54 inches x 12 feet	7	4
174	54 inches x 16 feet	9	4
175	60 inches x 8 feet	5	5
176	60 inches x 10 feet	6	5
177	60 inches x 12 feet	7	5
178	60 inches x 16 feet	9	5

Large Complete Iron Veneer Presses

Francis



No. 38

These Presses have extra heavy cast-iron tops and bases, strongly ribbed and braced and are further strengthened by large steel truss-rods drawn tightly over the arches. The top of the base and bottom of the top are planed true.

The cross-sections are strengthened by steel draw rods. The number of cross-sections and of screws attached to each may be varied to suit conditions and each may be purchased at any time. All these Presses are regularly fitted with 2x24-inch steel screws, with square-cut thread.

The nuts are made of best malleable iron, are tapped out and have an extra long thread bearing. The cross-sections slide lengthwise of the press and the screws are adjustable on the cross-sections, giving perfect adjustment in both directions.

The sizes 35, 36 and 37 are the same style as No. 38, illustrated, and Nos. 23, 24, 25 and 26 are the same design except with upright center rods, which are necessary on account of the extreme lengths of these Presses. These rods, however, are removable on one side which gives ample convenience in loading and unloading the stock.

The smaller sizes Nos. 35 to 38, inclusive, are especially suitable for work in piano, furniture, chair and trunk factories and the large sizes are particularly adapted for door factories and for general planing mill work.

While the standard distance between bottom of screw flanges and top of base plates is 26 inches, this distance may be altered to suit special conditions.

Numbers	35	36	37	38	23	24	25	26
Length of Base.....	3 ft. 6 in.	4 ft. 9 in.	6 ft.	6 ft. 8 in.	8 ft. 6 in.	10 ft.	12 ft.	8 ft. 6 in.
Extreme Width of Base.....	30 in.	30 in.	30 in.	36 in.	30 in.	30 in.	30 in.	36 in.
Length between Uprights.....	3 ft. 1 in.	4 ft. 4 in.	5 ft. 7 in.	6 ft. 1 in.	8 ft.	9 ft. 6 in.	11 ft. 5 in.	8 ft.
Width between Uprights.....	25½ in.	25½ in.	25½ in.	29 in.	25 in.	25 in.	25 in.	30 in.
Height between Top and Base.....	37 in.	37 in.	37 in.	37 in.	37 in.	37 in.	37 in.	37 in.
Extreme Height between Screws and Base.....	26 in.	26 in.	26 in.	26 in.	26 in.	26 in.	26 in.	26 in.
Number of Cross-Sections.....	2	3	4	5	5	6	7	6
Number of Screws.....	4	6	8	15	10	12	14	18
Approximate Weights.....	1900 lbs.	2500 lbs.	3300 lbs.	5800 lbs.	4000 lbs.	4600 lbs.	6500 lbs.	6000 lbs.

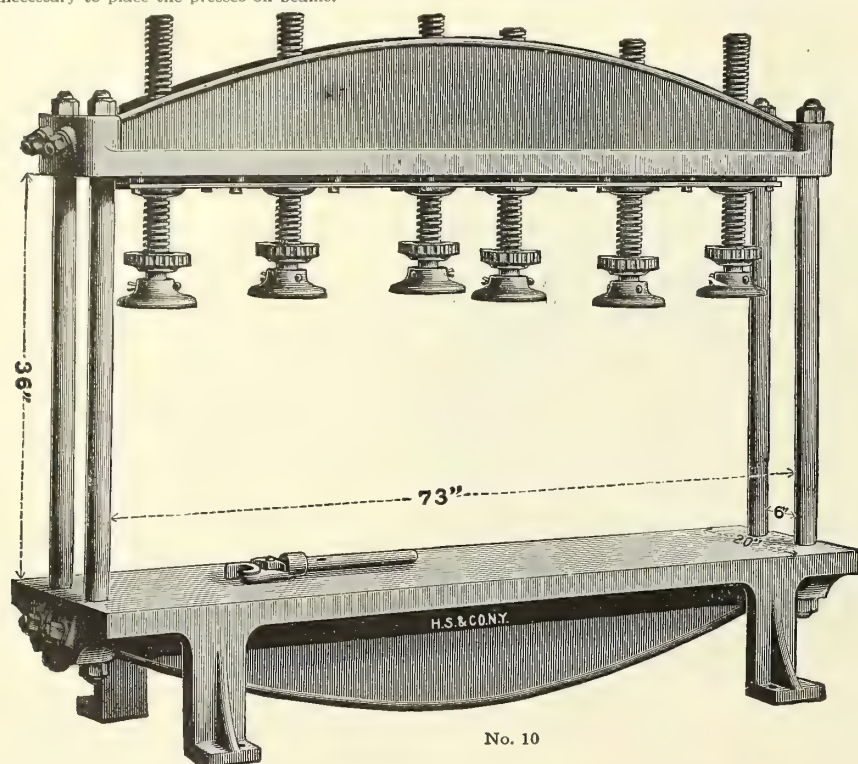
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Complete Iron Veneer Presses

Francis

These presses differ from the iron presses shown in the preceding pages in the arrangement of the feet which, in this style, extend below the arches, making it unnecessary to place the presses on beams.



No. 10

Has six adjustable screws, fitted with ratchet wrench attachment. A wrench is furnished with each press.

Length between upright rods, 73 inches.

Width of base overall, 20 inches.

Width of base between upright rods, 6 inches.

Greatest distance between base and bottom of screw flanges, 28 inches.

Weight complete, 1,850 pounds.

Extra screws can be supplied if desired.

No. 19

Has three adjustable screws fitted with ratchet wrench attachment. A wrench is furnished with each press.

Length between upright rods, 38½ inches.

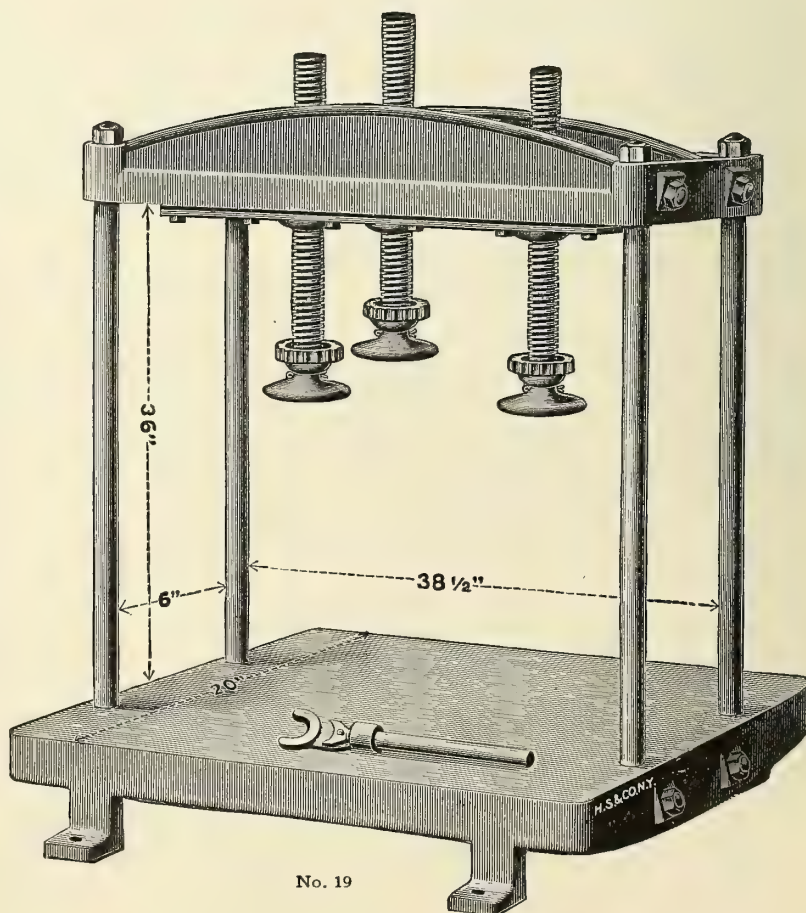
Width of base over all, 20 inches.

Width of base between upright rods, 6 inches.

Greatest distance between base and bottom of screw flanges, 28 inches.

Weight complete, 800 pounds.

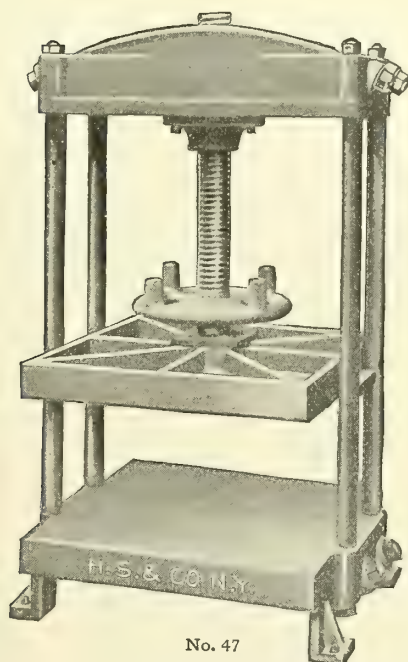
Extra screws can be supplied if desired.



No. 19

Extra Heavy Complete Iron Veneer Presses

Francis



No. 47

These presses are extra heavy and substantial in construction, being designed for the heavy pressure required for such work as bending chair backs and pressing veneered saddle seats and any other work requiring extra heavy pressure.

Both the base and top platens are extremely rigid and heavy and are ribbed and braced and reinforced with steel rods over the arches. The two brace surfaces are planed perfectly true, thus insuring straight and even pressure in clamping the stock.

No. 47, as illustrated, is equipped with a single screw and has an adjustable pressure plate 24x24 inches. The screw is 3 inches in diameter with $\frac{1}{2}$ -inch pitch and the weight of the complete machine is about 1,100 pounds.

No. 50 is of the same general construction except it is equipped with two plates 32x44 inches, with two screws to each plate, giving greatly increased clamping power for still heavier work. Length of base between end upright rods 66 inches; width of base 48 inches. This machine weighs about 6,500 pounds.

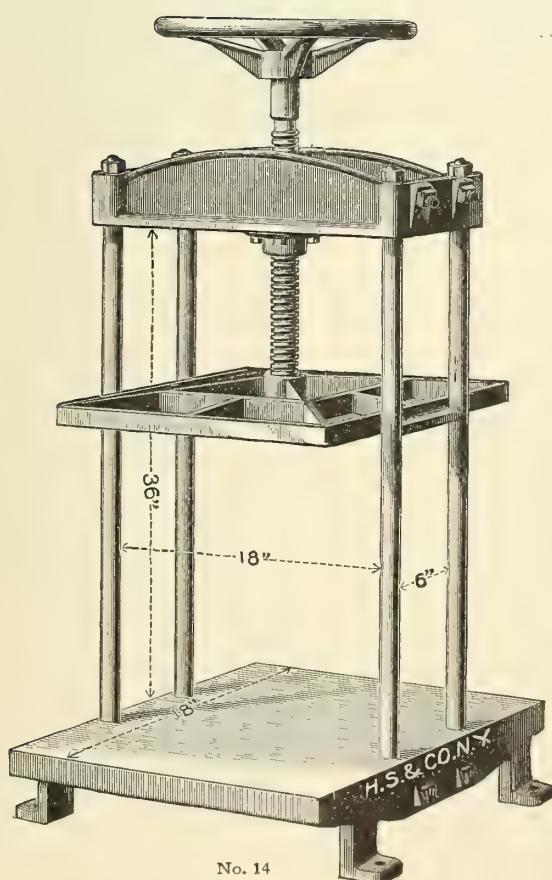
No. 51, practically the same in every way as No. 50 except equipped with four pressure plates, each $32\frac{1}{2}$ inches long by 23 inches wide, one screw in the centre of each plate, thus making it more adjustable than the No. 50. Length of base between end upright rods 66 inches; width of base 48 inches. Weight 6,750 pounds.

Small Complete Veneer Presses

One 18-inch Hand Wheel furnished with each Press.

Screws in these presses are 2 inches diameter by 24 inches long.

Construction is the same as the Sectional Presses, except that they have feet to rest on the floor.



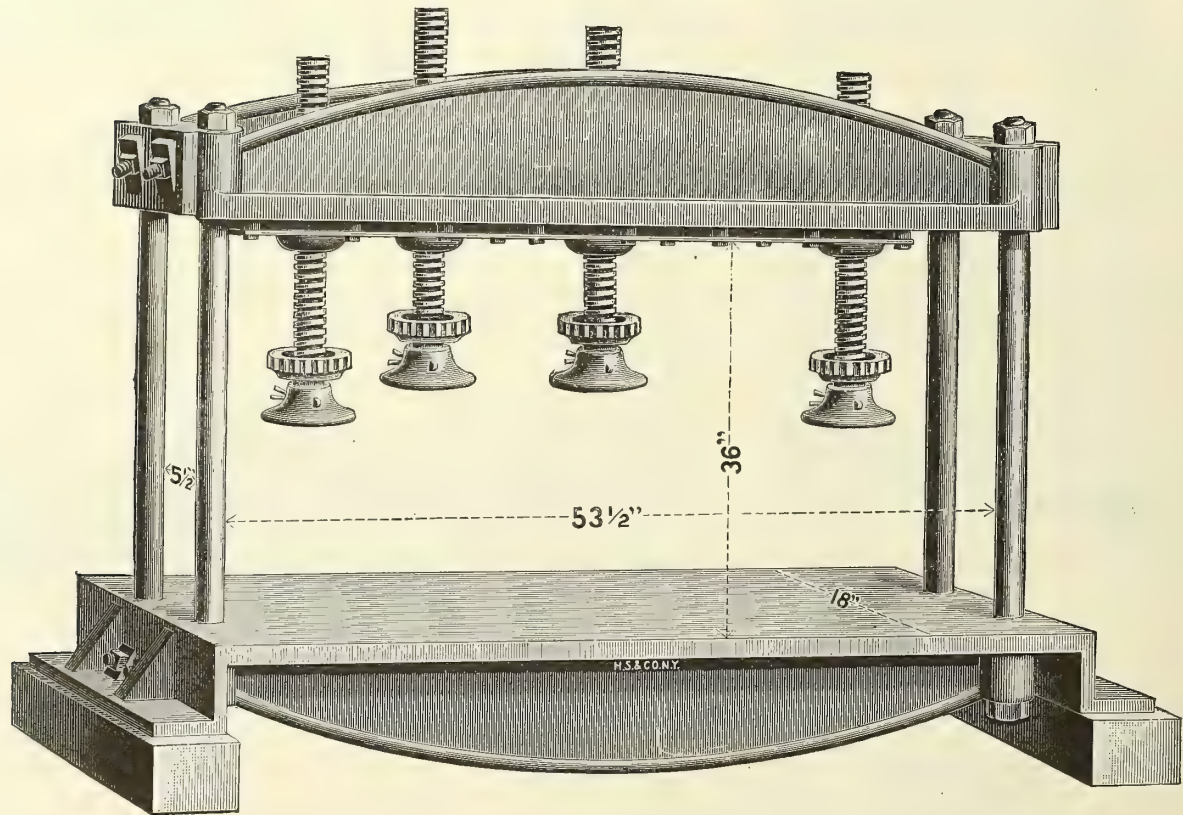
No. 14

Number	Width Between Upright Rods Inches	Length of Base Inches	Size of Plate Inches	Weight Complete Pounds
12	12	12	12x12	275
13	12	18	12x15	300
14	18	18	18x18	425
15	18	24	18x18	460
16	24	24	24x24	600
17	24	30	24x24	650
18	28	28	28x28	725

Greatest distance between base and plate 30 inches. Height can be changed to suit purchaser.

Extra Heavy Sectional Veneer Presses

Francis



No. 8-A With Ratchet Screws

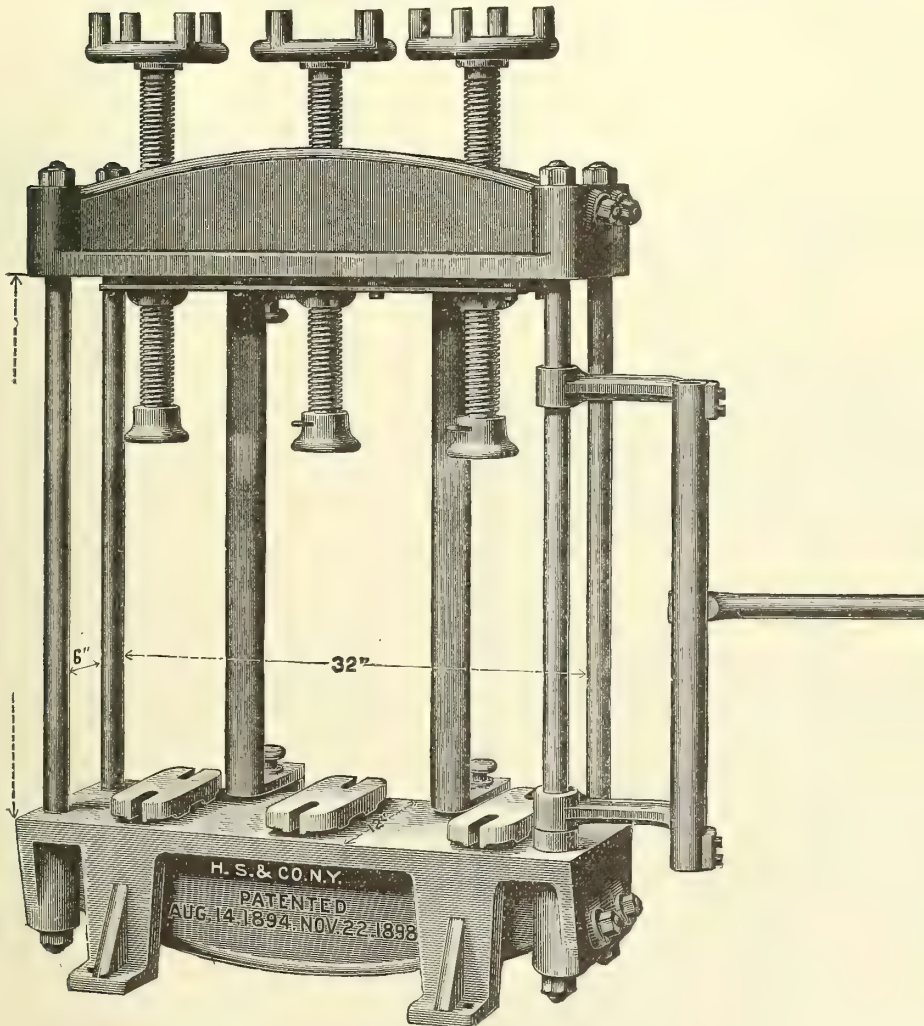
Number	Width Between Uprights Inches	Width of Bases Inches	Number of Adjustable Screws	Approximate Weight Pounds
1	12	12	1 Square Head	200
2	18	12	2 Square Heads	320
3	24	12	2 Square Heads	375
4	28	12	2 Square heads	450
5	32	12	2 Square Heads	510
6	38	12 1/4	3 Square Heads	650
7	44	13	3 Square Heads	750
8	53	14	4 Square Heads	1100
9	60	15	4 Square Heads	1250
8-A	53	18	4 Ratchet	1200
9-A	60	18	4 Ratchet	1350

A Lever Wrench (double or straight style) or a 9-inch Hand Wheel is regularly furnished with each Press Nos. 1—9, and a Patent Ratchet Wrench with each Press Nos. 8-A and 9-A. Any of the other Presses can be fitted with Ratchet Screws at a slight additional cost. The number of screws in these Presses can be increased or changed to suit the purchaser.

Can furnish these Presses with frame of structural steel if desired.

Table Leg Press and Retaining Clamps

Francis



Press empty, with clamp bases in position, ready for stock

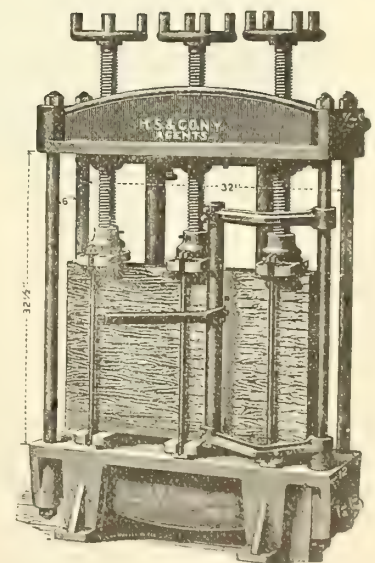
Extra screws can be added at any time if desired. The Press will take stock up to 12 inches wide by 32 inches long. The height is 31 inches under the screws, which allows about 27 inches in height between the base and top of malleable iron clamps. The height can be changed if desired by using longer uprights. Three sets (3 to a set) of malleable iron retaining clamps are regularly furnished with each press, viz.:

- One set, No. 1, for stock 3 to 6 inches wide.
 - One set, No. 2, for stock 6 to 9 inches wide.
 - One set, No. 3, for stock 9 to 12 inches wide.
- Extra Clamps can be furnished if desired.

This press is designed especially for table leg stock or other small work requiring heavy pressure. It has two adjustable back guides to center the stock under screws and front swinging guide to help hold stock in position when applying pressure; the use of retaining clamps makes the capacity of press practically unlimited and saves considerable floor space.

The heavy screws of the press are used to apply pressure and the clamps, which are put in place before pressure is applied, are then tightened after which the heavy screws are released and the stock, securely held in the clamps, is removed from the press and left clamped until dry.

The top and base of the press are cast-iron, planed true, uniformly and substantially made and heavily ribbed, arched and braced. The three adjustable screws with which the press is fitted are 2 inches in diameter and 24 inches long, made of steel and have heavy square threads. The nuts are of toughest malleable iron and have long thread bearing; they slide freely in planed ways so that the screws can be adjusted lengthwise of the press and brought down on the clamp tops.



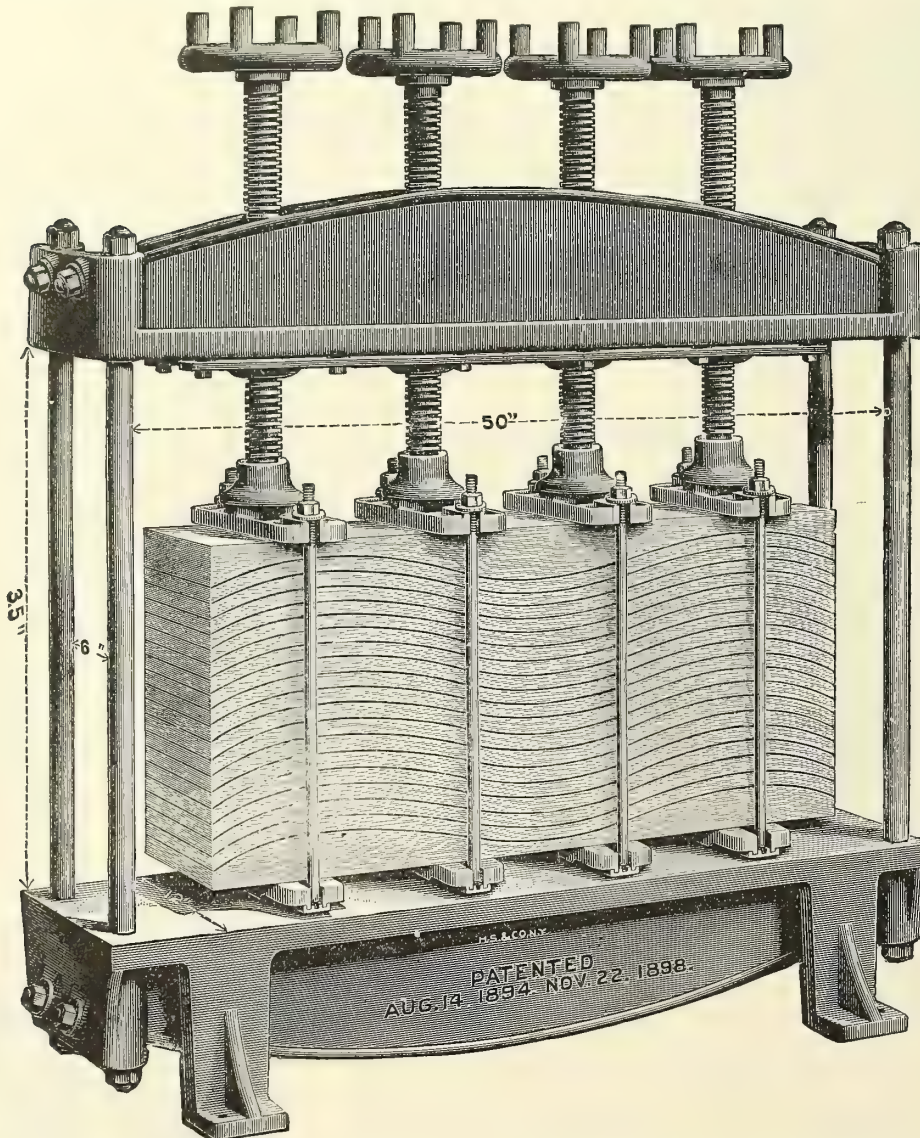
Press containing stock. Pressure has been applied and stock clamped ready for delivery

For illustration and description of these Clamps, as well as light pattern I-Beam Retaining Clamps, see page 438

Drawer Front Presses and Retaining Clamps

Francis

These presses are designed for use in furniture, table and other factories where built-up stock is used in quantities. Illustration shows 50-inch Press. Also made in 60-inch size.



The heavy screws apply the necessary pressure to the stock. The clamps are then tightened after which the heavy screws are released and the stock, held securely in the Clamps, is removed from the press and placed in storage to dry, which operation may be repeated as often as required.

The top and base of the press, planed true, are heavy cast-iron, heavily ribbed, arched and braced. The 50-inch Press is fitted with 4 and the 60-inch size with 5 adjustable screws. The screws are of steel and have heavy Acme Standard square threads. The nuts are malleable iron and have long thread bearing. They slide freely in planed ways, so that the screws can be adjusted lengthwise and brought down on clamp tops. Extra screws can be added at any time.

In either size press the base is 12 inches wide. The height is 31 inches under the screws which allows about 27 inches between the base and tops of the clamps. Height may be changed if desired. The heavy screws are 2 inches diameter by 24 inches long

One Set, No. 1, for stock 3 to 6 inches wide	} supplied with each Press
One set, No. 2, for stock 6 to 9 inches wide	
One set, No. 3, for stock 9 to 12 inches wide	

Three sets, malleable iron clamps (four of each size) supplied with each 50-inch Press.

Three sets, malleable iron clamps (five of each size) supplied with each 60-inch Press.

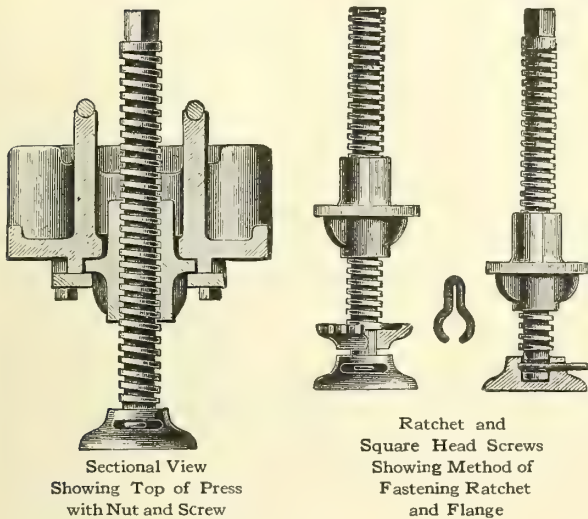
Extra parts supplied at any time.

Clamp Rods are $\frac{5}{8}$ -inch diameter, made of steel with malleable iron heads, which fit ribs at side, thus adding strength.

For illustration and description of these Clamps as well as Light Pattern I-Beam Retaining Clamps, see page 438

Press Screws

For Iron and Steel Veneer Presses



The sectional view of the top of a Press shows a screw and nut in position and demonstrates the simple, practical method of adjustment in the large presses shown. The nuts slide in planed ways, riding on steel strips bolted to the tops.

The heavy cast-iron flange swivels freely on the screw and is securely attached. By method illustrated above the steel screws are cut with an Acme Standard square thread and are strong and uniform. The pressure is exerted against the end of the screw, which fits into the cup of the flange, forming an oil reservoir which prevents wear.

Any Francis Press using 2-inch diameter screws can be fitted with ratchet screws at a slight additional cost, or the quantity or arrangement of screws can be altered to suit customer.

2 x 24 inches, with squared top, each..... \$4.00
Fitted with patent ratchet wrench attachment, additional, each..... .50

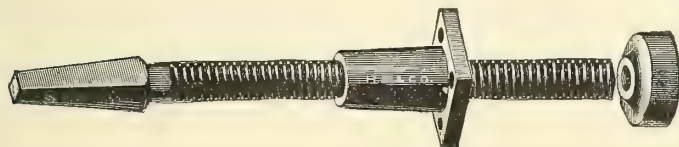
For Wooden Veneer Presses

We do not usually advise the building of wooden veneer presses, as the repair expense is large and there is constant danger of imperfect work, due to warping or other faulty alignment. For some purposes, however, wooden-frame presses are satisfactory and the following screws are suitable for such use.

With Fitted Flange						With Loose Flange					
Size, inches	1x12	1¼x16	1½x16	2x16	2x24	Size, inches	1x12	1¼x16	1½x16	2x16	2x24
Complete.....	\$1.80	2.50	2.80	3.50	4.00	Complete.....	\$1.25	1.50	1.80	3.30	3.75
Nut only.....	.40	.45	.55	1.05	1.05	Nut only.....	.40	.45	.55	1.05	1.05
Flange.....	.20	.25	.30	.55	.55	Flange.....	.10	.12	.15	.50	.50

Two-inch screws can be fitted with patent ratchet wrench attachment (instead of squared at top) at \$.50 each, extra.

H. S. & Co.



Wrought-iron screw, with cast-iron nut and flange. 20 inches long overall, 16-inch thread.

	Dozen
1¼-inch diameter.....	\$40.00
Nuts only, 3x3x3½ inches; base ½-inch thick.....	7.50
Flanges only, diameter 3 inches.....	3.00

Wrenches

Double Lever



Malleable Iron

For 2-inch Screws, each..... \$.85

Ratchet

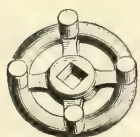


20 Inches Long

For 2-inch Screws fitted with Ratchet Wrench Attachment.

Each..... \$2.50

Hand Wheel



9 Inches Diameter

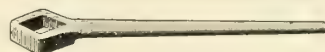
	Each
For 1-inch Screws.....	\$.50
For 1¼-inch Screws.....	.55
For 1½-inch Screws.....	.55
For 2-inch Screws.....	.85



For 2-Inch Screws

	Each
18-inch diameter.....	\$2.25
24-inch diameter.....	3.00

Single Lever Forged Steel



Straight

	Each
Straight 24 inches long.....	\$1.65
Bent 24 inches long.....	2.00

For 2-Inch Screws

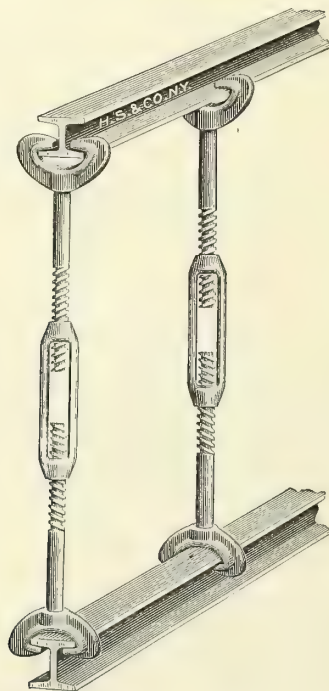
Malleable Iron

17 inches long, for 1¼ and 1½-inch screw, each.....	1.20
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Retaining Clamps for Use in Veneer Presses

Francis

I-Beam



The use of Retaining Clamps and I-Beams in binding loads of pressed stock is a thoroughly practical and economical method, one press being sufficient for any quantity of work.

The Francis Retaining Clamps are rapid in action, and durable and substantial in construction. This system also eliminates entirely any danger of removing the stock from press before it is ready, as no delay in preparing other stock can possibly be caused providing there is sufficient storage room.

The heads of these clamps are securely fastened to the connecting rods, are strongly made of special malleable iron, shaped to clasp the flanges of the I-Beam so as to get its full strength. The connecting rods are made of refined iron, with heavy square threads four to the inch, so that each turn permits $\frac{1}{2}$ -inch adjustment. The turn buckles are drop-forged steel, shaped to require very little space for adjustment, in order that the rods may be placed close to the work. They are made in two patterns, regular and light.

The regular is for all widths of stock and is usually preferred. It uses a 4-inch heavy I-Beam and 1-inch rods. The light pattern is recommended for stock up to 12 or 14 inches in width. It uses a 3-inch I-Beam and $\frac{3}{4}$ -inch rods. All rods are regularly made to take 24 to 30 inches of stock between beams. These lengths may be changed to suit the capacity of any press at slight additional cost.

All I-Beams for regular pattern clamps are made 4 inches longer and for light pattern 3 inches longer than the widest stock they will receive, so as to allow ample room for clamping. Rods, beams and turn-buckles of the same sizes are interchangeable throughout and any one of them may be purchased separately.

Regular Pattern

No. 1 take stock to 18 inches wide
No. 2 take stock to 24 inches wide
No. 3 take stock to 30 inches wide

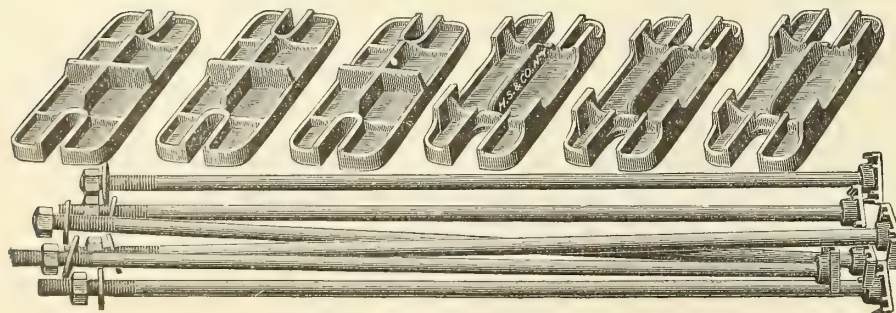
No. 4 take stock to 36 inches wide
No. 5 take stock to 42 inches wide
No. 6 take stock to 48 inches wide

Light Pattern

No. 10 made for any width of stock up to 6 inches wide
No. 11 made for any width of stock up to 10 inches wide
No. 12 made for any width of stock up to 14 inches wide

Malleable Iron

Advised only for use with table leg and drawer front presses, but may be used with the regular Veneer Presses for light narrow stock, if desired.



Complete set of three clamps

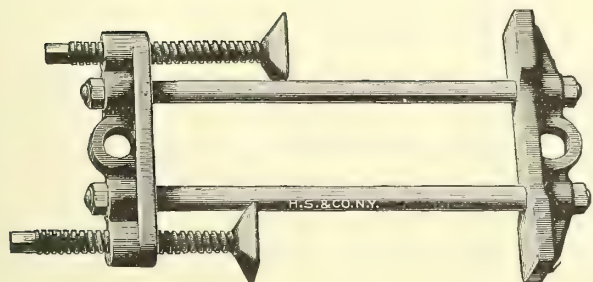
Number 1 for stock 3 to 6 inches wide
Number 2 for stock 6 to 9 inches wide
Number 3 for stock 9 to 12 inches wide

The top and base castings of these clamps are the best malleable iron, very strongly ribbed to secure strength with the least possible weight. Flat side of top and base castings, also feet of the bases are planed true. The rods are of steel $\frac{5}{8}$ -inch diameter and have malleable iron heads that fit the ribs at the sides of the adjusting slots in the base and top of the clamps.

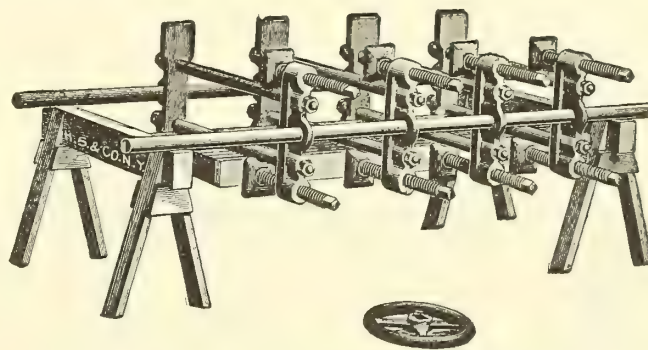
Clamps

Francis

Double, for Stiles, Rails and Strips



Separate Clamp Showing Construction



Set of Clamps Showing Method of Operation

By using longer connecting rods greater capacity can be obtained at a slight additional cost.

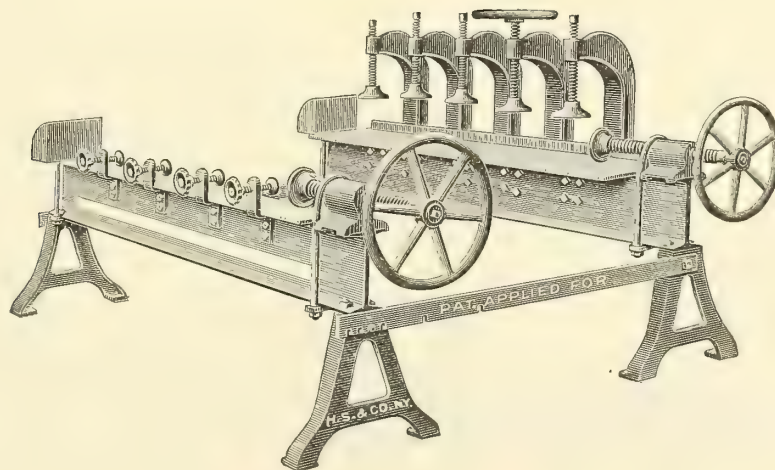
No. 1 1-inch diameter, Square Thread Screws; length 15 inches; weight 24 pounds. Projections 3 inches square.

No. 2 1¼-inch diameter, Square Thread Screws; length 15 inches; weight 55 pounds. Projections 5 inches long, 4 inches wide.

Hand Wheel Wrench for No. 1 Double Clamp, 9 inches diameter. Hand Wheel Wrench for No. 2 Double Clamp, 14 inches diameter. In ordering state number of wrenches wanted as none are supplied with regular equipment.

A larger size of somewhat similar Clamps are made with 6x4-inch projections. This style is especially suitable for veneered moulding work. Full particulars on request.

Piano Back



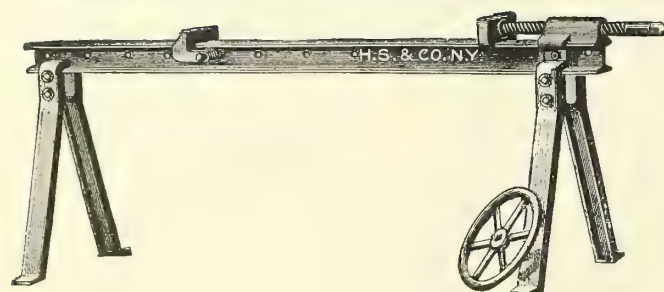
This design will clamp at different angles, holding the stock firmly and producing perfectly glued frames; will take stock 5 feet 6 inches long. The connecting rods are 4 feet 6 inches long and are fitted with slots for adjustment to different sizes. The beam which carries the five perpendicular clamps also supports a 10½-inch plate, planed true, with angle protruding 1½ inches to form a back guide for the stock. The curved clamps are made of strongly ribbed malleable iron, will take up stock to 9 inches and are curved so that center of screws are 5¼ inches from guide. These steel screws have square-cut thread, are

1¼ inches in diameter and have 6-inch adjustment. The screws at ends of beams are 1½ inches in diameter, with 12-inch adjustment. The hand wheels for applying pressure on the screws are 14 inches in diameter. The beams are of steel and faced with steel plates planed true on top surfaces. The lugs on front beam have ⅝-inch screws fitted with flanges and hand wheels to hold stock to guide while being clamped.

Clamps

Francis

Steel Beam Trestle



Trestle Clamp Complete



Clamp Without Legs

These Clamps were designed to meet the demand of woodworkers for a Trestle Clamp strong and stiff enough to apply the necessary pressure and still keep the trestle straight and true.

The top is made of steel I-Beam, and as glue does not stick to steel as it does to wood, the surface of the beam remains clean and true.

The Nut, Flange, Stop and Legs are all made of best malleable iron. The Nut casting for screw is 6 inches long. The screw is steel, 18 inches long, 1 1/4-inch diameter, and has square threads. The flange on end of screw hooks under the top flange of beam, holding itself firmly in the desired position. The stop is ribbed to stand the strain, and its position is easily changed by pulling out the pin as shown and sliding to desired place, where it is fastened by the heavy steel pin being forced into hole by a spring.

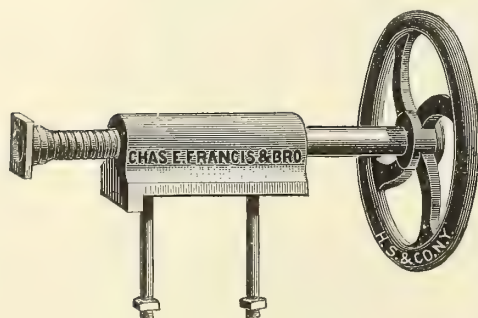
The Clamps are furnished either with or without legs. The legs can be slipped off by loosening the bolts that clamp them together which will be found very convenient where room is scarce.

Can be furnished in any length up to 18 feet. The following lengths are regular.

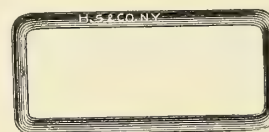
Length Feet	Weight Pounds	Complete		Without Legs	
		Each		Weight Pounds	Each
4	88	\$10.00		63	\$7.50
6	103	10.75		78	8.25
8	118	11.50		93	9.00
10	133	12.25		108	9.75
12	148	13.00		125	10.50

One Hand Wheel, 14 inches in diameter, is furnished with each Clamp. Extra Hand Wheels, each \$1.00

Carpenters



For Wood Trestle. Wheel, 9 inches Diameter



Iron Loop to Hold Stop

The screw is of steel, 1-inch in diameter, 15 inches long, and has square thread. The flange on end of screw is of malleable iron.

Carpenters Clamp, complete, with Loop \$2.70
Iron Loop only35

Hand Screws

Jorgensen Adjustable, with Steel Spindles

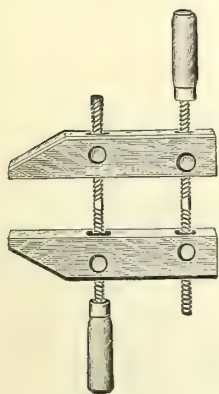
Their most important advantage lies in the fact that the jaws can be adjusted to any angle, a very desirable feature, as it does away with the necessity of squaring-up irregular surfaces. One jaw can also be made to overlap the other as shown in the illustration.

The spindles are of steel, and have a right and left thread, and open and close almost twice as fast as the old style clamps. The sockets in which the spindles work are also of steel; the jaws are of well-seasoned maple.

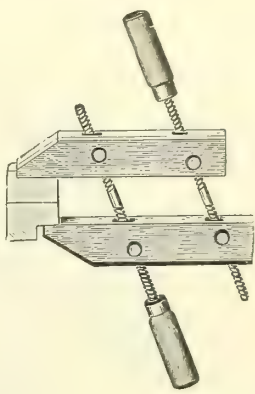
Glue will not adhere to the spindles causing the threads to strip, a trouble very common with ordinary wooden spindles.

The superior points of the Jorgensen Adjustable Hand Screws are embodied in the following: Adjustability of jaws to any angle and position—steel spindles, which are practically indestructible—rapidity—strength—durability.

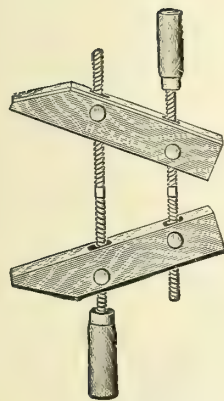
A single clamp will adjust to any one of the positions shown in the illustrations or any modification of them.



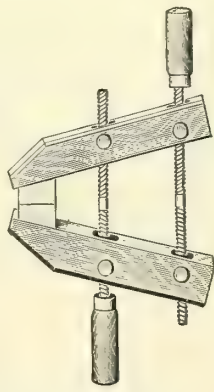
As a Regular Hand Screw



Showing One Jaw Overlapping the Other



In Position for Beveled Work



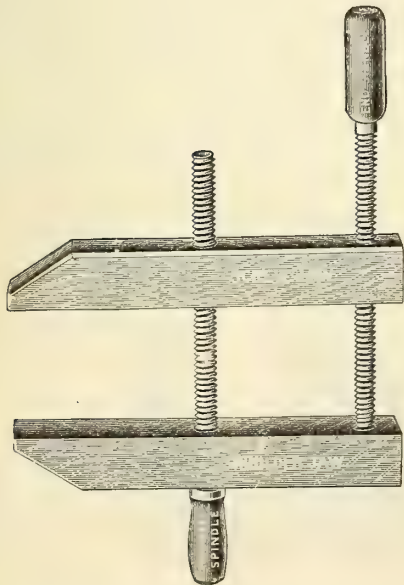
In Position for Beveled Work

Number	Length of Jaws Inches	Opening Between Jaws Inches	Dozen	Each
0	8	4	\$6.60	\$.66
1	10	6	7.80	.78
2	12	8	8.70	.87
3	14	10	9.60	.96
4	16	12	11.40	1.14
5	18	14	13.20	1.32

Aldrich, First Quality, Oiled

Jaws are made from best thoroughly seasoned maple, carefully selected and free from imperfections. Spindles are made of second growth hickory and are interchangeable.

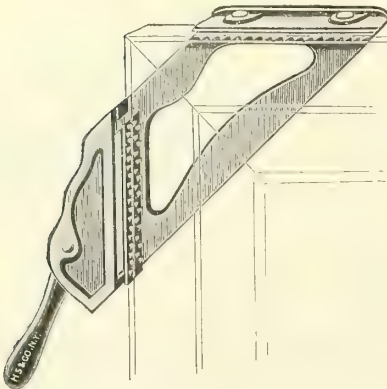
All parts being carefully oiled, the glue is prevented from adhering to clamps.



Number	Length of Jaw Inches	Size of Jaw Inches	Length of Spindle Inches	Diameter of Spindle Inches	Opens Inches	Dozen	Extra Spindles Dozen	Extra Jaws Dozen
0	21	3	26	1 1/4	15	\$36.00	\$12.00	\$12.00
2	20	3	24	1 1/4	13	34.00	11.33	11.33
5	18	2 3/4	22	1 1/4	12	31.00	10.33	10.33
10	16	2 1/4	18	1	9 1/2	25.00	8.33	8.33
12	14	2	16	1	8	22.00	7.33	7.33
14	12	1 3/4	14	3/4	7	16.00	5.33	5.33
16	10	1 5/8	12	3/4	5 1/2	14.00	4.67	4.67
17	8	1 3/8	10	1/2	4	11.00	3.67	3.67
17 1/2	6	1 1/8	8	1/2	3	10.00	3.33	3.33
18	4	3/4	6	3/8	2 1/4	8.00		

Mitre Clamps

H. S. & Co.



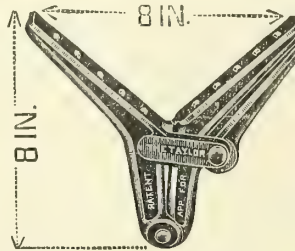
This Automatic Mitre Clamp requires no adjusting, takes any width or thickness of casing (whether sprung or flat) and sets in place and clamps a mitre in less time than it takes to make a full turn of a single screw.

It has no intricate parts to get out of order and is always in position.

Inexpensive, light, compact, effective and practically indestructible, Is being used by woodworkers and sash, door and blind manufacturers throughout the country.

Dozen..... \$24.00

Taylor No. 36

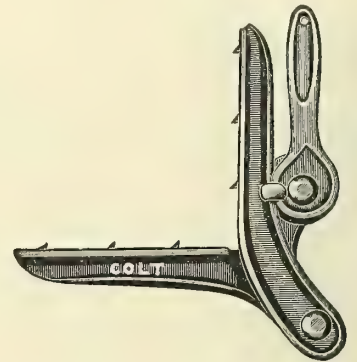


Light and strong. The jaws are planed true, and fitted to hold the work perfectly square when closed. The pins are only large enough to give a grip which prevents slipping. Eccentric is so designed that the initial part of the movement brings the jaw quickly into engagement, the latter part closing more slowly, giving great holding power.

Spring action holds the clamp open, always ready for use. Malleable iron castings, with Stubbs steel pins.

Each..... \$1.75

Colt

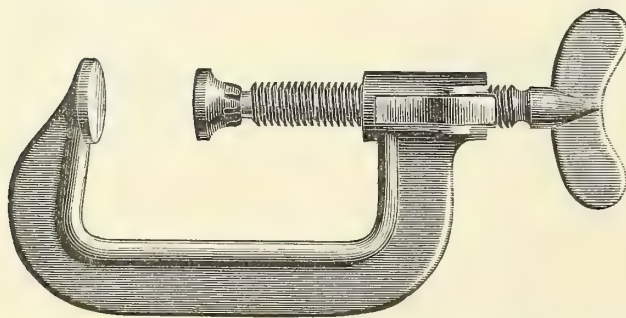


One motion of the cam sets the mitre and firmly clamps it in place, the pressure being made directly on the clamp jaw, giving it great power. Special attention has been given the design to make it light as well as strong. Positive in action, easy to apply, no springs to get out of order. Made of best refined malleable iron with tempered drill steel spurs.

Each..... \$1.50

Iron and Steel Clamps

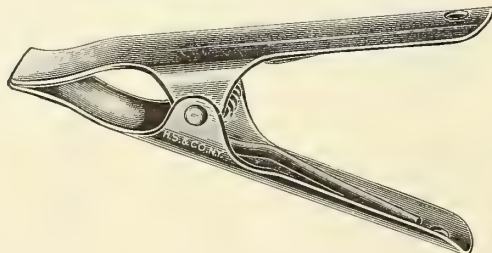
Quick Action. Malleable Iron



By means of a spring split-nut the spindle can be moved quickly backward or forward without turning it.

Opens, inches.....	3	4	5	6	7	8
Dozen.....	\$6.00	6.80	7.60	10.80	12.50	14.50

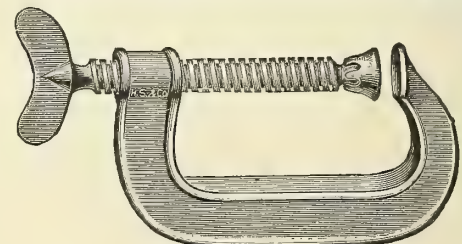
Spring Action. All Steel



Practically indestructible, suitable for a large variety of small work. May be attached and detached instantly. Made from stamped steel, with highest grade oil tempered springs, having strong tension.

A Opening 1-inch.....	Dozen	\$1.50
B Opening 1½ inches.....		2.50
C Opening 2¾ inches.....		3.50
D Opening 4 inches.....		6.00

Carriage Makers. Malleable Iron



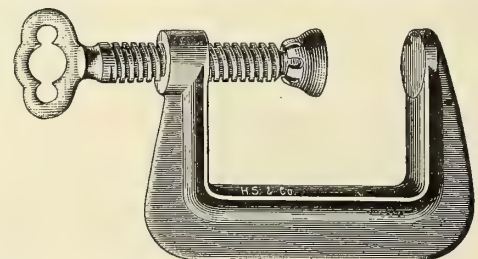
With Ball and Socket Swivel

Numbers.....	11	12	13	14	15	16
Opens, inches.....	2	2½	3	4	5	6
Dozen.....	\$2.00	2.60	3.00	4.20	5.00	6.50
Numbers.....	17	18	19	20	22	24
Opens, inches.....	7	8	9	10	12	14
Dozen.....	\$7.80	9.00	10.00	11.00	13.50	18.50

Special Deep, Extra Heavy

No. 8 5-inch opening, 7 inches deep between, frame and screw, dozen.....	\$30.00
No. 9 6-inch opening, 12 inches deep between frame and screw, dozen.....	36.00
No. 8½ 10-inch opening, 8½ inches deep between frame and screw, dozen.....	50.00

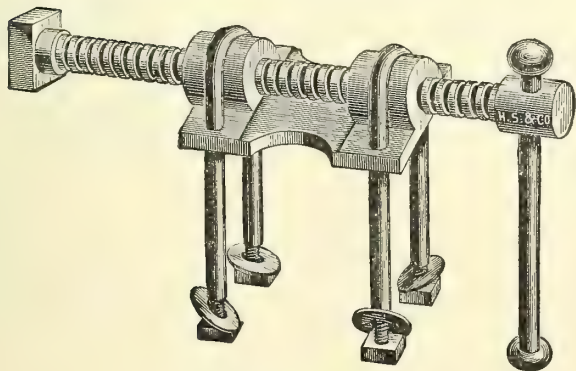
Quilt Frame. Cast Iron Japanned



No. 32 Opens 1⅞ inches dozen..... \$1.00

Clamp Fixtures

Iron Heads
For Carpenters Clamps



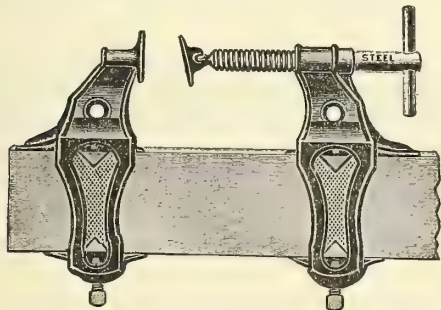
With Single Nut

Diameter of screw, 1-inch. Length of screw, 10 inches.
No. 11 Wrought screw, iron handle, dozen..... \$24.50

With Double Nut (As illustrated)

Diameter of screw, inches.....	1	1 1/8	1 1/4
Length of screw, inches.....	11	13	14
No. 12 Wrought screw, iron handle, dozen	\$32.50	38.00	47.00

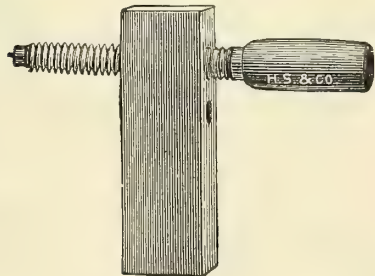
Dehnes Automatic



Malleable Iron with Steel Spindle

One of the castings is held firmly in place by means of a set screw, the other is kept loose enough to slide freely, so that the slightest pressure will automatically lock it.
No. 1 For beam 7/8x2 1/4 inches. Without beam, per set.... \$1.35
No. 1 1/2 For beam 1 1/16x2 13/16 inches. Without beam, per set... 1.50

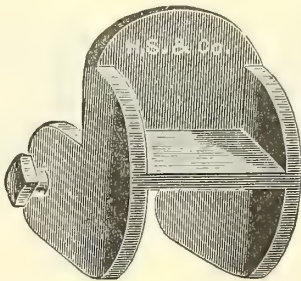
Wooden Heads with Spindles



Numbers.....	70	69	68
Diameter of Spindle, inches.....	7/8	1	1 1/8
Dozen.....	\$5.83	7.50	10.00

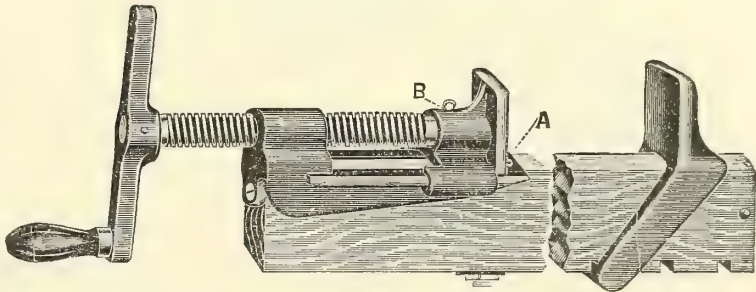
Spindles only or Heads only, half the price of complete clamp heads.

Iron Stops
For Carpenters Clamps



For 2 1/2-inch beam. Dozen \$10.80

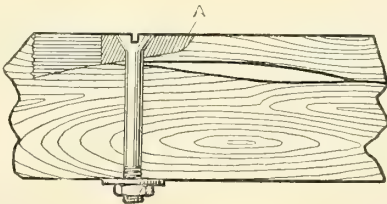
Sheldon Malleable Iron



No. 1

Indestructible and best adapted to excessive pressure and heavy work.
The above cut shows fixtures designed to attach to wood bars 1 1/4 inches thick by 2 1/2 inches wide, any length. The screws are 5/8-inch in diameter, 7 inches long, with deep, square threads cut from cold rolled steel. The sliding head is supported by malleable guides, thus relieving the screw of any bending strain when clamping irregular or thin material. They also keep the head from turning when pressure is being applied. The heads are easily hung, and will not get loose or out of line with the frame, or split the wood to which they are attached.

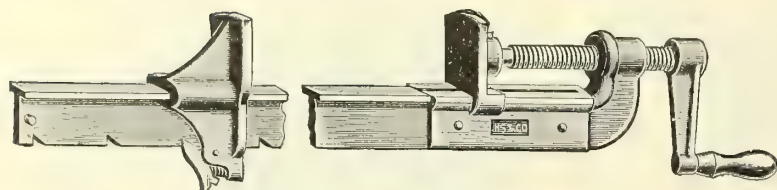
Note improved and indestructible method of attaching screw to sliding head at B. A steel collar is supplied which entirely envelopes groove in screw, and steel thrust plate at end of screw.



The accompanying sketch illustrates the method of mortising the head frame into the bar at "A," more than doubling the strength over those with the square mortises. The ends of the wood fibres underneath the iron frame being held down by the pressure of the bolt. We advise the use of 2 3/4x5/16-inch flat head stove bolts for attaching these heads.
Guaranteed by maker against weakness or wear for one year.
Dozen sets, fixtures only \$10.00

Clamps

Stearns Steel Bar



The bar is rolled from a special quality of stiff steel; the "T" shape has much more strength for a given weight than is possessed by flat stock.

The notches are cut on the lower edge of the bar, affording greater holding power to the sliding jaw than if they were on the upper edge.

The steel screw is provided with a deep and powerful thread; the cranks, sliding jaws and pawls are malleable, and the handle of wood ebonized. The sizes given below represent a maximum width of work which each size will take. Regular size, $\frac{3}{16}$ x $1\frac{1}{2}$ -inch bar, $\frac{5}{8}$ -inch screw.

Open, feet.....	1	1½	2	3	4	5
Each.....	\$1.35	1.43	1.50	2.00	2.25	2.50

Extra heavy, for large or heavy work, $\frac{1}{4}$ x $1\frac{3}{4}$ -inch bar, $\frac{3}{4}$ -inch screw.

Open, feet.....	3	4	5	6	7	8
Each.....	\$2.75	3.25	3.75	4.25	4.75	5.50

Sheldon Tempered Spring-Steel Bar

Note the Following Features:

A. Steel collar that entirely envelopes groove in end of screw, eliminating all possibility of the head becoming detached from the screw.

B. Ample sleeve enveloping bar, eliminating all bending strains on the screw and holding head rigidly in position.

C. An indestructible latch cast into head engaging in a tempered steel notch in bar. Can be used continuously in any single position without cutting loose or slipping.

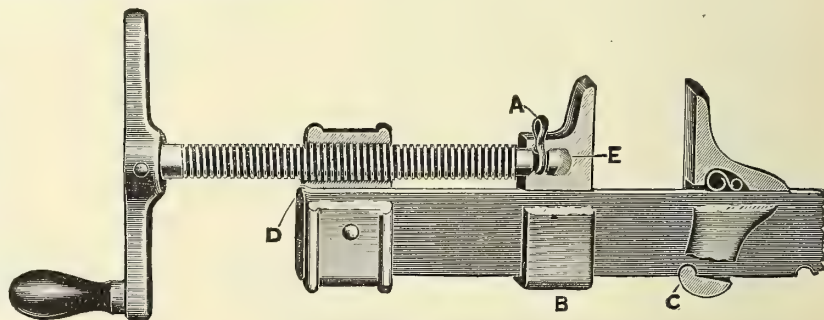
D. The screw head driven and headed on to bar before pinning insures absolutely permanent alignment under any pressure.

E. Hardened Steel Plate, eliminating wear at end of screw.

This combination will be recognized as the most consistent possible support for a screw subject to heavy pressure.

All useless complications at this point are eliminated and these clamps are unconditionally guaranteed.

Length, feet.....	2½	3	4	5	6	7
Dozen.....	\$20.00	22.50	25.00	28.00	31.00	34.00



Spindles are $\frac{5}{8}$ -inch diameter, 7 inches long; square thread cut from cold rolled steel; sliding head, $1\frac{3}{4}$ x 2 inches. Saddle held in bar notches by indestructible spring. Bars, $\frac{5}{16}$ x $1\frac{3}{8}$ -inch tempered steel.

The extra stiffness of the spring steel permits the use of a screw with 8 threads to the inch, giving 25 per cent. greater pressure than the usual 6 threads per inch commonly used.

The double-end malleable cranks are quick acting and indestructible and permit the use of two hands for excessive pressure.

Stearns Wood Bar

This Clamp is suitable for framing, cabinet and piano work, manufacturing furniture, sash, door, blinds, etc., and for all purposes in which wood work is required to be firmly held in a powerful clamp.

The bottom of the wood bar is perfectly smooth, the clamps may be set flat on the bench and the work put in them from the upper side.

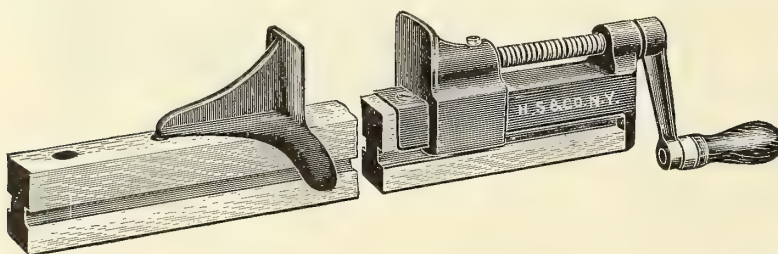
The bar is made of thoroughly seasoned and carefully selected hard wood, oil finished, $1\frac{3}{4}$ x $2\frac{3}{8}$ inches iron, carefully jannaped.

The jaws, crank and end-plate or head are malleable iron, jannaped.

Open, feet.....	4	6
Dozen.....	\$18.00	22.00

Wooden

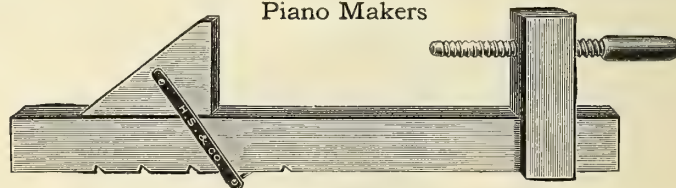
Cabinet Makers



Maple, with hickory screw; $1\frac{3}{4}$ x $1\frac{7}{8}$ -inch beam

Numbers.....	71	72	73	74	75
Opens, feet.....	2	3	4	5	6
Dozen.....	\$23.33	25.00	28.33	33.33	40.00
Extra stops for above, dozen.....	\$5.83				

Piano Makers



Maple, with hickory screw

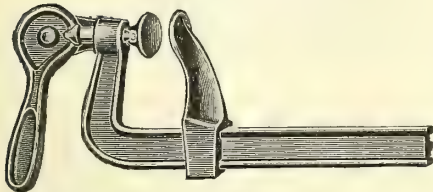
Numbers.....	56	57	58	59	60
Opens, feet.....	2½	3½	4½	5½	6½
Whole length, feet.....	3	4	5	6	7
Beam, inches.....	$\frac{7}{8}$ x 3	$\frac{7}{8}$ x 3	$\frac{7}{8}$ x 3	$\frac{7}{8}$ x 3	$1\frac{1}{8}$ x $3\frac{1}{2}$
Dozen.....	\$25.00	31.67	36.67	41.67	46.67
Extra stops for above, 3, 4, 5 and 6 feet, dozen.....	\$ 8.23				
Extra stops for above, 7 feet, dozen.....	10.00				

For Spindles and Heads, see page 443

Quick Acting Clamps

Colt Improved Malleable Iron

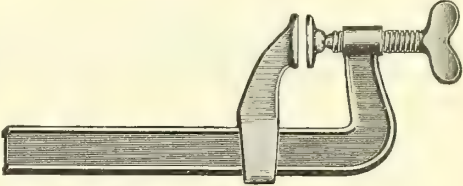
Eccentric Clamp



Made from best mallable iron, double flanged on each side, giving the requisite strength without excessive weight. The opening of movable jaw is ribbed, pressing on front and back of bar to reinforce the gripping power of the lugs between flanges, and supporting the jaw at right angles to bar. The jaw slides easily on the bar, and work is set rapidly and firmly.

The No. 1012 clamp is used extensively by concrete and cement workers.

Screw Clamp



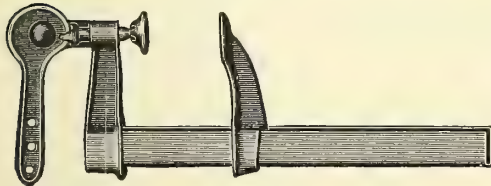
Eccentric

Numbers.....	1002	1004	1006	1008	1012
Opens, inches	2¼	4	6	8	12
Reach, inches	1	1¾	2¾	3	3
Dozen.....	\$3.60	4.80	6.60	8.40	10.20

Screw

Numbers.....	1104	1106	1108
Opens, inches	4	6	8
Reach, inches	1¾	2¾	3
Dozen.....	\$4.80	6.60	8.40

Eccentric

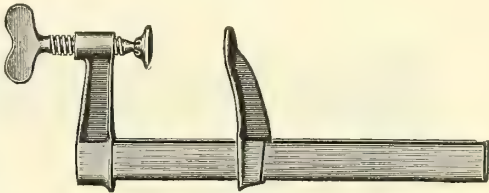


U-Bar

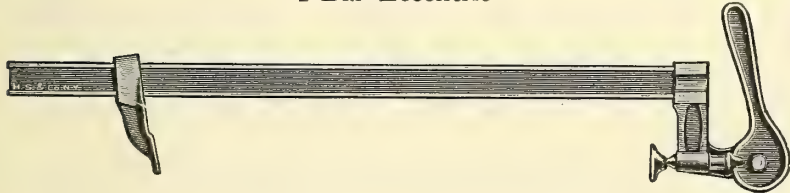
The U-Bar is made of the best open hearth steel plate pressed into shape when cold, which process stiffens the bar. Has a fixed head and a movable jaw with strong fixed tongue bearing on the bottom of the U-Bar, making a broad strong grip.

Nos. (Eccentric). 4006 4008 4010 4012
Nos. (Screw).... 4106 4108 4110 4112
Opens, inches .. 6 8 10 12
Reach, inches .. 21½ 2¾ 2¾ 2¾
Dozen..... \$7.20 9.00 10.00 10.80

Screw



I-Bar Eccentric



Colt Cabinet

Made with sliding foot and fixed head. The clamp is instant in action and perfect in work. The sliding foot with its improved locking device will grip the bar at any point without the necessity of notches which weaken the bar or springs to get out of order.

1¼-Inch I-Bar. 2-Inch Reach

Number Eccentric	Number Screw	Opens Inches	Dozen
1210	1310	10	\$10.00
1212	1312	12	10.80
1218	1318	18	12.60
1224	1324	24	14.40
1230	1330	30	16.20
1236	1336	36	18.00
1248	1348	48	21.60
1260	1360	60	25.20
1272	1372	72	28.80
1284	1384	84	32.40
1296	1396	96	36.00

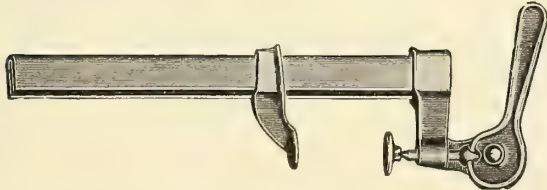
I-Bar Screw



1¼-Inch I-Bar. 4-Inch Reach

Number Eccentric	Number Screw	Opens Inches	Dozen
1410	1510	10	\$10.60
1412	1512	12	11.40
1418	1518	18	13.20
1424	1524	24	15.00

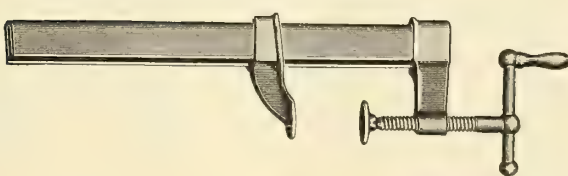
U-Bar Eccentric



1¼-Inch U-Bar. 2-Inch Reach

Number Eccentric	Number Screw	Opens Inches	Dozen
4210	4310	10	\$10.00
4212	4312	12	10.80
4218	4318	18	12.60
4224	4324	24	14.40
4230	4330	30	16.20
4236	4336	36	18.00
4248	4348	48	21.60
4260	4360	60	25.20
4272	4372	72	28.80
4284	4384	84	32.40
4296	4396	96	36.00

U-Bar Screw

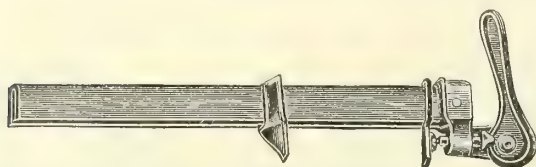


Unless otherwise specified Eccentric will be furnished

Quick Acting Clamps

Colt Short Reach

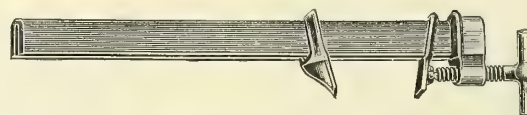
Eccentric



Made with 1 1/4-inch U-Bar. This clamp is designed for wide thin work from 3/4 to 2 inches thick and has only 3/4-inch reach. Placing the face of the clamp against the work prevents springing or buckling under pressure. Especially adapted to table, chair and all wide work of 2 inches thickness or less. The eccentric style we regularly furnish with cam with 3/8-inch draw for tight joints. We will furnish cam with 5/8-inch draw for tongue and groove joints if specified.

For the screw style we regularly furnish the bar screw unless the crank screw is specified.

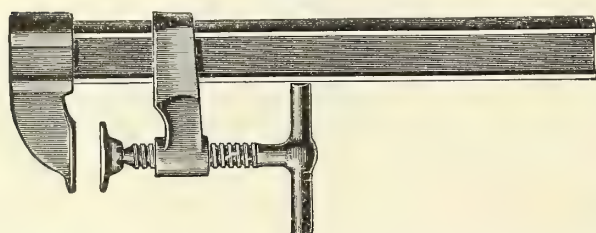
Screw



Number Eccentric	Number Screw	Opens Inches	Dozen
4410	4510	10	\$10.00
4412	4512	12	10.80
4418	4518	18	12.60
4424	4524	24	14.40
4430	4530	30	16.20
4436	4536	36	18.00
4448	4548	48	21.60
4460	4560	60	25.20
4472	4572	72	28.80
4484	4584	84	32.40
4496	4596	96	36.00

Colt Finishing

Screw



This clamp has a fixed jaw or foot and a movable head which on some kinds of work has advantages over a fixed head. Having a smooth end there is nothing to prevent the use of the auger or brace bit.

Unless otherwise specified Screw Style will be supplied

1 1/4-inch I-Bar, 2-inch Reach

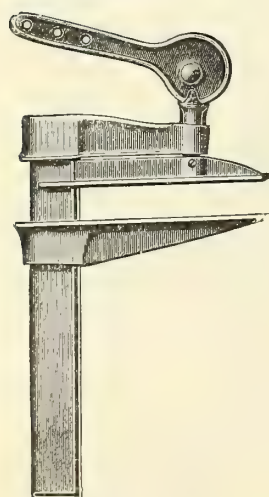
Number Eccentric	Number Screw	Opens Inches	Dozen
1610	1710	10	\$10.00
1612	1712	12	10.80
1618	1718	18	12.60
1624	1724	24	14.40
1630	1730	30	16.20
1636	1736	36	18.00
1648	1748	48	21.60
1660	1760	60	25.20
1672	1772	72	28.80
1684	1784	84	32.40
1696	1796	96	36.00

1 7/8-inch I-Bar, 4-inch Reach Screw Style Only

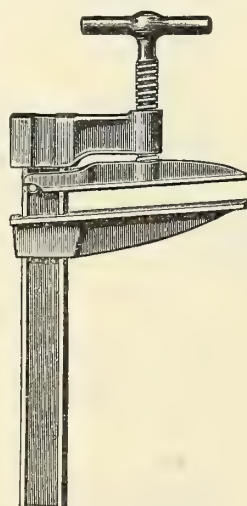
Number	Opens Inches	Dozen
1912	12	\$17.30
1918	18	20.06
1924	24	22.82
1930	30	25.58
1936	36	28.34
1948	48	33.86
1960	60	39.38
1972	72	44.90
1984	84	50.42
1996	96	55.94

Colt Universal

Eccentric



Screw



This clamp has the broad jaw clamping surface of the wood hand screw and all the convenience of handling and quick acting advantages of Colt clamps. The clamping plate attached to the end of the plunger or screw finds its own bevel and parallel automatically, and may be used for a large variety of purposes including all forms of woodworking, cement-concrete, block and curb and foundry core making, as they do not injure moulds, veneering and all work requiring a long broad pressure.

Pattern Makers. 1-inch U-Bar. Jaws 3 5/8 x 1 3/8 inches

Number Eccentric	Number Screw	Opens Inches	Dozen
4604	4704	4	\$6.00
4606	4706	6	7.80

Pattern Makers. 1 1/8-inch U-Bar. Jaws 4 1/2 x 1 1/2 inches

Number Eccentric	Number Screw	Opens Inches	Dozen
4806	4906	6	\$8.30
4808	4908	8	10.10
4810	4910	10	11.10
4812	4912	12	11.90

Universal. 1 1/4-inch Bar. Jaws 4 1/2 x 1 1/2 inches

I-Bar		U-Bar		Opens Inches	Dozen
Number Eccentric	Number Screw	Number Eccentric	Number Screw		
2012	2112	5012	5112	12	\$11.90
2018	2118	5018	5118	18	13.70
2024	2124	5024	5124	24	15.50
2030	2130	5030	5130	30	17.30
2036	2136	5036	5136	36	19.10
2048	2148	5048	5148	48	22.70
2060	2160	5060	5160	60	26.30
2072	2172	5072	5172	72	29.90

Universal. 1 7/8-inch Bar. Jaws 6 1/2 x 2 inches

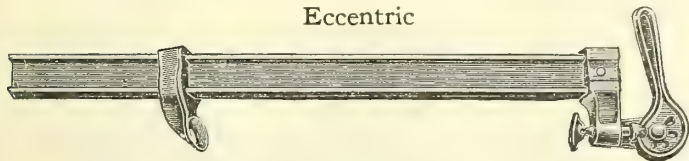
Eccentric made in U-Bar only; Screw in I-Bar only

Number Eccentric	Number Screw	Opens Inches	Dozen
5212	2312	12	\$18.00
5218	2318	18	20.76
5224	2324	24	23.52
5230	2330	30	26.28
5236	2336	36	29.04
5248	2348	48	34.56
5260	2360	60	40.08
5272	2372	72	45.60

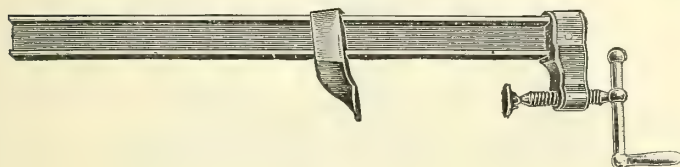
Quick Acting Clamps

Colt

Eccentric



Screw



Extra Heavy

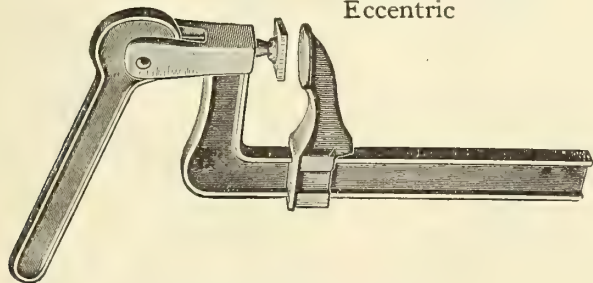
The Extra Heavy Clamp is made from 1½-inch steel bar, one-half heavier than the Cabinet style, and is suitable for the heaviest work. The length of openings given indicates the size of work the jaws will grip. 2-inch Reach. U-Bar made eccentric only.

I-Bar		U-Bar Number Eccentric	Opens Inches	Dozen
Number Eccentric	Number Screw			
2412	2512	5412	12	\$15.60
2418	2518	5418	18	18.36
2424	2524	5424	24	21.12
2430	2530	5430	30	23.88
2436	2536	5436	36	26.64
2448	2548	5448	48	32.16
2460	2560	5460	60	37.68
2472	2572	5472	72	43.20
2484	2584	5484	84	48.72
2496	2596	5496	96	54.24

4-inch Reach. Eccentric in U-Bar only. Screw in I-Bar only.

Number Eccentric	Number Screw	Opens Inches	Dozen
5612	2712	12	\$17.30
5618	2718	18	20.06
5624	2724	24	22.82
5630	2730	30	25.58
5636	2736	36	28.34
5648	2748	48	33.86
5660	2760	60	39.38
5672	2772	72	44.90
5684	2784	84	50.42
5696	2796	96	55.94

Eccentric



Car and Piano Clamp

A powerful malleable iron clamp, having a 2½-inch double-flanged body with a double-flanged eccentric 14-inch lever supported between two ears. The eccentric operates a plunger having ¾-inch movement, and is attached to a self-adjusting clamping plate.

Has a movable jaw with a compound grip.

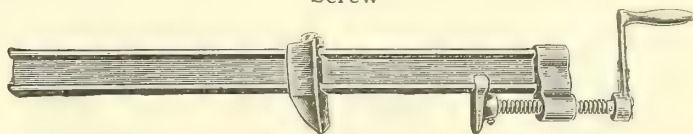
This clamp reaches 6 inches.

Adapted to car, piano, automobile work and boat-building.

Made only in 12-inch length.

No. 3212. dozen. \$30.00

Screw

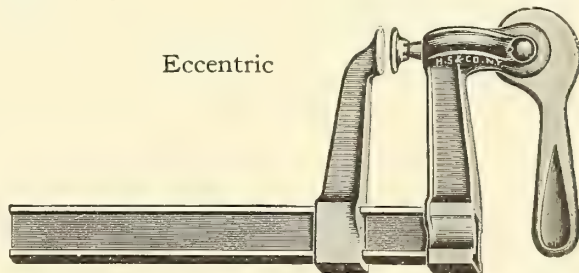


Vise Clamp

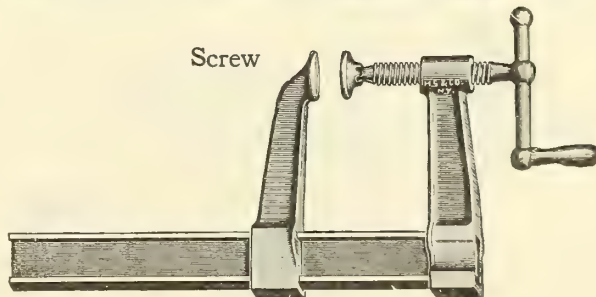
We especially recommend this clamp to all manufacturers of wood requiring a strong clamp for wide work. This clamp has the 1½-inch steel I-Bar and the clamping surface of the button and sliding foot is two inches square. It is operated by a ¾-inch steel screw. An improvement has been effected by making the crank and handle all one piece of malleable iron. This overcomes the difficulty of broken wood handles. The sliding foot we have made heavier to stand excessive pressure. It has our improved double-locking device of ribs and lugs and in addition we have placed a set screw through the back of the foot so adjusted that the foot will slide easily along the bar. This screw gives a grip on the bar just before the ribs engage the front and back. It is not to set the clamp with and should not be touched except a quarter turn to take up the wear if the clamp is continually used on one width of work.

I-Bar Number	U-Bar Number	Opens Inches	Dozen
2912	5912	12	\$15.60
2918	5918	18	18.36
2924	5924	24	21.12
2930	5930	30	23.88
2936	5936	36	26.64
2948	5948	48	32.16
2960	5960	60	37.68
2972	5972	72	43.20
2984	5984	84	48.72
2996	5996	96	54.24

Eccentric



Screw



Long Reach Clamp

Especially adapted to carpentering and building, concrete construction and in the trades generally where pressure is required 6 inches from the edge of the work.

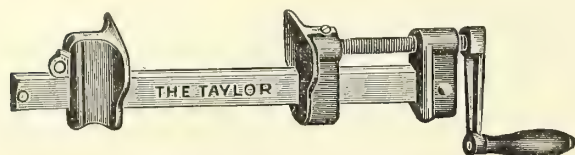
Number Eccentric	Number Screw	Opens Inches	Dozen
3012	3112	12	\$18.00
3018	3118	18	20.76
3024	3124	24	23.52
3030	3130	30	26.28
3036	3136	36	29.04
3048	3148	48	34.56
3060	3160	60	40.08
3072	3172	72	45.60
3084	3184	84	51.12
3096	3196	96	56.64

Screw Clamps

Taylor Quick-Adjusting Self-Locking

In the gripping action of these clamps a wedge is employed to carry the gripping block. The head will not slip under any strain that can be applied, even when brought to bear directly at the base of the head close to, and in a direct line with the bar—the most severe test that can be made of it. In shifting the head, it is only necessary to grasp the projecting end between the thumb and second finger, the first finger pressing slightly against the head. This releases the wedge and the head is moved back any distance desired. To move head forward, simply push it along the bar to any point, and it grips instantly wherever it is left. The bars are all high-grade steel (120 per cent stronger than Bessemer) and the castings best refined malleable iron.

Cabinet No. 16



Distance from centre of screw to bar is only $\frac{1}{2}$ -inch, thus reducing the leverage and increasing the power, making a very stiff clamp for its weight.

Clamping Surface $1\frac{1}{8}$ inches high, $1\frac{1}{8}$ inches wide.

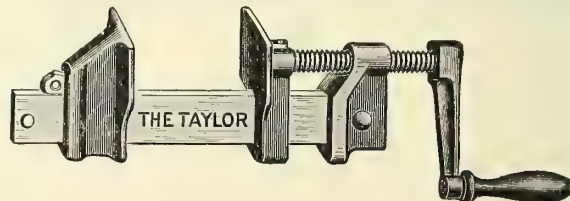
Steel bar $1 \times \frac{5}{16}$ inch.

Steel screw $6 \times \frac{9}{16}$ inches.

Tested to safe clamping strain of 5,500 pounds.

Opens Feet	Each	Opens feet	Each
1	\$2.00	3	\$2.50
$1\frac{1}{2}$	2.12	4	2.75
2	2.25	5	3.00
$2\frac{1}{2}$	2.38	6	3.25

Carpenters No. 25



Medium weight. Recommended for the general run of door and fixture work.

Clamping surface 2 inches high, $1\frac{1}{4}$ inches wide.

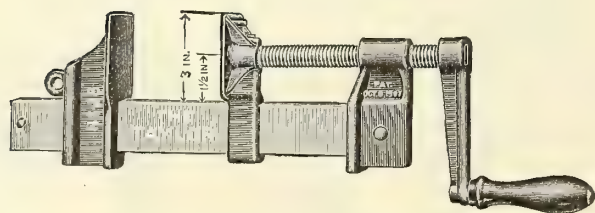
Steel bar $1\frac{1}{2} \times \frac{1}{4}$ inches.

Steel screw $6\frac{1}{2} \times \frac{3}{4}$ inches.

Tested to safe clamping strain of 7,000 pounds.

Opens Feet	Each	Opens feet	Each
2	\$2.75	4	\$3.25
$2\frac{1}{2}$	2.88	5	3.50
3	3.00	6	3.75

No. 28



Having a 3-inch engagement, this clamp is particularly useful for work on pilasters, columns, parlor frames and all work requiring clamps with an extra deep engagement.

Clamping surface 3 inches high, 2 inches wide.

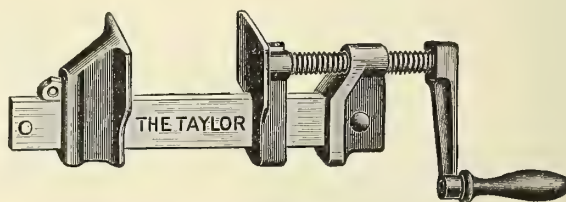
Steel bar $1\frac{3}{4} \times \frac{5}{16}$ inches.

Steel screw $7\frac{1}{2} \times \frac{3}{4}$ inches.

Tested to a safe clamping strain of 6,500 pounds.

Opens Feet	Each	Opens feet	Each
2	\$3.10	6	\$5.10
$2\frac{1}{2}$	3.35	7	5.60
3	3.60	8	6.10
4	4.10	9	6.60
5	4.60	10	7.10

Carpenters No. 30



Same design as No. 25, but much stronger. Well adapted for heavy door and hardwood work.

Clamping surface 2 inches high, $1\frac{1}{4}$ inches wide.

Steel bar $1\frac{3}{4} \times \frac{5}{16}$ inches.

Steel screw $7\frac{1}{2} \times \frac{3}{4}$ inches.

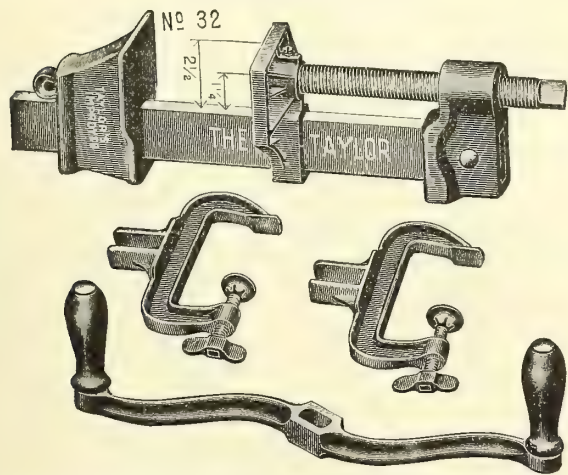
Tested to safe clamping strain of 10,000 pounds.

Opens Feet	Each	Opens feet	Each
2	\$3.00	6	\$5.00
$2\frac{1}{2}$	3.25	7	5.50
3	3.50	8	6.00
4	4.00	9	6.50
5	4.50	10	7.00

Screw Clamps

Taylor Quick-Adjusting
Self-Locking, Improved

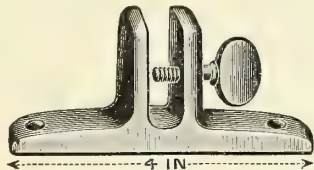
Carpenters No. 32



An extra powerful clamp for the heaviest class of hardwood work. Supports shown below clamp are designed to fasten to trestles. Steel bar 2x3/4 inches. Screw 1x9 inches.

Tested to safe clamping strain of 40,000 pounds.

Opens Feet	Each	Opens feet	Each
3	\$5.50	8	\$9.25
4	6.25	9	10.00
5	7.00	10	10.75
6	7.75	11	11.50
7	8.50	12	12.25



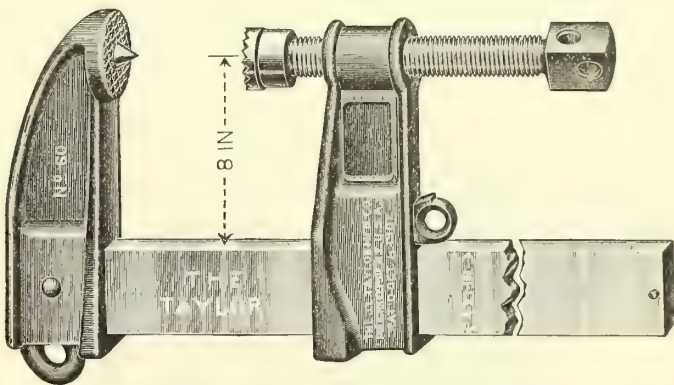
Supports

For securing Clamps on Benches or Trestles.

Will fit any clamp with bar not over 1/8-inch thick.

Pair \$.35

Dock and Construction No. 60



This Clamp is designed for the heaviest class of construction work. The bar of high-grade steel is 4x1 inches, and the steel screw 1 3/4x15 inches. The distance from the center of the screw to the bar is 8 inches.

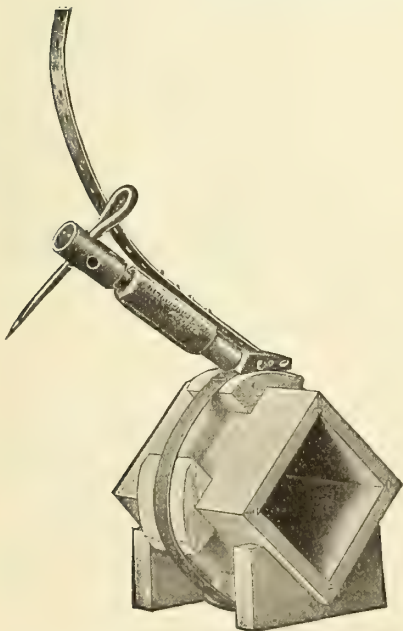
The attachment to the stationary head enables workmen to run a rope through, thereby preventing clamp being lost when working in deep water—a decided advantage. The steel point on the stationary head, also the milled portion on the end of screw, gives a better grip on the wood, particularly when it is wet.

Tested to safe clamping strain of 26,400 pounds

	Each
18 inch opening	\$28.00
24 inch opening	29.00
30 inch opening	30.00

Column or Encircling Clamps

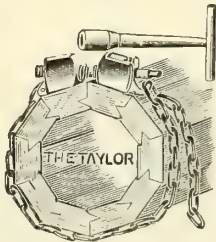
Twentieth Century



This clamp consists of a tubular metal body with a jawed foot at one end and an interior screw thread at the other. The body is within a metal sleeve which has protecting pins that engage perforations at one end of the encircling steel strap. The other end of the strap is fastened to the jawed foot. The loose end of the strap passes over a roller bearing in the jaw, hinged to permit its being thrown back for adjustment. The strap is tightened by a screw working on body, a collar preventing its working out of the sleeve.

With 5 foot compression belt, dozen. \$24.00
Longer belts at \$.10 per foot additional

Taylor



No. 47

With 3/4-inch steel screw threaded right and left. Nuts have long bearings, making the clamp very durable.

With 4-foot chain.

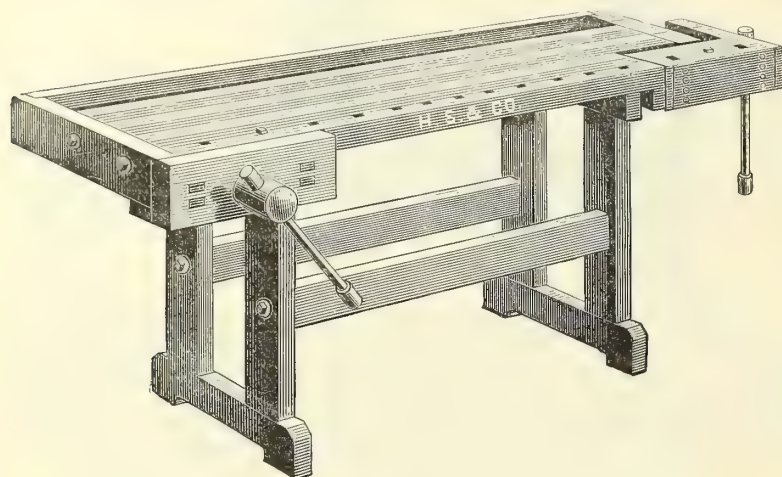
Dozen	\$27.00
Each	2.70
Extra chain, foot. . . . .	.17
One wrench included with each half dozen clamps.	
Extra Wrenches, each . . . . .	.30

Cabinet Makers Benches

H. S. & Co.

We call attention to the superior quality of our Benches. They are not the ordinary kind made to sell in competition with the cheapest, but are made of thoroughly seasoned, kiln-dried stock, carefully and scien-

tifically put together. The lumber is cut and prepared a long time before use, giving sufficient time to dry and cure, and will not warp or crack after a short period, as the inferior and cheaper-priced benches so often do.



Style B

Made of maple throughout, except the vise screws, which are second-growth hickory. The top, exclusive of vises, is 75 inches long, 24 inches wide, $2\frac{3}{4}$ inches thick, with 7 inches recess. Stands 33 inches high. Has two iron stops. Head vise is 18 inches wide, opens 12 inches. Tail vise is 6 inches wide, opens 10 inches. Vise screws $2\frac{3}{8}$ x 17 inches. Oil rubbed. Weight 190 pounds, each \$28.00

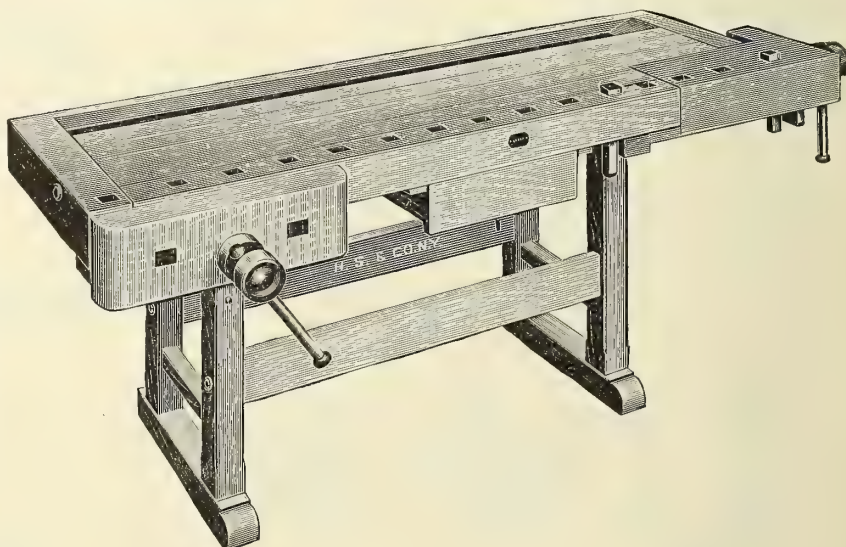
Style BB

Same as Style B except that it has $1\frac{1}{4}$ x 18 inches Iron Bench Screws, each \$28.00

Style C

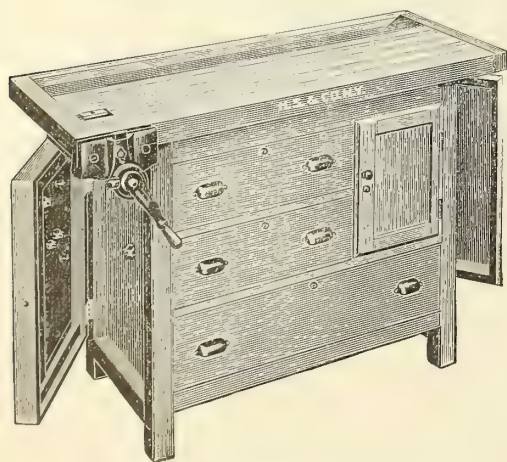
Same as Style B except that the length of the top is 64 inches. Weight 167 pounds, each \$28.00

Style E



The construction of this Bench is very solid and heavy, the stands being made of 4-inch square timbers. The bolsters are bolted to the main portion of the tops.

Made of Austrian red beech, with white beech vise screws. Top, exclusive of vises, is 78 inches long, 24 inches wide, $2\frac{5}{8}$ inches thick, with 4 inches front strip, 6 inches recess. Stands 33 inches high. Has two iron stops. Head vise is 22 inches wide, opens 10 inches and is provided with a device for equalizing the strain when work is clamped at one end of the vise. The vise jaw is kept absolutely at right angles to the screw. Tail vise is $6\frac{1}{4}$ inches wide, opens $9\frac{1}{2}$ inches, with locked corners. Drawer is 15 inches wide, $15\frac{1}{2}$ inches deep, $4\frac{1}{2}$ inches high. Vise screws $2\frac{3}{8}$ x17 inches. Waxed finish. Weight 230 pounds, each \$56.00



Combination Bench and Cabinet

H. S. & Co.

For Manual Training or Home Use

No. 075

The bench top is 50 inches long, 22 inches wide, $2\frac{1}{4}$ inches thick, made of strips of solid maple, tongued and grooved and glued together. Tool recess 7 inches wide. Stands $33\frac{1}{2}$ inches high. Top is equipped with a rapid acting vise and adjustable metal planing stop.

The Cabinet is made almost entirely of oak, with solid brass hardware. The bottom drawer is fitted with saw racks and is $29\frac{1}{2}$ x16x $6\frac{1}{2}$ inches. The top and middle drawers are $18\frac{3}{4}$ x16x6 inches, while the cupboard is $9\frac{1}{2}$ x16 $\frac{1}{2}$ x14 inches. The end tool racks are $14\frac{1}{4}$ inches wide and 22 inches high, inside measurements.

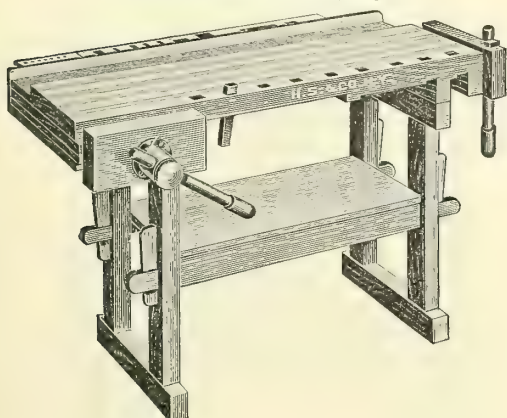
Approximate weights. Boxed, 275 pounds. Not boxed, 200 pounds. Each \$60.00

Manual Training and Home Benches

H. S. & Co.

Styles J and R

Illustration shows Style J



This is our Standard School Bench, and since it has been on the market has met with extremely favorable reception. Our vise construction is the result of careful experiment, and as now made distributes the strain over the entire bench top. Bench is made of thoroughly seasoned lumber, carefully put together, all joints being glued where practicable.

Style J

Made of maple, except vise screws, which are second growth hickory. The top, exclusive of vises, is 48 inches long, 18 inches wide, 2 inches thick, with 6 inches recess. Stands 32 inches high. Has two wooden stops. Head vise 12 inches wide, opens 8½ inches. Tail vise 12 inches wide, opens 10 inches. Vise screws 2x17 inches. Weight 105 pounds.

Each..... \$25.00

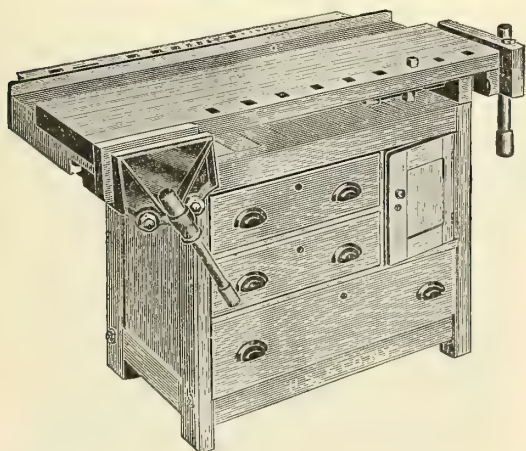
Style R

Same as Style J, except head vise is a No. 230, size 2, maple faced rapid acting vise.

Each..... \$34.00

Styles P and S

Illustration shows Style S.



Style P

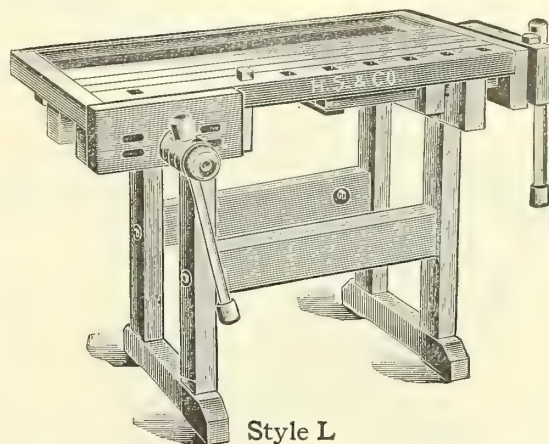
This Bench is the Style J Bench, with drawers and cupboard added. Top drawer, 18 inches wide, 15½ inches deep, 4½ inches high. Middle drawer, 18 inches wide, 15½ inches deep, 4½ inches high. Bottom drawer, 29 inches wide, 15½ inches deep, 6¼ inches high. Cupboard, 10 inches wide, 16 inches deep, 11¼ inches high. Weight 155 pounds.

Each..... \$31.50

Style S

Same as Style P, except that head vise is a No. 230, size 2, maple faced rapid acting vise.

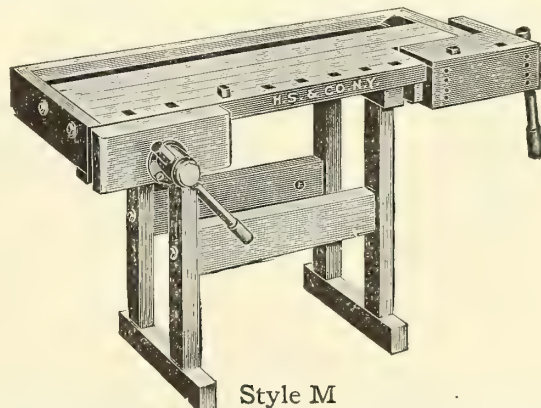
Each..... \$40.00



Style L

This Bench, while it is designed to meet the demand for a low-priced article and is of light construction, is still well-made and serviceable. Made of maple, except vise screws, which are hickory. Top, exclusive of vises, is 42 inches long, 20 inches wide, 2 inches thick, with 6 inches recess. Stands 32 inches high. Has two wooden stops. Head vise 12 inches wide, opens 10 inches. Tail vise 12 inches wide, opens 8 inches. Vise screws 2x17 inches. Weight 90 pounds.

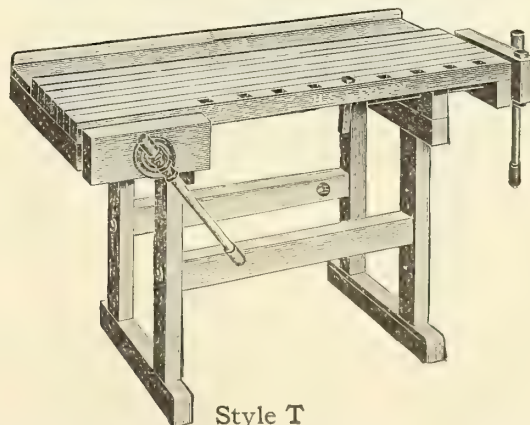
Each..... \$15.00



Style M

The Style M Bench is built on practically the same lines as our Style B Cabinet Makers Bench, but smaller. Made of maple with hickory vise screws. Top, exclusive of vises, is 51 inches long, 20 inches wide, 2½ inches thick, with 6 inches recess. Stands 33 inches high. Has two wooden stops. Vise screws 2x17 inches. Head vise 14 inches wide, opens 12 inches. Tail vise 6 inches wide, opens 6½ inches. Weight 115 pounds.

Each..... \$20.00



Style T

This Bench is made of thoroughly seasoned maple, with 1½x15 inches iron screws on both head and tail vises. Top exclusive of vises, is 48 inches long, 22 inches wide, 2 inches thick, with 7½ inches recess. Stands 32 inches high. Has two wooden stops. Both vises are 12 inches wide and open 10 inches. Weight 115 pounds.

Each..... \$19.00

Manual Training Benches

H. S. & Co.

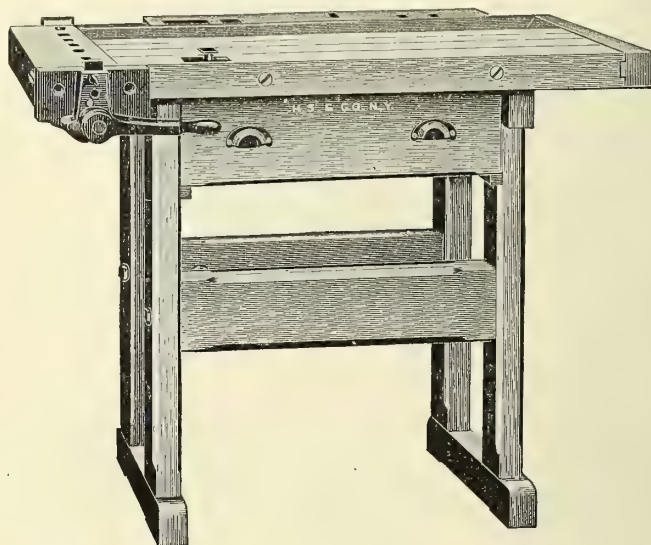
Nos. 101 and 102



This Bench is designed primarily for the home work shop. It is made of well seasoned maple throughout and is regularly fitted with No. 3 Rapid-Acting Vise, but can be supplied with No. 10 Vise if desired. Steel Bench Dog. Top is 42 inches long, 22 inches wide, 1 3/4 inches thick, with 7 inches recess. Weight, 90 pounds without drawer. Drawer is 5 1/2 inches high, 22 inches wide, and 19 inches deep.

No. 101	Without drawer	\$15.00
No. 102	With drawer	17.00

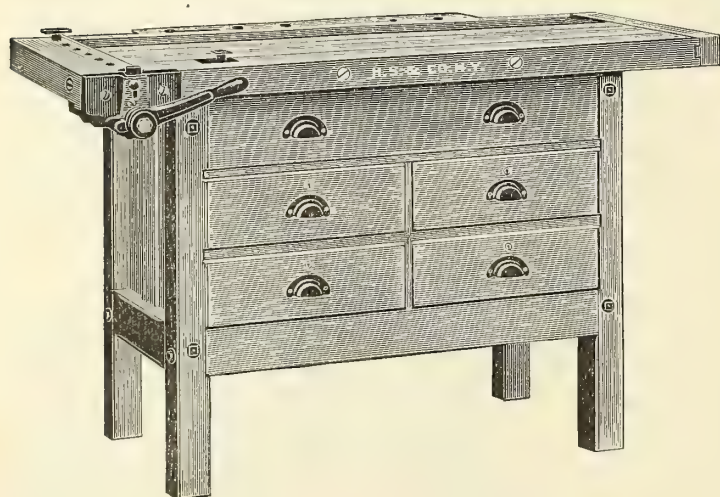
No. 103



Made of thoroughly seasoned maple. Top is 42 inches long, 22 inches wide, and 2 1/4 inches thick, with 7 inches recess. Stands 32 inches high. Drawer is 5 1/2 inches high, 22 inches wide, 19 inches deep. Fitted regularly with No. 3 Rapid-Acting Vise, but No. 10 is optional in its place. Steel Dog and Malleable Bench Stop. Weight without drawer 115 pounds.

With drawer	\$21.00
Without drawer	18.50
With Quick Acting Tail Vise, add net	7.50

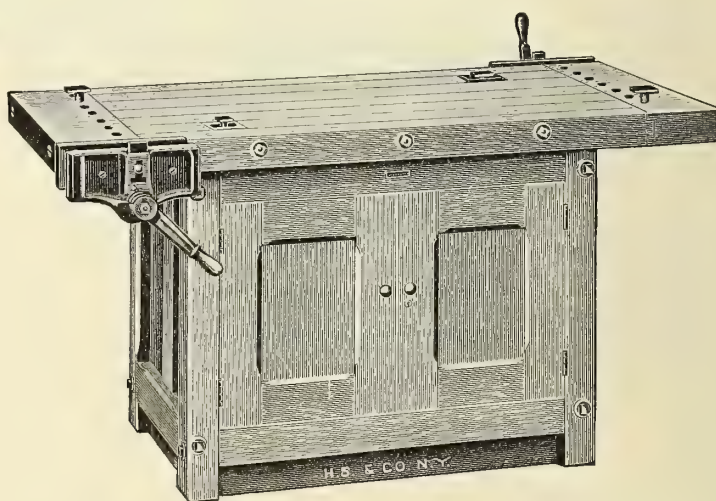
No. 104



This Bench supplies the need for a bench that will contain the pupils individual equipment. It is made of maple and the construction throughout is sturdy. The top is 52 inches long, 22 inches wide, 2 1/4 inches thick, with 7 inches recess. The drawers measure 5 inches high, 17 inches deep, and 32 and 15 1/2 inches long. Stands 32 inches high. Fitted with No. 3 Rapid Acting or No. 10 Continuous Screw Vise, Steel Dog and Malleable Bench Stop. Weight, 215 pounds.

Each	\$36.00
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No. 105

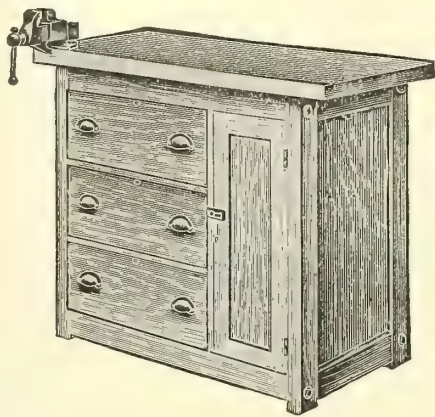
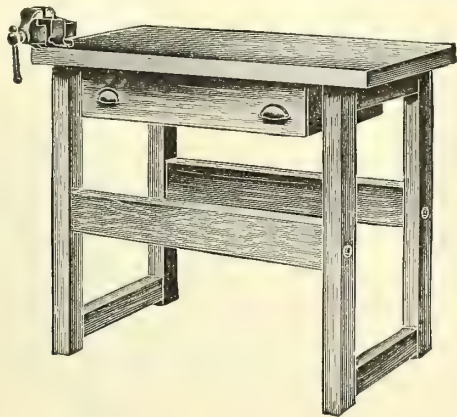


This Bench is intended for the use of two pupils and is economical in floor space. The tool cabinets are ample and convenient. The top is 56 inches long, 26 inches wide, 2 3/4 inches thick. The Cabinet is 30 inches long, 21 inches high and 10 inches deep. Stands 32 inches high. Fitted with two No. 6 Rapid Acting or No. 12 Continuous Screw Vises, two Steel Dogs and two Malleable Bench Stops. Weight, 310 pounds.

Each	\$60.00
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Machinists Benches

H. S. & Co.



Made of hard maple shellaced. The top is 48 inches long, 23 inches wide, and 2 inches thick. Stands 38 inches high. Drawer is 30 inches wide, 17½ inches deep, 5 inches high.

No. 27 Without vise \$18.00

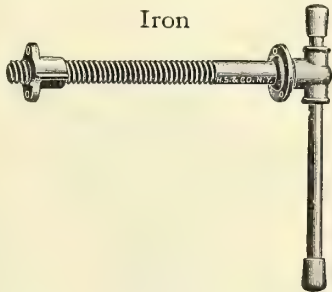
No. 27V, with Parker No. 102 Eclipse Vise, 3 inches Jaw, opens 4 inches, each \$24.50

Made of hard maple, shellaced top, is 48 inches long, 23 inches wide and 2 inches thick. Stands 38 inches high. Three drawers, each 23 inches wide, 19 inches deep, 8 inches high. Cupboard, 30 inches high, 20 inches deep and 10½ inches wide.

No. 28 Without vise \$31.00

No. 28V, with Parker No. 102 Eclipse Vise, 3 inches Jaw, opens 4 inches, each \$37.50

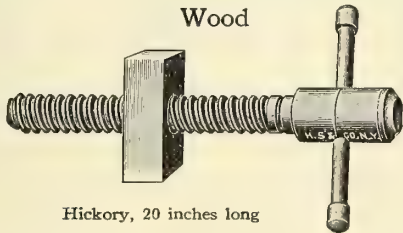
Iron



No. 50 Wrought iron screw, wooden handle with loose collar.

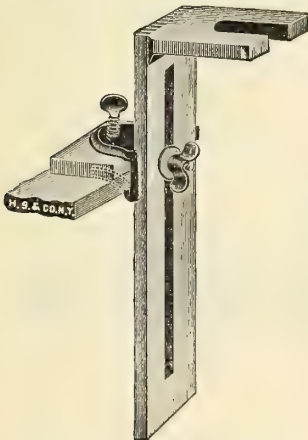
Diameter of screw, inches.	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 1/4
Length of screw, inches..	15	18	15	18	20	15	18	20
Dozen	\$9.00	13.00	10.00	15.00	16.00	12.00	17.00	19.00

Wood



Hickory, 20 inches long

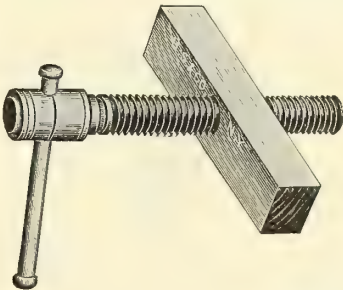
Numbers	20	19	18	17
Diameter of screw, inches.	1 1/2	1 3/4	2	2 3/8
Dozen	\$18.33	20.00	21.67	30.00
Extra Nuts, dozen				\$4.17
Extra Handles, dozen				4.17



Bench Screws

H. S. & Co.

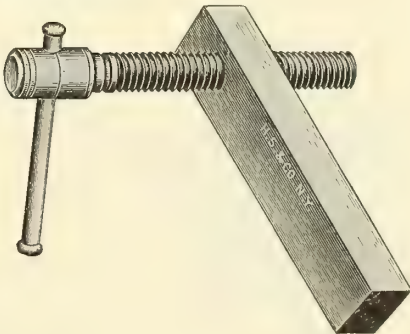
O. K. Head Screw



Hickory screw, with 3x4x20 inches maple nut.

Numbers	79 1/2	79
Diameter of screw, inches	2	2 3/8
Length of screw, inches	20	20
Dozen	\$33.33	36.67

O. K. Tail Screw



Hickory screw, with 3x5x30 inches maple nut.

No. 80 1/2 2x20 inches screw, dozen \$40.00

No. 80 2 3/8x20 inches screw, dozen \$43.33

Fret Saw Table

Pierce

For Manual-Training Work

This Table is particularly commendable for two features: First, it is adjustable to any height above desk from 3 to 20 inches, permitting the student to work in a sitting or standing position; second, it can be instantly attached to any school desk.

It is designed to meet the popular demand for a saw table, low in price, quick and easy of adjustment, and simple enough in construction to enable the younger students to attach or detach it without difficulty.

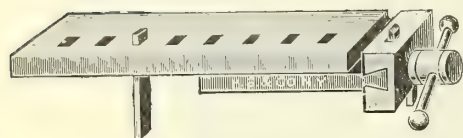
It most admirably combines these features and is recommended where an inexpensive but thoroughly practicable saw table is wanted.

Each \$1.90

Bench Appliances

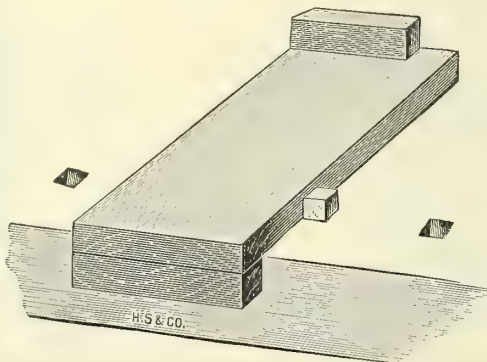
H. S. & Co.

Wood-Carvers Bench



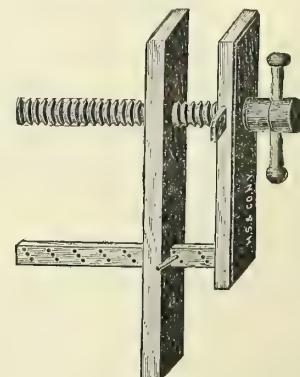
Made of selected maple, with $1\frac{1}{2} \times 18$ inches hickory screw. It is $37\frac{1}{2}$ inches long over all, $8\frac{1}{2}$ inches wide, and opens 11 inches. With stops.
Each \$5.00

Bench Hook



Made of selected maple. For odd sawing and chiselling, so that the bench will not be marred. $4\frac{1}{2} \times 12$ inches.
Dozen \$4.00

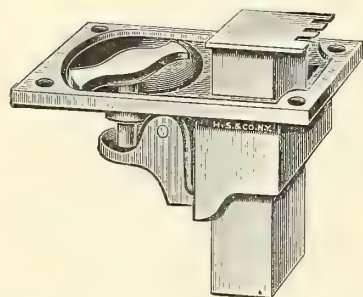
Wood-Carvers Vise



Made of selected maple, with $2\frac{3}{8} \times 19$ inches hickory screw. It is 44 inches long, 6 inches wide, and opens 14 inches.
Each \$3.25

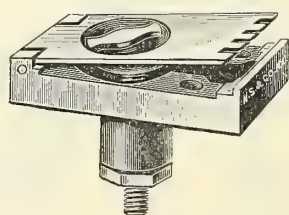
Bench Stops

Weston No. 1

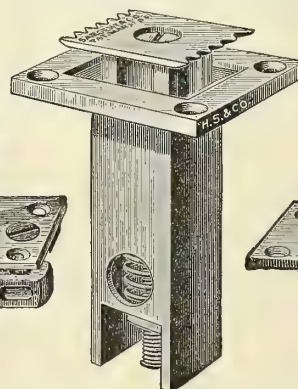


Weston No. 1, dozen \$8.70
Weston No. 2, dozen 6.70

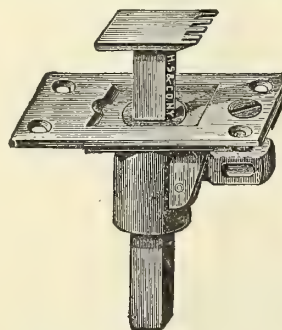
Weston No. 2



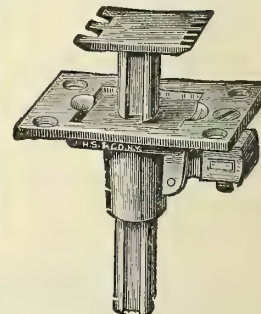
Sargent No. 41



Morrill No. 1

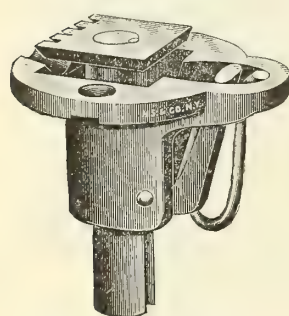


Morrill No. 2



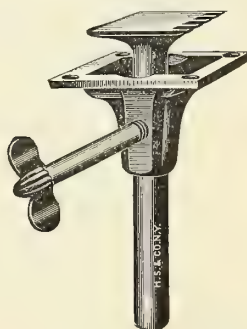
Morrill No. 1, each \$1.00
Morrill No. 2, each 1.40
Sargent No. 41, dozen 4.50

Sheldon Quick Set



Sheldon Quick-Set, each \$.80
B. M. Co. Swivel, each 1.00

B. M. Co. Swivel



H. S. & Co.



Wrought Iron

	Small	Medium	Large
Thickness, inches.....	$\frac{3}{4} \times \frac{7}{8}$	$\frac{7}{8} \times 1$	$\frac{7}{8} \times 1$
Length, inches.....	$6\frac{1}{2}$	$7\frac{1}{2}$	9
Dozen pairs.....	\$11.00	13.00	15.00

H. S. & Co.



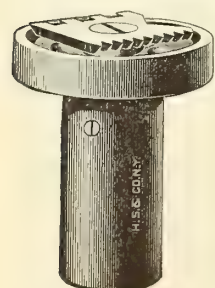
Style L



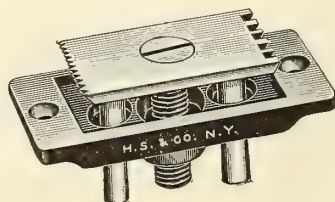
Style J

Style L, 6 inches long, Maple, dozen pairs \$2.40
Style J, 6 inches long, Maple, dozen pairs 2.40

M. F. Co. No. 56



Smith No. 1



M. F. Co., No. 56, dozen \$6.50
Smith, No. 1, dozen 8.00

Manual Training Outfits

On this and the following pages we give descriptions of several outfits of tools for Manual Training and Technical Schools. We wish to impress upon all who are interested in Manual Training Work, that the tools in these various outfits are all of the highest grade. Our hobby since 1848 has been to handle only the best, and our extended experience has proven time and again that only the best tools obtainable should be used for Manual Training. In the hands of beginners, tools are usually put to severe and undue strain and unless quality is there they are bound to give way. Every tool is warranted to be perfect. The various outfits as listed are not intended to cover all requirements, but were carefully planned to form a nucleus or start which may be enlarged as necessary.

Woodworkers Tools

Equipment for Class of 10 Pupils

Individual Tools

10 Buck Bros. Handled and Sharpened Firmer Chisels, $\frac{1}{4}$ -inch.
 10 Buck Bros. Handled and Sharpened Firmer Chisels, $\frac{1}{2}$ -inch.
 10 Buck Bros. Handled and Sharpened Firmer Gouges, $\frac{3}{8}$ -inch.
 10 Disston Back Saws, No. 4, 10 inches.
 10 Hammond Adze Eye Hammers, No. 3.
 10 Stanley Iron Block Planes, No. 9 $\frac{1}{2}$.
 10 Stanley Iron Smooth Planes, No. 3.
 10 Stanley Iron Spokeshaves, No. 53.
 10 Imported Gimlet Bits, $\frac{3}{16}$ -inch.
 10 Imported Gimlet Bits, $\frac{1}{4}$ -inch.
 10 Russel Jennings Genuine Dowel Bits, $\frac{3}{8}$ -inch.
 10 Russell Jennings Genuine Dowel Bits, $\frac{1}{2}$ -inch.
 10 Barber Nickel-plated Braces, No. 223, 8 inches.
 10 Disston Hardened Blade Try Squares, No. 5 $\frac{1}{2}$, 6 inches.
 10 Stanley Beech Marking Gauges, No. 64 $\frac{1}{2}$.
 10 New Century Screwdrivers, 4 inches.
 10 Stanley Boxwood Rules, No. 18, 2 foot, 2 fold.
 10 Round Hickory Mallets, No. 4.
 10 H. S. & Co. Maple Bench Hooks.
 10 H. S. & Co. Handled Brad Awls, 1 $\frac{1}{4}$ -inch.
 10 P. S. & W. Winged Dividers, No. 35, 6 inches.
 10 Bench Dusters, No. 10.
 10 H. S. & Co. Knurled Nail Sets.
 10 H. S. & Co. Sloyd Knives, No. 7.

Class Tools

1 Buck Bros. Handled and Sharpened Firmer Chisel $\frac{3}{4}$ -inch.
 1 Buck Bros. Handled and Sharpened Firmer Chisel, 1-inch.
 1 Buck Bros. Handled and Sharpened Firmer Gouge, $\frac{3}{4}$ -inch.
 1 Disston Crosscut Saw, No. 7, 22 inches.
 1 Disston Rip Saw, No. 7, 22 inches.
 1 M. F. Co. Turning Saw, 14 inches with blade.
 1 Stanley Wood Jack Plane, No. 26.
 1 Stanley Iron Rabbet and Fillester Plane, No. 78.
 1 Russel Jennings Genuine Dowel Bit, $\frac{5}{8}$ -inch.
 1 Russel Jennings Genuine Dowel Bit, $\frac{3}{4}$ -inch.
 1 Handled K. & F. Flat Bastard File, 8 inches.
 1 Handled K. & F. Half-round Bastard File, 8 inches.
 1 Handled K. & F. Round Bastard File, 8 inches.
 1 Handled K. & F. Square Bastard File, 8 inches.
 2 Rose Countersinks, No. 10, $\frac{5}{8}$ inch.
 2 Medium India Oil Stones, No. 29, mounted in iron box.
 1 Disston sliding T-Bevel, No. 2, 8 inches.
 12 Jorgensen Hand Screws, 10 inches.

	Each
No. 20 Includes above list of tools with 10 Manual Training School Benches, Style J (see page 451)	\$210.00
No. 20A Includes above list of tools with 10 Manual Training School Benches, Style R (see page 451).....	290.00
No. 21 Includes above list of tools with 10 Manual Training School Benches, Style P (see page 451).....	275.00
No. 21A Includes above list of tools with 10 Manual Training School Benches, Style S (see page 451).....	325.00

Individual Equipments

While designed primarily for Manual Training use, they make excellent outfits for home use. The tools are all of the highest grade, fully guaranteed. The benches are well made of selected and thoroughly seasoned maple, very rigid and strong, and we take pleasure in recommending them.

We are often asked to suggest a moderate-priced Bench Outfit. If conditions are normal and the appropriation limited, we invariably advise No. 24. This outfit includes our standard "J" Bench, Bench Hook, and 26 best quality tools as listed—an assortment which contains all the necessary tools for a general equipment for all around work.

One Buck Bros. Handled and Sharpened Firmer Chisel, $\frac{1}{4}$ -inch.
 One Buck Bros. Handled and Sharpened Firmer Chisel, $\frac{1}{2}$ -inch.
 One Buck Bros. Handled and Sharpened Firmer Gouge, $\frac{3}{8}$ -inch.
 One Disston Back-Saw, No. 4, 10 inches.
 One Disston Hand Saw, No. 7, 22 inches.
 One Hammond Adze Eye Hammer, No. 3.
 One Stanley Iron Block Plane, No. 9 $\frac{1}{2}$.
 One Stanley Iron Smooth Plane, No. 3.
 One Imported Gimlet Bit, $\frac{3}{16}$ -inch.
 One Imported Gimlet Bit, $\frac{1}{4}$ -inch.
 One Russell Jennings Genuine Dowel Bit, $\frac{3}{8}$ -inch.
 One Russell Jennings Genuine Dowel Bit, $\frac{1}{2}$ -inch.
 One Barber Nickel-plated Brace, No. 223, 8 inches.

One Rose Countersink, No. 10, $\frac{5}{8}$ -inch.
 One Disston Hardened Blade Try-square, No. 5 $\frac{1}{2}$, 6 inches.
 One Stanley Beech Marking Gauge, No. 64 $\frac{1}{2}$.
 One New Century Screwdriver, 4 inches.
 One Stanley Boxwood Rule, No. 18, 2 foot, 2 fold.
 One Round Hickory Mallet, No. 4.
 One H. S. & Co. Handled Brad Awl, 1 $\frac{1}{4}$ -inch.
 One P. S. & W. Winged Dividers, No. 35, 6 inches.
 One Bench Duster, No. 10.
 One H. S. & Co. Knurled Nail Set.
 One H. S. & Co. Sloyd Knife, No. 7.
 One Stanley Iron Spokeshave, No. 53.
 One India Oil Stone, No. 29, in iron box.
 One H. S. & Co. Maple Bench Hook.

	Each
No. 24 Includes above list of tools with Manual Training School Bench, Style J (see page 451)	\$22.50
No. 24A Includes above list of tools with Manual Training Bench, Style R (see page 451)	27.00
No. 25 Includes above list of tools with Manual Training School Bench, Style P (see page 451).....	25.75
No. 25A Includes above list of tools with Manual Training School Bench, Style S (see page 451).....	30.00

For illustration of outfit No. 25A see page 461

Manual Training Outfits

Woodworkers Tools Individual Equipments

For those desiring a less expensive equipment than the No. 24, we suggest outfits Nos. 22, 22A or 22B. The tools and benches are of fine quality and the difference in price is due principally to the quantity and not to quality. These outfits contains bench, bench hook, and 17 tools and are the smallest equipments we recommend for practical work.

- 1 Hammond Adze Eye Hammer, No. 3.
- 1 Stanley Block Plane, No. 120.
- 1 Buck Bros. Handled and Sharpened Firmer Chisel, $\frac{1}{4}$ -inch.
- 1 Buck Bros. Handled and Sharpened Firmer Chisel, $\frac{1}{2}$ -inch.
- 1 Back Saw, No. 1, 10-inch.
- 1 Russel Jennings Genuine Dowel Bit, $\frac{3}{8}$ -inch.
- 1 Imported Gimlet Bit, $\frac{3}{16}$ -inch.
- 1 Barber Nickel-plated Brace, No. 223, 8-inch.
- 1 Disston Hardened Blade Try-square, No. 5 $\frac{1}{2}$, 6-inch.

- 1 Stanley Beech Marking Gauge, No. 64 $\frac{1}{2}$.
- 1 New Century Screwdriver, 4-inch.
- 1 H. S. & Co. Knurled Nail Set.
- 1 Round Hickory Mallet, No. 4.
- 1 Stanley Boxwood Rule, No. 18, 2 foot, 2 fold.
- 1 H. S. & Co. Sloyd Knife, No. 7.
- 1 India Oil Stone, No. 29, mounted in iron box.
- 1 Bench Duster, No. 10.
- 1 H. S. & Co. Maple Bench Hook.

- No. 22 Includes above list of tools, with Manual Training School Bench.
- No. 22A Includes above list of tools, with Manual Training School Bench.
- No. 22B Includes above list of tools, with Manual Training School Bench.

- Style L (see page 451)..... Each \$13.00
- No. 101 (see page 452)..... 13.00
- No. 102 (see page 452)..... 14.00

Sloyd

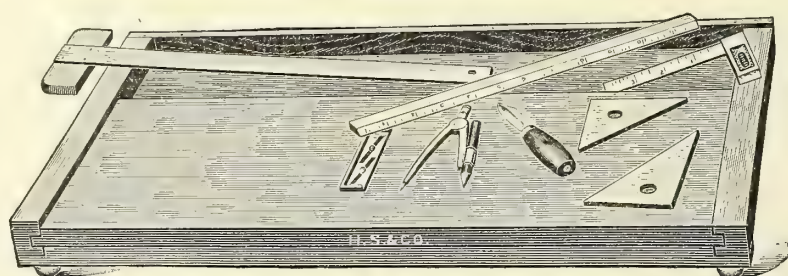
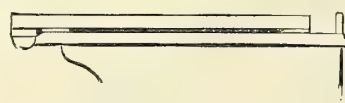


Illustration shows the H. S. & Co. Improved Whittling Tray, with complete tool outfit.



Showing tray on an inclined desk top



Showing tray on a straight desk top

Individual Elementary

The following set is especially adapted for elementary knife work, and includes our standard No. 7 Sloyd Knife and an assortment of 6 other tools approved by well-known manual training authorities.

- 1 Whittling Tray.
- 1 H. S. & Co. No. 7 Sloyd Knife.
- 1 Eagle Compass.
- 1 Triangle, No. 100, 30x60 degree, 4 $\frac{1}{2}$ inches, Maple.
- 1 Triangle, No. 101, 45x45 degree, 3 inches, Maple.
- 1 Desk Rule, No. 150, 12 inches.
- 1 T-square, No. 300, 13 $\frac{1}{2}$ inches, Maple.
- 1 Disston Try-square, No. 4 $\frac{1}{2}$, 4 inches.
- No. 31 Dozen..... \$17.50
- Each..... 1.75

Whittling Tray Only

12 $\frac{1}{2}$ inches wide, 22 inches long, with a recess 4 inches wide. It is provided with a unique and very practicable clamp which will hold a block up to 9 inches in width. Now being used by prominent schools all over the country, has come to be standard for use in elementary knife work. It is designed for use on the lap or as a desk or bench top, and is so constructed that it will not slip or mar the desk when in use.

- Dozen..... \$9.00
- Each..... .90

Equipment for a Class of Ten Pupils

- 10 H. S. & Co. Whittling Trays, 22 inches.
- 10 H. S. & Co. Sloyd Knives, No. 7.
- 10 Eagle Compasses.
- 10 Triangles, No. 100, 30x60 degrees, 4 $\frac{1}{2}$ inches, Maple.
- 10 Triangles, No. 101, 45x45 degrees, 3 inches, Maple.
- 10 Desk Rules, No. 150, Maple.
- 10 T-squares, No. 300, 13 $\frac{1}{2}$ inches, Maple.
- 10 Disston Try-squares, No. 4 $\frac{1}{2}$, 4-inch.
- 10 H. S. & Co. Handled Brad Awls, 1-inch.
- 2 Stanley Iron Smooth Planes, No. 3.
- 2 Stanley Iron Block Planes, No. 9 $\frac{1}{2}$.
- 2 Disston Back Saws, No. 4, 10 inches.
- 2 H. S. & Co. Carvers Knives, No. 3.
- 4 Hammond Bell Face Claw Hammers, No. 15.
- 1 India Oil Stone, No. 29, mounted in iron box.
- 1 Copperized Steel Oiler, No. 12.
- 6 Jorgensen Hand Screws, 8 inches.

- No. 32 For 10 pupils..... \$26.00

Books

Handwork in Wood

By William Noyes

A handbook for teachers and a textbook for normal school and college students. Covering logging, sawmilling, seasoning and measuring, hand tools, wood fastenings, equipment and care of the shop, the common joints, types of wood structures, principles of joinery and wood finishing. 304 illustrations. Excellent pen drawings and many photographs.

- Each..... \$2.00

Wood and Forest

By William Noyes

A companion volume to "Handwork in Wood," by the same author. Especially adapted as a reference book for teachers of woodworking. Treats of wood, distribution

of American forests, life of the forest, enemies of the forest, destruction, conservation and uses of the forest, with a key to the common woods by Filibert Roth. Describes 67 principal species of wood with maps of the habitat, leaf drawings, life size photographs and micro-photographs of sections. Profusely illustrated with photographs by the author. 309 pages.

- Each..... \$3.00

Design and Construction in Wood

By William Noyes

A companion volume to the above, being an elementary course in woodworking, giving details in handling of tools and some practice in the simpler designs. As the lessons or chapters progress, the exercises become slightly more difficult and during the lessons simple exercises in copper are introduced as relative to woodworking and the subject of finishing and polishing is taken up in the proper place. 159 pages.

- Each..... \$1.50

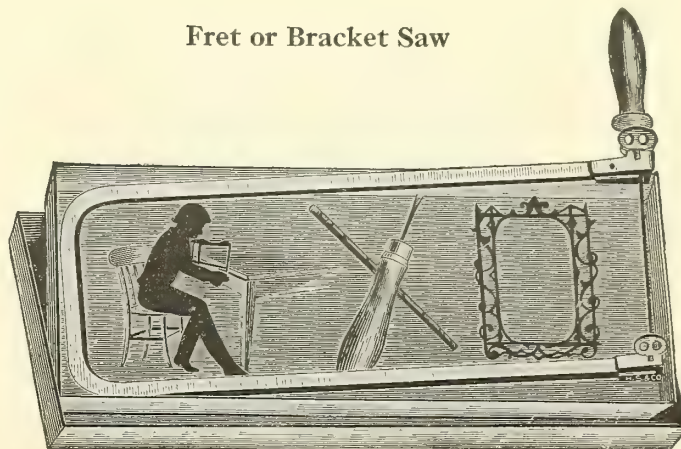
Manual Training Outfits

Fret or Scroll Saw

- 1 Pierce Saw Table.
- 1 H. S. & Co. Bracket Saw Frame, No. 20, 10-inch.
- 1 dozen Fret Saw Blades, No. 1.
- 1 dozen Fret Saw Blades, No. 3.
- 1 M. F. Co. Plain Sleeve Brace, No. 223.
- 1 Russell Jennings Dowel Bit, $\frac{3}{16}$ -inch.
- 1 Russell Jennings Dowel Bit, $\frac{1}{4}$ -inch.
- 1 Russell Jennings Dowel Bit, $\frac{3}{8}$ -inch.
- 1 Forstner Dowel Bit, $\frac{1}{4}$ -inch.
- 1 Forstner Dowel Bit, $\frac{3}{8}$ -inch.
- 1 H. S. & Co. Handled Brad Awl, $\frac{7}{8}$ -inch.
- 1 H. S. & Co. Handled Brad Awl, $1\frac{1}{4}$ -inch.
- 1 Hammond Adze-Eye Bell Face Claw Hammer, No. 14, 5-ounce.
- 1 H. S. & Co. Flat Plier, No. 20, $4\frac{1}{2}$ -inch.
- 1 H. S. & Co. Round Plier, No. 21, $4\frac{1}{2}$ -inch.
- 1 H. S. & Co. Cutting Nipper, No. 1306 A. Y., $4\frac{1}{2}$ -inch.
- 1 K. & F. Handled Round Bastard File, 4-inch.
- 1 K. & F. Handled Round Bastard File, 8-inch.
- 1 Jersey Clamp Vise, No. 765.
- 1 Stanley Boxwood Rule, No. 61, two-foot.
- 1 dozen sheets 3-ply Wood, $\frac{3}{16}$ x16x24 inches.
- 3 Birch Dowels, $\frac{3}{16}$ x36 inches.
- 3 Birch Dowels, $\frac{1}{4}$ x36 inches.
- 3 Birch Dowels, $\frac{3}{8}$ x36 inches.
- 1 pound Brads, $\frac{1}{2}$ -inch, No. 20.
- 1 pound Nails, $\frac{1}{2}$ -inch, No. 20.
- 1 tube LePage Glue.
- 1 dozen steel Thumb Tacks, $\frac{1}{2}$ -inch.
- $\frac{1}{2}$ dozen sheets Sandpaper, No. 1.
- $\frac{1}{2}$ dozen sheets Sandpaper, No. $1\frac{1}{2}$.
- 1 Bowman Book of Designs, Part I.

No. 35 Set \$12.00

Fret or Bracket Saw



This set contains a Spring Steel Saw Frame, 12 inches; 3 sheets of designs, embracing a great variety of fancy and useful articles; 12 Saw Blades; 1 Awl and 1 sheet of Impression Paper.

No. 2 In paper box, per set \$1.25

Wood Turners

- 1 Buck Bros. Handled and Sharpened Turning Gouge, No. 20, $\frac{3}{8}$ -inch.
- 1 Buck Bros. Handled and Sharpened Turning Gouge, No. 20, $\frac{3}{4}$ -inch.
- 1 Buck Bros. Handled and Sharpened Round Point Turning Chisel, No. 19 $\frac{1}{4}$, $\frac{1}{4}$ -inch.
- 1 Buck Bros. Handled and Sharpened Skew Point Turning Chisel, No. 19, $\frac{3}{8}$ -inch.
- 1 Buck Bros. Handled and Sharpened Skew Point Turning Chisel, No. 19, $\frac{3}{4}$ -inch.
- 1 Buck Bros. Handled and Sharpened Skew Point Turning Chisel, No. 19, 1-inch.

- 1 Buck Bros. Handled and Sharpened Square Point Turning Chisel, No. 19 $\frac{1}{2}$, $\frac{1}{4}$ -inch.
- 1 Buck Bros. Handled and Sharpened Parting Tool, $\frac{3}{4}$ -inch.
- 1 Boxwood Rule, No. 61, 2-foot, 4-fold.
- 1 Pair Winged Calipers, 6-inch.
- 1 Bench Duster, No. 10.
- 1 India Oil Stone, No. 29, mounted in iron box.
- 1 Washita Oil Slip, Round Edge, No. 13.
- 1 Copperized Steel Oiler, No. 13.

No. 38 \$6.50

Mechanical Drawing

- 1 Drawing Board, No. 444, 18x24 inches.
- 1 Mahogany, Ebony Lined T-square, No. 371, 24 inches.
- 1 Mahogany, Ebony Lined Triangle, No. 133, 8 inches, 45x45 degrees.
- 1 Mahogany, Ebony Lined Triangle, No. 132, 11 inches, 30x60 degrees.
- 1 Triangular Scale, No. 575, 12 inches, white edge.
- 1 Manual Training Rule, No. 1, Boxwood, 12 inches.
- 1 Ebony Shifting Parallel Rule, No. 200, 12 inches.
- 1 Irregular Curve, No. 174x3.
- 1 Irregular Curve, No. 174x8.
- 1 German Silver Protractor, No. 1262.
- 1 dozen Brass Thumb Tacks, No. 15, $\frac{5}{8}$ -inch.
- 1 set Drawing Instruments, No. 209, Bar-lock, velvet lined case.
- 6-inch Compass with fixed needle point and with pen and pencil points and lengthening bar, 2 shoulder needles.
- 6 inches Hair Spring Dividers.
- $3\frac{1}{2}$ inches Steel Spring Dividers.
- $3\frac{1}{2}$ inches Steel Spring Bow Pen with Needle Point.
- $3\frac{1}{2}$ inches Steel Spring Pencil, with Needle Point.
- $4\frac{1}{2}$ inches Drawing Pen, with Joint.
- $5\frac{1}{2}$ inches Drawing Pen, with Joint.
- Box of Leads.

No. 40 \$11.50

We have embodied in this outfit only high-grade instruments. They will do accurate work.

- 1 Drawing Board, No. 442, 18x24 inches.
- 1 Cherry T-square, No. 363, 24 inches.
- 1 Cherry Triangle, No. 125, 45x45 degrees, 8 inches.
- 1 Cherry Triangle, No. 124, 30x60 degrees, 11 inches.
- 1 Triangular Scale, No. 489, 12 inches, Boxwood.
- 1 Manual Training Rule, No. 3, Boxwood, 12 inches.
- 1 Ebony Shifting Parallel Rule, No. 200, 6 inches.
- 1 Irregular Curve, No. 174, No. 3.
- 1 Irregular Curve, No. 174, No. 8.
- 1 Brass Protractor, No. 1266.
- 1 dozen Steel Thumb Tacks, No. 12, $\frac{1}{2}$ -inch.
- 1 Set Drawing Instruments, No. 207 $\frac{1}{2}$, containing: 6-inch Compass, with Fixed Needle Point, Pen, Pencil Point and Lengthening Bar.
- $5\frac{1}{2}$ -inch Dividers.
- $3\frac{1}{4}$ -inch Spring Bow Pen, with Needle Point.
- $5\frac{1}{4}$ -inch Drawing Pen, upper Blade with Spring.
- Box of Leads.

No. 41 \$5.50

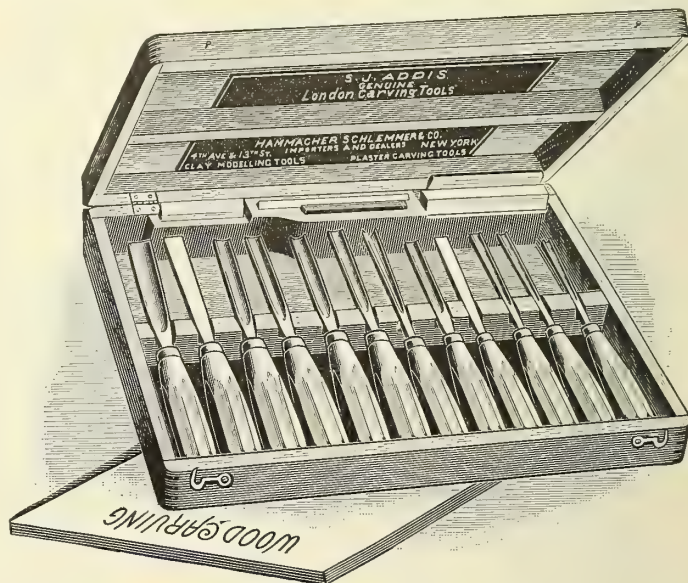
This is an excellent outfit for beginners. Good quality at moderate price.

Manual Training Outfits

Carving Tools in Sets

S. J. Addis

For full line of Wood-Carving Tools, see index. These sets contain the well-known S. J. Addis, London make tools ground sharp, but not honed. The sizes and sweeps are those generally used by practical wood carvers. Each tool is carefully selected and the sets are put up in nicely finished oak cases.



Sets Nos. 13 and 14 contain 6 Handled and Sharpened (not honed) Carving Tools, in nicely finished oak case.

No. 1, $\frac{3}{8}$ inch; No. 3, $\frac{1}{2}$ inch; No. 5, $\frac{1}{4}$ inch; No. 6, $\frac{5}{16}$ inch; No. 10, $\frac{1}{8}$ inch; No. 45, $\frac{1}{4}$ inch.

1 Washita Oil Stone, No. 26.

1 Special Arkansas Carving Tool Slip, No. 15.

1 Carvers Marker, No. 8.

1 Illustrated Book of Instructions.

Set No. 13 With Round Maple Handles, each..... \$3.00
Set No. 14 With New Style Octagon Maple Handles, each..... 3.25

Sets Nos. 11 and 12 contain 12 Handled and Sharpened (not honed) Carving Tools, in nicely finished oak case.

No. 1, $\frac{1}{4}$ and $\frac{1}{2}$ inch; No. 3, $\frac{3}{8}$ and $\frac{5}{8}$ inch; No. 5, $\frac{1}{4}$ and $\frac{1}{2}$ inch; No. 6, $\frac{1}{4}$ and $\frac{1}{2}$ inch; No. 7, $\frac{7}{16}$ inch; No. 8, $\frac{1}{4}$ inch; No. 10, $\frac{1}{8}$ inch; No. 45, $\frac{1}{4}$ inch.

1 Washita Oil Stone, No. 26.

1 Washita Round-Edge Slip, No. 11.

1 Arkansas Triangular Stick, No. 20.

1 Special Arkansas Carving-Tool Slip, No. 15.

1 Carvers Marker, No. 8.

1 Illustrated Book of Instructions.

Set No. 11 With Round Maple Handles, each..... \$5.00

Set No. 12 With New Style Octagon Maple Handles, each.... 5.25

Set No. 11A special, contains 12 handled and sharpened (not honed) Carving Tools. In nicely finished oak case.

No. 1, $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ inch; No. 2, $\frac{5}{16}$ inch; No. 3, $\frac{1}{2}$ inch; No. 5, $\frac{1}{4}$ inch; No. 6, $\frac{5}{16}$ inch; No. 8, $\frac{3}{16}$ inch; No. 9, $\frac{1}{16}$ inch; No. 10, $\frac{1}{8}$ inch; No. 11, $\frac{5}{64}$ inch; No. 41, $\frac{5}{16}$ inch.

1 Special Arkansas Slipstone, No. 15.

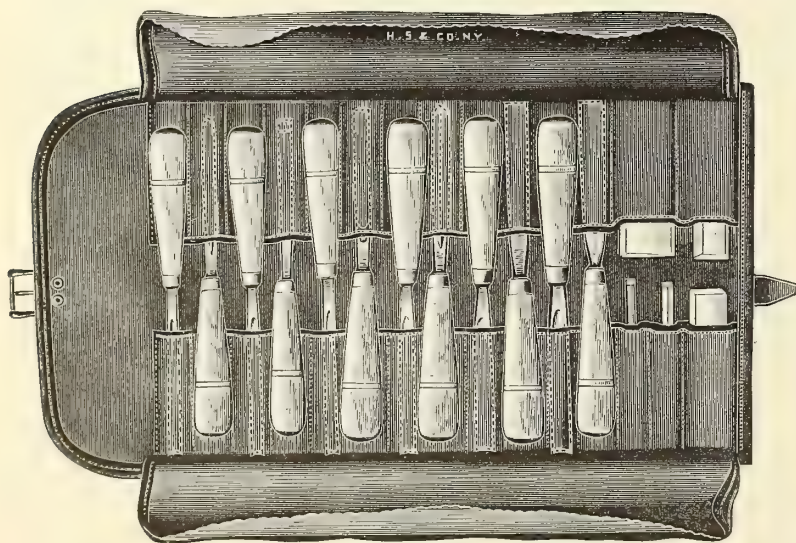
1 Arkansas Triangular Stick, No. 20.

1 Washita Oilstone, No. 26.

1 Washita Round-Edge Slip, No. 11.

1 Carvers Marker, No. 8.

Set No. 11A Special, with round Maple handles, each..... \$3.50



The assortments of tools in these sets are the same as shown above, excepting that they are contained in a strong canvas roll in place of a wooden case. The roll is made of selected canvas, leather edged and a separate pocket is provided for each tool. This makes a very compact and convenient carrying case.

Set No. 21 Same assortment as No. 11..... Each \$5.50
Set No. 22 Same assortment as No. 12..... 5.75
Set No. 23 Same assortment as No. 13..... 3.50
Set No. 24 Same assortment as No. 14..... 3.75

Book on Wood Carving

Containing 91 pages, devoted to Wood Carving, with suggestions in Chip Carving. Contains many illustrations and fully describes the wood, tools, etc., and also devotes an entire chapter to the sharpening and management of tools. Postpaid, 50 cents.

Manual Training Outfits

Venetian Bent Iron Work

Venetian Iron Work as a light form of manual training is becoming more popular every year. Owing to the low cost of the following outfits, they have proven very acceptable to school boards and purchasing agents as an initial equipment, which may be increased as necessary.

Individual

- 1 pair H. S. & Co., Flat-Nose Pliers, No. 20, 5 inch.
- 1 pair H. S. & Co., Round-Nose Pliers, No. 21, 5 inch.
- 1 Stanley Boxwood Rule, No. 18, 2-foot, 2-fold.
- 1 Jersey Clamp Vise, No. 765.
- 1 H. S. & Co., Riveting Hammer, No. 2-0.
- 1 pair Reliance Snips, No. 9.
- ½-pound Lead Wire.
- 1 coil Venetian Iron, ¼ inch.
- 100 Binders, ¼ inch.

No. 34..... \$4.00

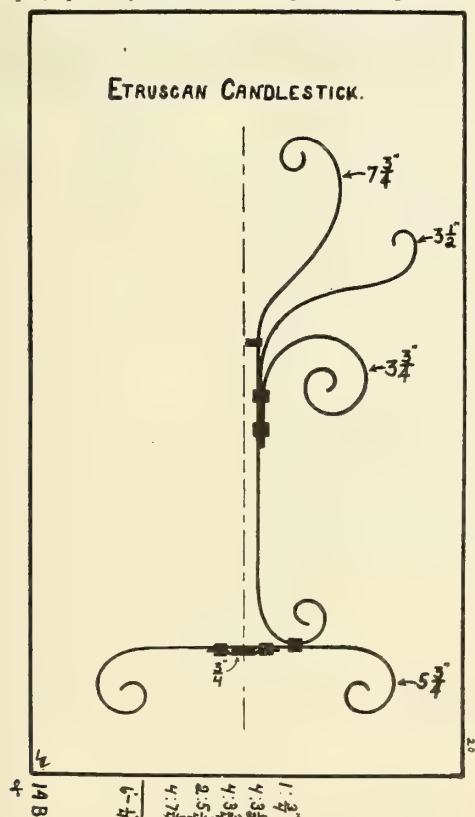
Equipment for Class of Ten Pupils

- 10 pairs H. S. & Co., Flat-Nose Pliers, No. 20, 5-inch.
- 10 pairs H. S. & Co., Round-Nose Pliers, No. 21, 5-inch.
- 10 Stanley Boxwood Rules, No. 18, 2-foot, 2-fold.
- 5 Jersey Clamp Vises, No. 765.
- 3 H. S. & Co., Riveting Hammers, No. 2-0.
- 3 H. S. & Co., Riveting Hammers, No. 1.
- 5 pairs Reliance Snips, No. 9.
- 1 Rolling Cutter Shear, No. 11.
- 1 pound Lead Wire.
- 5 coils Venetian Iron, ¼ inch.
- 500 Binders, ¼ inch.

No. 36..... \$27.00

Designs

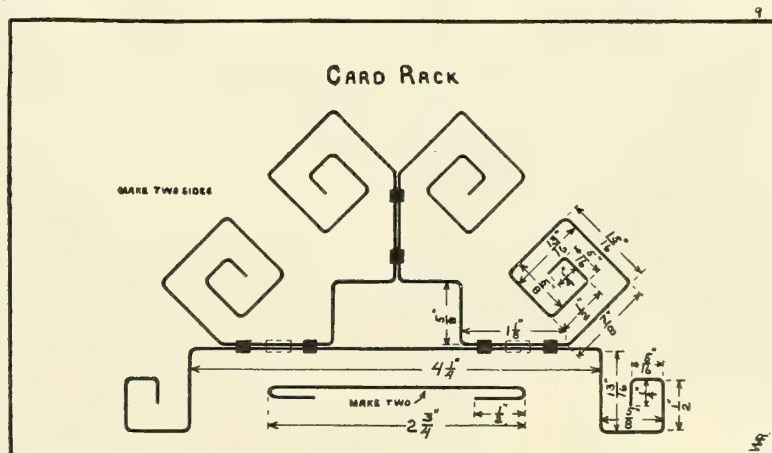
The following combined exercises and designs form an elementary course adopted by many schools. After the student has mastered the work sufficiently to produce these, he is generally able to proceed along his own lines, developing as he produces various other articles and in proportion with his own natural and artistic instincts. There is scarcely any limit to the articles that may be made, as a visit to almost any antique shop (especially those handling oriental goods) will prove.



Design No. 20

For this design there is required 1 strip of iron (width optional) ¾-inch long, 4 strips 3½ inches long, 4 strips 3¾ inches long, 2 strips 5¾ inches long, 4 strips 7¾ inches long and 14 binders.

Iron in strips in coils of 50 feet.....	1/8	3/16	1/4	3/8
Coil.....	\$.16	.18	.21	.25
Binders in sizes 1/8, 3/16, 1/4 and 3/8 inch.				
Hundred.....				\$.10
Paint, fine ivory black, in 1-pound cans.				
Each.....				.40



Design No. 9

For this design there is required 2 strips of iron (width optional) 3¾ inches long, 2 strips 9¼ inches long, 4 strips 12⅞ inches long and 16 binders.

No. 1 *Exercise.	No. 13 Test-Tube Holder.
No. 2 Exercise.	No. 14 Egg Boiler.
No. 3 Exercise.	No. 15 Exercise.
No. 4 Exercise.	No. 16 Photograph Rack.
No. 5 Exercise.	No. 17 Details of Test-Tube Rack.
No. 6 Pen Rack.	No. 18 Ink Stand.
No. 7 Easel.	No. 19 Ink Stand, double.
No. 8 Mat.	No. 20 Etruscan Candlestick (as illustrated.)
No. 9 Card Rack (as illustrated.)	No. 21 Candlestick.
No. 10 Exercise.	No. 22 Wall Candle Bracket.
No. 11 Exercise.	No. 23 Design for 5-light Can-
No. 12 Exercise.	No. 24 delabrum.

*No. 1: First exercise also shows the method of attaching binders, Either number, dozen..... \$1.00 Each..... \$.10 Set (1 each of above)..... 2.00

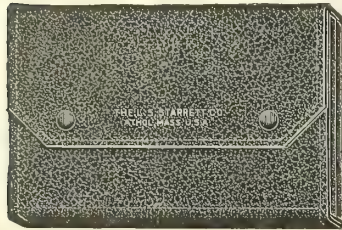
Supplies

Lead wire, soft and pliable, for measuring length of iron required.	
3 foot strips.....	\$.05
Book of Instructions by T. Vernet Morse, illustrated with working designs.	
Each.....	\$.25

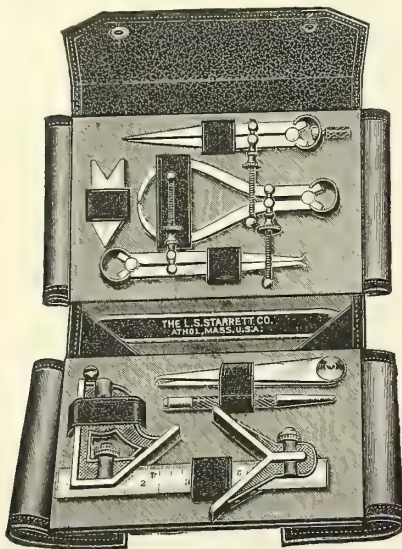
Manual Training Outfits

Machinists

Starrett No. 900



In folding leather case. Size of case folded, 7 inches x 4 3/4 inches x 1 3/8 inches.



This set consists of the folding leather case and the following tools:

- No. 11 6-inch Combination Square, complete.
- No. 117B Center Punch.
- No. 321 6-inch Flexible Steel Rule in pocket case.
- No. 390 Center Gage.
- No. 241 4-inch Caliper.
- No. 79 4-inch Outside Caliper with solid nut.
- No. 73 4-inch Inside Caliper with solid nut.
- No. 83 4-inch Divider with solid nut.
- Each \$6.00

H. S. & Co. No. 28

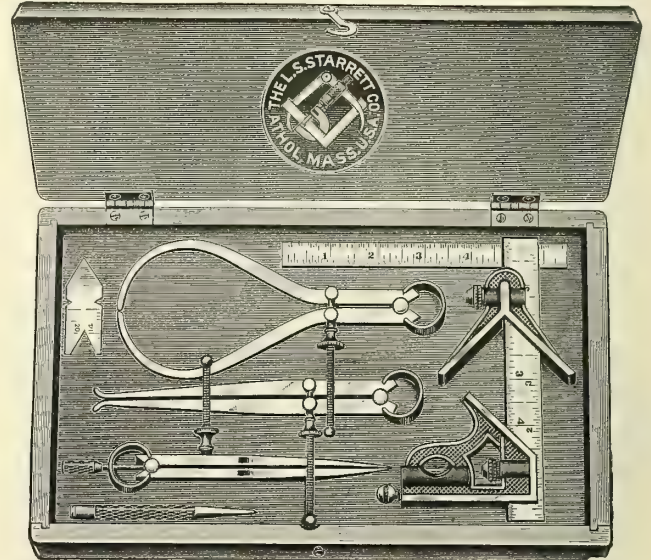
Users of machinists tools know that the Brown & Sharpe and Starrett tools are considered to be the best on the market. Outfit No. 28 contains tools of both of these makes.

This outfit is not intended to cover a full equipment, but is only suggested to those who wish the necessary tools for a start and who intend to increase the equipment as further tools are needed.

- 1 Parker Eclipse Vise, No. 102.
- 1 Hammond Ball Pein Machinists Hammer, No. 0.
- 1 Starrett Combination Square, with Center Head, No. 11, 9-inch.
- 1 Starrett Nickel-plated Hack Saw Frame, No. 140, with blade.
- 1 pair Brown & Sharpe Rex Spring Dividers, No. 810, 4-inch.
- 1 pair Brown & Sharpe Firm Joint Outside Calipers, No. 821, 6 inches.
- 1 pair Brown & Sharpe Firm Joint Inside Calipers, No. 822, 4 inches.
- 1 Brown & Sharpe Spring Tempered-Steel Rule, No. 300 6 inches.
- 1 Starrett Steel Scriber, No. 70A.
- 1 H. S. & Co. Knurled Prick Punch.
- 1 H. S. & Co. Knurled Center Punch, No. 10, 3/8 inch.
- 1 H. S. & Co. Cold Chisel, 5/8-inch.
- 1 H. S. & Co. Cape Chisel, 1/2-inch.
- 1 Handled K. & F. Flat Bastard File, 10 inches.
- 1 Handled K. & F. Hand Second-Cut File, 10 inches.
- 1 Handled K. & F. Half-Round Second-Cut File, 10 inches.
- 1 Handled K. & F. Half-Round Smooth File, 6 inches.
- 1 Handled K. & F. Round Second Cut File, 6 inches.

Each \$10.50

Starrett No. 901



In nicely finished wooden case. Size of case, 12 inches x 7 inches x 1 1/2 inches.

Set No. 901 consists of the wooden case and the following tools:

- No. 11 6-inch Combination Square, complete.
- No. 321 6-inch Flexible Steel Rule in pocket case.
- No. 117B Center Punch.
- No. 390 Center Gage.
- No. 77 5-inch Divider with solid nut.
- No. 79 6-inch Outside Caliper with solid nut.
- No. 73 6-inch Inside Caliper with solid nut.
- Each \$6.15

Blacksmiths

- 1 Champion Agricultural Lever Forge, No. 151.
- 1 Hay-Budden Anvil, 70 pounds.
- 1 pair Straight-Lipped Blacksmiths Tongs, No. 1332, 16 inches.
- 1 pair Single Pick-up Tongs, No. 2091, 18 inches.
- 1 Hardie, to fit anvil, No. 1200.
- 1 Bottom Fuller, to fit anvil, No. 1180, 5/8 inches.
- 1 Bottom Swedge, to fit anvil, No. 1140, 3/4 inches.
- 1 Flatter, No. 1190, 2 inches, with handle.
- 1 Top Fuller, No. 1170, 5/8-inch, with handle.
- 1 Top Swedge, No. 1130, 3/4-inch, with handle.
- 1 Atha Engineers Hammer, No. 3.
- 1 Atha Ball Pein Machinists Hammer, No. 1.
- 1 Handled K. & F. Flat Bastard File, 10 inches.
- 1 Stanley Boxwood Rule, No. 61, 2-feet, 4-fold.
- No. 30 \$20.00

Books by Robert H. Smith

Instructor of Machine Tool Work at Massachusetts Institute of Technology

Operations in machining, standard and typical problems in machine construction, are given in condensed schedules which name the material, operations, machines, speeds, feeds, jigs, fixtures and tools. Calculations are supplied by condensed rules and formulas. Facts and principles are supplied which a student or apprentice in school or shop must rediscover or obtain from instructor or foreman.

Text-Book of the Principles of Machine Work. Prepared for students in technical, manual training, and trade schools, and for the apprentice in the shop. 434 ill., 5 1/4 x 8 1/4, 342 pp. \$3.00

Abstract of contents: Engine and Speed Lathes, Drilling and Grinding Machines, Carbon and High-Speed Steel-Cutting Tools, Measuring, Turning, Fitting, Threading, Chucking, Drilling, Reaming, Jigs, Fixtures, Cylindrical Grinding.

Text-Book of the Elements of Machine Work. Prepared for students in technical, manual training, and trade schools, and for the apprentice in the shop. 204 ill., 5 1/4 x 8 1/4, 192 pp. \$2.00

Abstract of contents: Laying Out Work, Chipping, Filing, Scraping, Hardening and Tempering, Carbon and High-Speed Steels, Testing Hardness, Pipe Fitting, Soldering, Brazing, Lacing, Belts Aligning Shafting, Installing Machines.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW
YORK

Manual Training Outfit

H. S. & Co.



No. 25A

This illustration shows one of our most desirable manual training wood-working outfits. Complete list of tools contained therein appears on page 455. Our other outfits for manual training are listed on pages 455 to 460 inclusive. All our benches are substantially built of well-seasoned maple and can be had either with the old style wooden vises having hickory screws or the improved metal continuous screw or rapid-acting vises. The tools are all high grade and are made by well known reliable manufacturers. We have planned these outfits after years of experience, but realizing that many manual training directors have their own ideas, we are always pleased to quote on special requirements.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Tool Outfits

H. S. & Co.

In Patented Combination Bench and Tool Cabinets

See Following Page



No. 100

This Combination Bench Cabinet is unique in construction. The illustration showing fully its many desirable features, among which are its conveniently arranged drawer and closet space. End opening and hinged top. The bench top is made of seasoned maple, and is absolutely rigid. Supported by strong uprights which rest directly on the floor. When the cabinet is closed, the bench top as well as all tools are inside, thus making it a fine piece of polished solid oak furniture. Trimmed throughout with solid brass locks and handles. The cabinet dimensions are as follows: Length, 47 inches; width, 19 inches, height, 35 inches. The outfits contain about 100 different tools, each of the highest grade, as may be noted from the detailed list on next page.

Outfit No. 100 has a wooden vise with $1\frac{3}{4}$ -inch screw, and double bench stop, and the bench top is arranged for their adjustment.

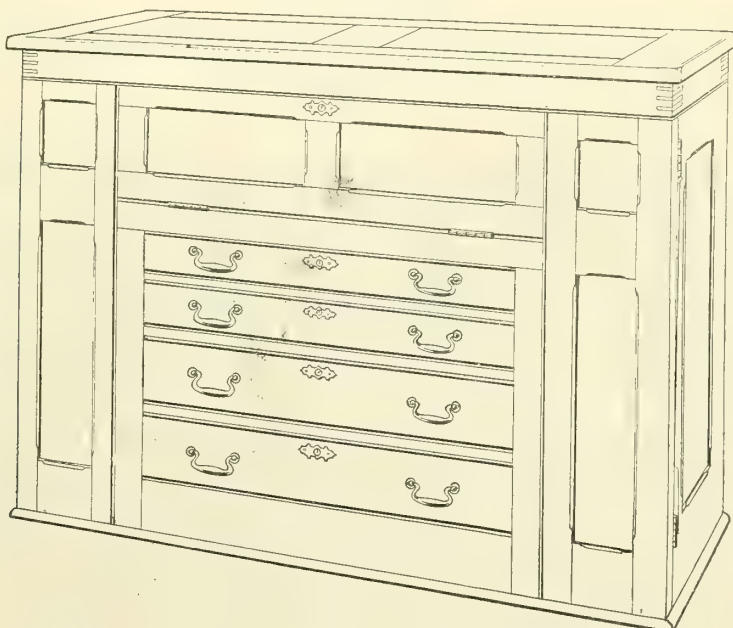
Outfit No. 200 is fitted with a quick action iron vise and double stop in place of the wooden vise. The iron vise has one movable and two stationary jaws, which can be operated at either the head or tail.

Outfit No. 400 is the same as No. 200 in every respect excepting the cabinet is made of solid mahogany instead of oak, and the hardware and vise are finished in old brass.

Tool Outfits

H. S. & Co.

In Patented Combination Bench and Tool Cabinets
See Preceding Page



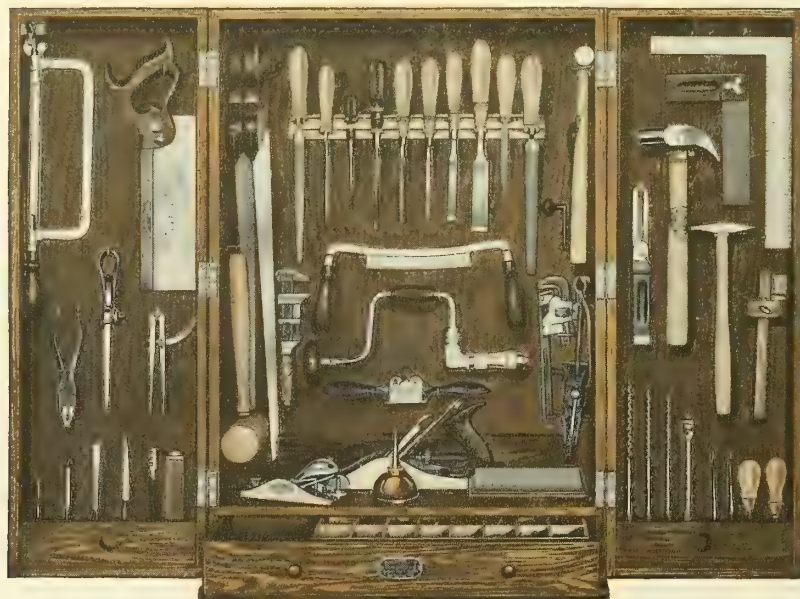
List of Tools for Outfits Nos. 100, 200 and 400

- Buck Bros. Handled and Sharpened Firmer Chisels, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 inch.
Buck Bros. Handled and Sharpened Firmer Gouges, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ inch.
Russell Jennings Auger Bits, Nos. 4, 5, 6, 7, 8, 9, 10 and 12.
Clark Expansive-Bit, $\frac{7}{8}$ to 3 inches.
Imported Gimlet Bits, Nos. 2, 3, 4, 5, 6, 7 and 8.
H. S. & Co. Extra Quality Crosscut Saw, 22 inches.
H. S. & Co. Extra Quality Rip Saw, 22 inches.
H. S. & Co. Back Saw, 10 inches.
H. S. & Co. Compass Saw, 10 inches.
Disston Iron Pad Keyhole Saw, No. 10.
Hammond Adze-Eye Nail Hammer, No. 2.
H. S. & Co. Riveting Hammer, No. 1.
Round Lignum-vitæ Mallet, No. 4.
Stanley Iron Jack Plane, No. 5.
Stanley Iron Smooth Plane, No. 4.
Stanley Iron Rabbet and Filletster Plane, No. 78.
Stanley Iron Block Plane, No. 18.
Barber Nickel-plated Ball-bearing Ratchet Brace, No. 33, 8 inches.
M. F. Co. Hand Drill, No. 1.
Disston Sliding T-Bevel, 8 inches, No. 3.
Disston Hardened Blade Try Squares, No. 5 $\frac{1}{2}$, 6 and 8 inches.
Sargent Steel Nickel-plated Square, No. 3JN, 18x12 inches.
Stanley Two-Foot Boxwood Folding Rule, Brass Bound, No. 54.
Stanley Marking Gauge, No. 64 $\frac{1}{2}$.
H. S. & Co. New Century Screwdriver, No. 100, 2 $\frac{1}{2}$, 4 and 6 ins.
P. S. & W. Winged Divider, No. 35, 6 inches.
H. S. & Co. Sloyd Knife, No. 6.
M. F. Co. Spokeshave, No. 2.
H. S. & Co. Cabinet Scraper, 3x6 inches.
H. S. & Co. Handled Brad Awl, 1 $\frac{3}{8}$ inches.
Perfection Sandpaper Holder.
H. S. & Co. Flat Nose Pliers, No. 1906 $\frac{1}{2}$, 5 $\frac{1}{2}$ inches.
H. S. & Co. Round Nose Pliers, No. 1906 $\frac{3}{4}$, 5 $\frac{1}{2}$ inches.
Combination Pliers, No. 1880, 7 inches.
Trimmo Pipe Wrench, 10 inches.
Standard Vise, No. 78.
Reliance Tinnern Snips, No. 10.
H. S. & Co. Carpenters Pincers, 6 inches.
Perfect Handle Monkey Wrench, 8 inches.
Set of Bit Stock Drills, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{5}{16}$ and $\frac{3}{8}$ inch (for metal).
K. & F. Handled Double Ender Saw File, 8 inches.
K. & F. Handled Warding Bastard File, 4 inches.
K. & F. Handled Flat Bastard File, 6 and 8 inches.
K. & F. Handled Half Round Bastard File, 6 and 8 inches.
K. & F. Handled Round Bastard File, 6 and 8 inches.
K. & F. Handled Square Bastard File, 6 inches.
K. & F. Handled Cabinet File, 8 inches.
K. & F. Handled Cabinet Rasp, 8 inches.
Stanley Adjustable Level, No. 3, 22 inches.
Jacob Mitre Box, No. 4.
Brass Plumb Bob, No. 5, with one hank No. 6 Linen Line.
Starrett Nickel-plated Hack Saw Frame, No. 140, with six 8 inch Blades.
Glass Cutter, No. 2.
Bench Duster, No. 10.
B. M. Co. Screwdriver Bit, No. 10, $\frac{3}{8}$ -inch.
India Oil Stone, mounted in iron box, No. 29, Combination.
B. M. Co. Rose Countersink, No. 10, $\frac{5}{8}$ -inch.
H. S. & Co. Knurled Nail Set, No. 2.
B. M. Co. Square Reamer, No. 40.
Coppered Steel Oiler, No. 12.
Buck Bros. Scratch Awl.
H. S. & Co. Knurled Center Punch, No. 10, $\frac{5}{16}$ -inch.
Hammond Half Hatchet, No. 30, Size No. 1.
- | | |
|---|-----------------|
| No. 100 Complete..... | \$95.00 |
| No. 0100 Cabinet only, without Racks or Tools..... | 55.50 |
| No. 0100 Cabinet only, with Racks, but without Tools..... | 57.00 |
| Approximate weights: No. 100, complete, boxed, 375 pounds; not boxed, 290 pounds. | |
| Approximate weights: No. 0100, Cabinet only, without Racks or Tools, boxed, 275 pounds; not boxed, 205 pounds. | |
| Approximate weights: No. 0100, Cabinet only, with Racks, but without Tools, boxed, 280 pounds; not boxed, 210 pounds. | |
| No. 200 Complete..... | \$105.00 |
| No. 0200 Cabinet only, without Racks or Tools..... | 62.50 |
| No. 0200 Cabinet only, with Racks, but without Tools..... | 64.00 |
| Approximate weights: No. 200, complete, boxed, 400 pounds; not boxed, 315 pounds. | |
| Approximate weights: No. 0200, Cabinet only, without Racks or Tools, boxed, 300 pounds; not boxed, 230 pounds. | |
| Approximate weights: No. 0200, Cabinet only, with Racks, but without Tools, boxed, 305 pounds; not boxed, 235 pounds. | |
| No. 400 Complete..... | \$125.00 |
| No. 0400 Cabinet only, without Racks or Tools..... | 85.50 |
| No. 0400 Cabinet only, with Racks, but without Tools..... | 87.00 |
| Approximate weights: No. 400, complete, boxed, 380 pounds; not boxed, 295 pounds. | |
| Approximate weights: No. 0400, Cabinet only, without Racks or Tools, boxed, 280 pounds; not boxed, 210 pounds. | |
| Approximate weights: No. 0400, Cabinet only, with Racks, but without Tools, boxed, 285 pounds; not boxed, 205 pounds. | |
| The boxed weights may vary to some extent owing to difference in weight of lumber. | |

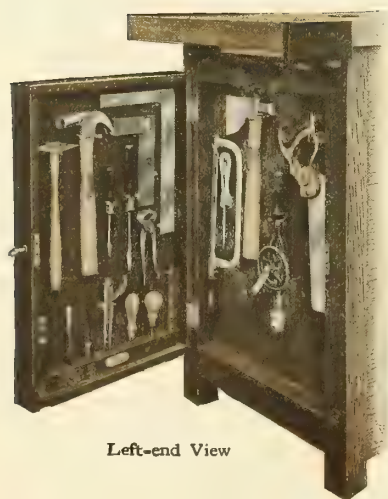
Tool Outfits

H. S. & Co.

See Following Page



No. 55



Left-end View



No. 75

Tool Outfits

H. S. & Co.

See Preceding Page

No. 55

The cabinet for this outfit is made of solid oak, with locked corners; is trimmed in brass, well finished, and high grade in every detail. The outside dimensions are 33 inches in height, 22 inches wide, and 10 inches deep, and the door is divided to open in the center. When open, the width across entire front is 44½ inches. There is room in the drawer for the utility box No. 10, a small tray divided into compartments for holding an assortment of nails, tacks, staples and screws, and this box, filled, is included with each outfit. The illustration shows the 52 different tools and their compact arrangement, and we append an exact list detailing each, so their high quality may be appreciated, as the makes represent names known in the tool world as the best that are made.

No. 55 Complete..... \$36.00 No. 055 Cabinet only..... \$12.50

Approximate weights, No. 055, Cabinet only, boxed, 70 pounds; not boxed, 50 pounds.

Approximate weights, No. 55, complete, boxed, 125 pounds; not boxed, 95 pounds.

The boxed weights may vary to some extent owing to difference in weight of lumber.

List of Tools in Outfits Nos. 55 and 75

H. S. & Co. Crosscut Saw, 22 inches.	Imported Gimlet Bit, ⅛ inch.
H. S. & Co. Rip Saw, 22 inches.	Imported Gimlet Bit, ⅜ inch.
H. S. & Co. Back Saw, 10 inches.	Genuine Russell Jennings Auger Bit, ¼ inch.
Disston Iron Pad Keyhole Saw, No. 10.	Genuine Russell Jennings Auger Bit, ⅜ inch.
H. S. & Co. Hack Saw Frame, No. 100, with half dozen H. S. & Co.	Genuine Russell Jennings Auger Bit, ½ inch.
8-inch blades.	Clark Small Expansive Bit, ½ inch to 1½ inches.
Hammond A. E. Hammer, No. 2.	B. M. Co. Square Reamer, No. 40.
H. S. & Co. Riveting Hammer, No. 0.	B. M. Co. Rose Countersink, No. 10, ⅝ inch.
Hammond Half Hatchet, No. 30, size No. 1.	Sargent Nickel-plated Steel Carpenter Square, No. 10-N, 8 inches.
Round Second Growth Hickory Mallet, No. 4.	Disston Try Square, No. 1, 6 inches.
H. S. & Co. Nail Set, No. 2.	Stanley Tee Bevel, No. 25, 8 inches.
Pair H. S. & Co. Carpenters Pincers, 6 inches.	Stanley Level, No. 104, 18 inches.
H. S. & Co. New Century Screwdriver, No. 120, 3½ inches, slim.	Stanley Marking Gauge, No. 64½.
H. S. & Co. New Century Screwdriver, No. 100, 5 inches.	P. S. & W. Winged Dividers, No. 35, 6 inches.
B. M. Co. Screwdriver Bit, No. 10, ⅜ inch.	Stanley Boxwood Rule, No. 53, 2 feet.
Stanley Iron Jack Plane, No. 5.	Perfect Handle Monkey Wrench, 8 inches.
Stanley Iron Block Plane, No. 18.	Genuine Trimo Pipe Wrench, 10 inches.
Iron Spokeshave, No. 91, adjustable.	H. S. & Co. Combination Pliers, No. 1880, 7 inches.
Wetherby Carpenters Draw Knife, No. 115, 6 inches.	K. & F. Half Round Bastard File, 8 inches, handled.
Buck Bros. Handled and Sharpened Chisel, No. 2, ¼ inch.	K. & F. Warding Bastard File, 4 inches, handled.
Buck Bros. ditto, No. 2, ½ inch.	K. & F. Slim Taper Saw File, 5½ inches, handled.
Buck Bros. ditto, No. 2, 1 inch.	K. & F. Cabinet Rasp, 8 inches, handled.
Buck Bros. Gouge, No. 8, ⅜ inch.	Standard Steel Jaw Bench Vise, No. 6.
H. S. & Co. Handled Scratch Awl, 2 inches.	Carborundum Oil Stone, No. 122, mounted in Oak Case.
H. S. & Co. Handled Brad Awl, 1⅜ inches.	Coppered Steel Oiler, No. 12.
M. F. Co. Hand Drill, No. 1.	Glass Cutter, No. 2.
Barber Nickel-plated Ball-bearing Ratchet Brace, No. 33, 8 inches.	Utility Box, No. 10, of Brads, Nails, Tacks and Screws.

No. 75

This Outfit is contained in a Combination Bench Cabinet, 33½ inches high, with a bench top 50 inches long, 22 inches wide, 2¼ inches thick, having a tool recess at back 7 inches wide. The top is made of strips of thoroughly seasoned hard maple, having heavy bolsters at each end; tongued and grooved joints, bolted and glued together. Has rapid-acting vise and adjustable metal planing stop. The cabinet is made almost entirely of oak, with solid brass hardware. The top and middle drawers are 18¾x16x6 inches; the bottom drawer measures 29½x16x6½ inches and is fitted with tool racks. The cupboard is 9½ inches wide, 16½ inches deep, 14 inches high. The end tool racks have inside space, available for tools, 14¼ inches wide, 22 inches high and 3 inches deep.

No. 75 Complete..... \$55.00 No. 075 Cabinet only..... \$30.00

Approximate weights, No. 075, Cabinet only, boxed, 275 pounds; not boxed, 200 pounds.

Approximate weights, No. 75, complete, boxed, 330 pounds; not boxed, 255 pounds.

The boxed weights may vary to some extent owing to difference in weight of lumber.

Tool Outfits

H. S. & Co.

See Following Pages



No. 52

These are the same polished quartered oak, portable Cabinets as those contained in the No. 47 outfit, see page 468. This outfit, however, contains 24 different tools, some of which are higher grade than those in the No. 47. The assortment is naturally more complete and is the best small portable set that can be purchased. The detailed list of tools given on next page shows the high quality of each.



No. 54

These Cabinets are substantially made of polished quartered oak, the same as those of Outfit No. 53, see page 468. Outside dimensions are 29½ inches in height, 18 inches in width, and 8½ inches in depth. Owing to size and weight they are not suitable for a portable outfit, but No. 54 is a most complete and high-grade set of tools in every detail. Contains 40 different tools of the very best quality, among them being a Barber Ball-bearing Brace, Stanley Iron Planes, etc. The detailed list on the next page shows the very high quality of each item.

Tool Outfits

H. S. & Co.

See Preceding Page



No. 52

Disston Crosscut Saw, No. 7, 16 inches.

Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{4}$ inch.

Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{2}$ inch.

Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{3}{4}$ inch.

Hammond Adze-eye Hammer, No. 2.

H. S. & Co. New Century Screwdriver, No. 100, 4 inches.

Imported Gimlet Bit, $\frac{1}{8}$ inch.

Imported Gimlet Bit, $\frac{3}{16}$ inch.

Russell Jennings Auger Bit, No. 6.

Russell Jennings Auger Bit, No. 8.

Barber Nickel-plated Ratchet Brace, No. 323, 8 inches.

H. S. & Co. Combination Pliers, No. 25, $5\frac{1}{2}$ inches.

H. S. & Co. Handled Brad Awl, $1\frac{3}{8}$ inches.

B. M. Co. Rose Countersink, No. 10, $\frac{1}{2}$ inch.

H. S. & Co. Knurled Nail Set.

Stanley Boxwood Folding Rule, No. 61, two foot.

Disston Hardened Blade Try-square, No. $5\frac{1}{2}$, 6 inches.

Stanley Iron Block Plane, No. $9\frac{1}{2}$.

B. M. Co. Screwdriver Bit, No. 10, $\frac{3}{8}$ inch.

Best Quality Rosy Red Oil Stone, 6 inches. mounted.

P. S. & W. Winged Dividers, 6 inches.

Stanley Iron Spokeshave, No. 53.

K. & F. Handled Half-round Bastard File, 6 inches.

Coppered Steel Oiler, No. 12.

Contains 24 Different Tools

No. 52 Complete..... \$12.00

No. 052 Cabinets only..... 4.50

Approximate weights: No. 052, Cabinet only, boxed, 20 pounds;
not boxed, 17 pounds.

Approximate weights: No. 52, complete, boxed, 35 pounds; not
boxed, 32 pounds.

Unless otherwise specified, the Cabinets only are supplied with
Tool Racks.

No. 54

H. S. & Co. Extra Quality Crosscut Saw, 20 inches.

H. S. & Co. New Century Screwdriver, No. 100, 4 inches.

H. S. & Co. New Century Screwdriver, No. 100, 6 inches.

Barber Nickel-plated Ball-bearing Ratchet Brace, No. 33, 8 inches.

Stanley Iron Block Plane, No. 18.

Stanley Iron Jack Plane, No. 5.

Coppered Steel Oiler, No. 12.

India Oil Stone, No. 2, mounted in iron box.

Hammond Adze-eye Hammer, No. 2.

Disston Hardened Blade Try-square, No. $5\frac{1}{2}$, 6 inches.

Stanley Iron Spokeshave, No. 53.

Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{4}$ inch.

Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{2}$ inch.

Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{3}{4}$ inch.

Buck Bros. Handled and Sharpened Gouge, No. 8, $\frac{3}{8}$ inch.

K. & F. Handled Flat Bastard File, 8 inches.

H. S. & Co. Best Quality Riveting Hammer, No. 0.

M. F. Co. Hand Drill, No. 1.

Russell Jennings Auger Bit, No. 4.

Russell Jennings Auger Bit, No. 6.

Russell Jennings Auger Bit, No. 8.

Clark Expansive Bit, $\frac{1}{2}$ to $1\frac{1}{2}$ inches.

Imported Gimlet Bit, $\frac{1}{8}$ inch.

Imported Gimlet Bit, $\frac{3}{16}$ inch.

H. S. & Co. Handled Brad Awl, $1\frac{3}{8}$ inches.

B. M. Co. Rose Countersink, No. 10, $\frac{1}{2}$ inch.

H. S. & Co. Knurled Nail Set.

Stanley Beech Marking Gauge, No. $64\frac{1}{2}$.

Stanley Sliding T-Bevel, No. 2, 8 inches.

Perfect Handle Monkey Wrench, 6 inches.

Stanley Boxwood Folding Rule, No. 61, two foot.

P. S. & W. Winged Dividers, No. 35, 6 inches.

Bernard Nickel-plated Cutting Pliers, No. 102, $5\frac{1}{2}$ inches.

Burner Pliers, No. 118, 6 inches.

Disston Iron Pad Keyhole Saw, No. 2.

K. & F. Handled Half-round Bastard File, 6 inches.

K. & F. Handled Warding Bastard File, 4 inches.

Jersey Vise, No. 741.

B. M. Co. Square Reamer, No. 40.

B. M. Co. Screwdriver Bit, No. 10, $\frac{3}{8}$ inch.

Contains 40 Different Tools

No. 54 Complete..... \$23.00

No. 054 Cabinets only..... 7.50

Approximate weights: No. 054, Cabinet only, boxed, 45 pounds;
not boxed, 30 pounds.

Approximate weights: No. 54, complete, boxed, 72 pounds; not
boxed, 57 pounds.

Unless otherwise specified, the Cabinets only are supplied with
Tool Racks.

Tool Outfits

H. S. Co.

See Following Page



No. 47

These Cabinets are made of polished quartered oak, substantially built, but light enough in construction to permit the outfit to be easily portable, and are provided with convenient handle for carrying. When closed, the cabinets form an attractive piece of furniture. Outside dimensions are 22 inches in height, 14 inches in width, and 6 inches in depth. Each outfit contains 21 high-grade tools. Made by reliable manufacturers, as shown in detailed list on next page. These tools were carefully selected to give as complete an assortment as possible where a small portable outfit is required. They are excellent for general home use or for the boy who wants to make a beginning in wood-working.



No. 53

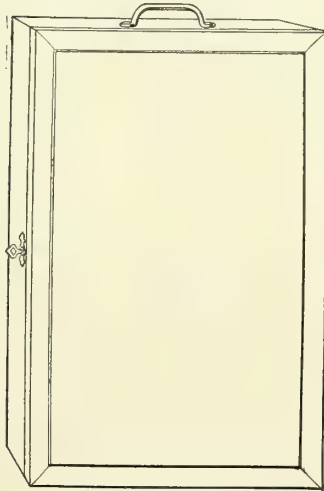
These Cabinets are larger and better finished than those containing assortments Nos. 47 above, and 52, see page 466, the outside dimensions being 29½ inches in height, 18 inches in width, and 8½ inches in depth. On account of their weight these outfits are not suitable where portable sets are required, but we recommend them for all cases where a medium-sized outfit of excellent quality is desired. No. 53 contains 36 different tools, made by the best manufacturers, as may be noted from detailed list on next page.

Tool Outfits

H. S. & Co.

See Preceding Page

No. 47



Crosscut Saw, 16 inches.
Hammond Adze-eye Hammer, No. 2.
Stanley Adjustable Iron Block Plane, No. 120.
Barber Nickel-plated Brace, No. 223, 8 inches.
Blued Auger Bit, $\frac{3}{8}$ inch.
Blued Auger Bit, $\frac{1}{2}$ inch.
Imported Gimlet Bit, $\frac{1}{8}$ inch.
Imported Gimlet Bit, $\frac{3}{16}$ inch.
Screwdriver Bit, No. 10 $\frac{1}{2}$, $\frac{3}{8}$ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{4}$ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{2}$ inch.
New Century Screwdriver, No. 100, 4 inches.
Disston Hardened Blade Try-square, No. 5 $\frac{1}{2}$, 6 inches.
O. K. Nail Set.
Stanley Boxwood Folding Rule, No. 61, two foot.
P. S. & W. Winged Dividers, 6 inches.
Burner Pliers, No. 118, 5 inches.
H. S. & Co. Flat-nose Pliers, No. 20, 5 inches.
K. & F. Handled Half-round Bastard File, 6 inches.
Rose Countersink, No. 10 $\frac{1}{2}$, $\frac{1}{2}$ inch.
H. S. & Co. Handled Brad Awl 1 $\frac{3}{8}$ inches.

Contains 21 Different Tools

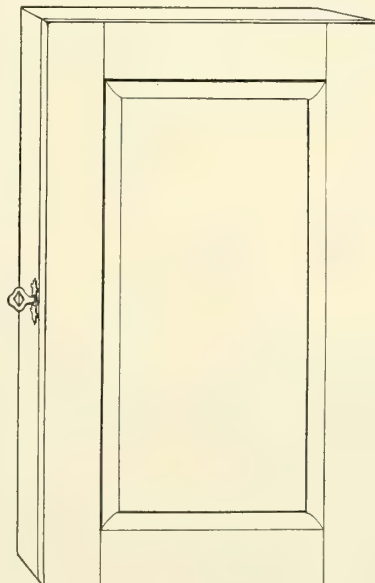
No. 47 Complete..... \$9.00 No. 047 Cabinet only, with Tool Racks \$4.50

Approximate weights: No. 047 Cabinet only, boxed, 20 pounds; not boxed, 17 pounds. No. 47 Complete, boxed, 30 pounds; not boxed, 27 pounds.

Unless otherwise specified, the Cabinets only are supplied with Tool Racks.

No. 53

Barber Nickel-plated Ratchet Brace, No. 323, 8 inches.
Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{4}$ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{1}{2}$ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, $\frac{3}{4}$ inch.
H. S. & Co. New Century Screwdriver, No. 100, 4 inches.
H. S. & Co. New Century Screwdriver, No. 100, 6 inches.
Disston Hardened Blade Try-square, No. 5 $\frac{1}{2}$, 6 inches.
Stanley Wood Jack-plane, No. 26.
Stanley Iron Block Plane, No. 9 $\frac{1}{2}$.
Hammond Adze-eye Hammer, No. 2.
Stanley Boxwood Folding Rule, No. 61, two foot.
K. & F. Handled Flat Bastard File, 8 inches.
K. & F. Handled Half-round Bastard File, 6 inches.
K. & F. Handled Warding Bastard File, 4 inches.
Buck Bros. Handled and Sharpened Gouge, No. 8, $\frac{3}{8}$ inch.
Disston Crosscut Saw, No. 7, 18 inches.
Disston Iron Pad Keyhole Saw, No. 2.
Stanley Iron Spokeshave, No. 53.
Stanley Beech Marking Gauge, No. 64 $\frac{1}{2}$.
Russell Jennings Auger Bit, No. 4.
Russell Jennings Auger Bit, No. 6.
Russell Jennings Auger Bit, No. 8.
Russell Jennings Auger Bit, No. 10.
Imported Gimlet Bit, $\frac{1}{8}$ inch.
Imported Gimlet Bit, $\frac{3}{16}$ inch.
H. S. & Co. Handled Brad Awl, 1 $\frac{3}{8}$ inches.
B. M. Co. Rose Countersink, No. 10, $\frac{1}{2}$ inch.
B. M. Co. Screwdriver Bit, No. 10, $\frac{3}{8}$ inch.
H. S. & Co. Knurled Nail Set.
P. S. & W. Winged Dividers, No. 35, 6 inches.
India Oil Stone, No. 2, mounted in iron box.
Coppered Steel Oiler, No. 12.
H. S. & Co. Combination Pliers, No. 25, 5 $\frac{1}{2}$ inches.
Perfect Handle Monkey Wrench, 6 inches.
Disston Sliding T-Bevel, No. 2, 8 inches.
B. M. Co. Square Reamer, No. 40.



Contains 36 Different Tools

No. 53 Complete..... \$18.00 No. 053 Cabinet only, with Tool Rack..... \$7.50

Approximate weights: No. 053 Cabinet only, boxed, 45 pounds; not boxed, 30 pounds. No. 53 Complete, boxed, 67 pounds; not boxed, 52 pounds.

Unless otherwise specified, the Cabinets only are supplied with Tool Racks.

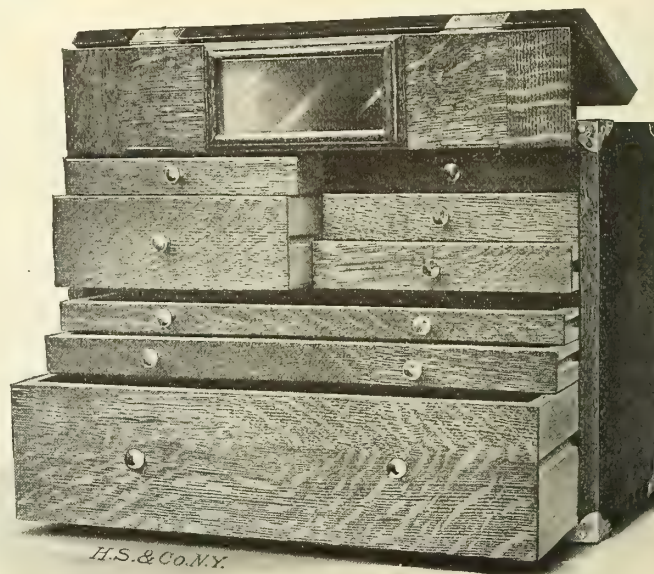
Machinists Portable Tool Cases

H. S. & Co.

The most practical portable Tool Cases for machinists. The drawers are so arranged that every available inch can be utilized, and tools may be so distributed that each one can quickly and easily be found without first handling a number of other tools which have hurriedly been placed on top of the one wanted. With the exception of the bottoms and sides of drawers, they are made throughout of thoroughly kiln-dried solid (not veneered) oak or mahogany, which will not warp nor twist, and very carefully and handsomely polished and finished; the corners are dovetailed and the workmanship is of the very best. The trimmings are of polished brass. Each case has a brass spring lock with two flat steel keys and a comfortable leather handle for convenience in carrying.

The drawers run on hardwood slides, have brass polished knobs, and bottoms are lined with genuine felt.

Machinists will find the little mirror which is placed on the inside of the case a very handy and convenient addition.



Showing Case Open and Drawers Exposed

Made in Two Sizes as Follows

No. 120, Oak. No. 125, Mahogany.

Outside dimensions when closed: 15 $\frac{5}{8}$ inches long, 8 inches deep, 10 $\frac{3}{4}$ inches high.

Inside dimensions of the drawers:

First..... 6 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{3}{4}$ inch high
Second..... 6 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, 2 $\frac{3}{16}$ inches high
Third..... 6 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{3}{4}$ inch high
Fourth..... 6 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, 1 inch high
Fifth..... 6 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{15}{16}$ inch high
Sixth..... 14 $\frac{1}{8}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{1}{2}$ inch high
Seventh..... 14 $\frac{1}{8}$ inches long, 6 $\frac{1}{8}$ inches deep, 1 inch high
Eighth..... 14 $\frac{1}{8}$ inches long, 6 $\frac{1}{8}$ inches deep, 3 $\frac{3}{16}$ inches high

No. 121, Oak. No. 126, Mahogany.

Outside dimensions when closed: 20 inches long, 8 inches deep, 10 $\frac{3}{4}$ inches high.

Inside dimensions of the drawers:

First..... 8 $\frac{3}{4}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{3}{4}$ inch high
Second..... 8 $\frac{3}{4}$ inches long, 6 $\frac{1}{8}$ inches deep, 2 $\frac{3}{16}$ inches high
Third..... 8 $\frac{3}{4}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{3}{4}$ inch high
Fourth..... 8 $\frac{3}{4}$ inches long, 6 $\frac{1}{8}$ inches deep, 1 inch high
Fifth..... 8 $\frac{3}{4}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{15}{16}$ inch high
Sixth..... 18 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, $\frac{1}{2}$ inch high
Seventh..... 18 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, 1 inch high
Eighth..... 18 $\frac{1}{2}$ inches long, 6 $\frac{1}{8}$ inches deep, 3 $\frac{3}{16}$ inches high



Showing Case Closed and Locked

	Each
No. 120 Oak, 15 $\frac{5}{8}$ inches long.....	\$20.00
No. 125 Mahogany, 15 $\frac{5}{8}$ inches long.....	20.00
No. 121 Oak, 20 inches long.....	30.00
No. 126 Mahogany, 20 inches long.....	30.00

Approximate weights:

No. 120 Oak, packed for shipment, 20 pounds.
No. 120 Oak, not packed for shipment, 14 $\frac{1}{2}$ pounds.
No. 125 Mahogany, packed for shipment, 19 $\frac{1}{2}$ pounds.
No. 125 Mahogany, not packed for shipment, 14 pounds.
No. 121 Oak, packed for shipment, 25 pounds.
No. 121 Oak, not packed for shipment, 17 $\frac{3}{4}$ pounds.
No. 126 Mahogany, packed for shipment, 24 $\frac{1}{4}$ pounds.
No. 126 Mahogany, not packed for shipment, 17 pounds.

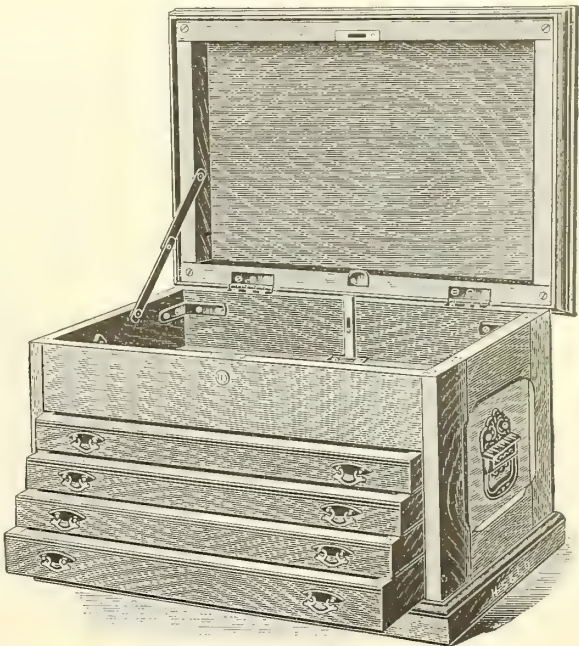
Machinists Tool Chests

H. S. & Co.

These Chests are all carefully made of selected wood, are nicely finished in every respect, have nickel-plated trimmings, flat-keyed locks and automatic device for locking all drawers. We recommend particularly the No 4 as most excellent value.

		Each
No. 1	Quartered Oak, with 2 drawers.....	\$10.63
No. 2	Quartered Oak, with 3 drawers.....	11.25
No. 4	Quartered Oak, with 4 drawers.....	10.63
No. 4	Gumwood, with 4 drawers.....	7.64

Num- ber	Outside Inches	Receptacle Under Lid Inches	First Drawer Inches	Second Drawer Inches	Third Drawer Inches	Fourth Drawer Inches
1	20 $\frac{3}{4}$ x12 $\frac{5}{8}$ x11 $\frac{1}{4}$	18x10 $\frac{1}{8}$ x3 $\frac{1}{8}$	17 $\frac{1}{8}$ x 8 $\frac{7}{8}$ x1 $\frac{3}{8}$	17 $\frac{1}{8}$ x 8 $\frac{7}{8}$ x2 $\frac{5}{8}$		
2	23 $\frac{3}{4}$ x14 $\frac{5}{8}$ x12 $\frac{7}{8}$	21x11 $\frac{3}{4}$ x3 $\frac{1}{8}$	20 x10 $\frac{1}{2}$ x1	20 x10 $\frac{1}{2}$ x1 $\frac{1}{2}$	20 x10 $\frac{1}{2}$ x2 $\frac{1}{2}$	
4	18 $\frac{7}{8}$ x12 $\frac{1}{4}$ x11 $\frac{1}{8}$	16x10 $\frac{1}{8}$ x2 $\frac{1}{2}$	15 $\frac{1}{8}$ x 8 $\frac{7}{8}$ x $\frac{1}{8}$	15 $\frac{1}{8}$ x 8 $\frac{7}{8}$ x $\frac{1}{8}$	15 $\frac{1}{8}$ x 8 $\frac{7}{8}$ x $\frac{1}{8}$	15 $\frac{1}{8}$ x8 $\frac{7}{8}$ x1 $\frac{5}{8}$



Machinists Tool Outfits

Starrett

These three sets of machinists tools have been very carefully selected to meet all requirements and we recommend each one for the purpose indicated. The No. 904 set is for use by a beginner; the No. 903 for a practical workman and No. 902 set forms a basis for tools required for the most exact work. None of the sets cover all requirements, but form excellent initial equipments, which may be increased as necessary.

Apprentice No. 904

No. 603	6-inch Rule.....	\$.65
No. 390	Center gage.....	.25
No. 11	12-inch Combination Square.....	2.00
No. 3	Micrometer.....	6.00
No. 40	Screw Pitch Gage.....	1.00
No. 146	Hack Saw Frame.....	1.00
No. 70A	Scriber.....	.25
No. 79	3-inch Caliper with solid nut.....	.70
No. 79	6-inch Caliper with solid nut.....	.85
No. 73	3-inch Caliper with solid nut.....	.70
No. 83	5-inch Divider with solid nut.....	.80
No. 42	6-inch Calipers.....	1.15
No. 117C	Center Punch.....	.20
No. 13	4-inch Double Square.....	1.65
No. 26	6-inch Calipers.....	.65
No. 27	6-inch Calipers.....	.65
No. 57B	Surface Gage.....	2.85
Set.....		21.35

Machinists No. 903

No. 603	3-inch Rule.....	\$.35
No. 603	6-inch Rule.....	.65
No. 300	12-inch Rule.....	1.25
No. 419	6-inch Hook Rule.....	1.00
No. 391	Center Gage.....	.35
No. 9	12-inch Combination Set.....	4.00
No. 13	4-inch Complete Double Square.....	1.65
No. 63	6-inch Square.....	3.50
No. 3	Micrometer.....	6.00
No. 72	Thickness Gage.....	1.50
No. 46A	Depth Gage.....	1.25
No. 268C	Drill Blocks and Clamps.....	1.50
No. 146	Hack Saw Frame.....	1.00
No. 67	Complete Scriber.....	.50
No. 57B	Surface Gage.....	2.85
No. 77	3-inch Divider with spring nut.....	1.15
No. 77	6-inch Divider with spring nut.....	1.75
No. 75	3-inch Caliper with spring nut.....	1.15
No. 75	6-inch Caliper with spring nut.....	1.50
No. 74	3-inch Caliper with spring nut.....	1.15
No. 74	6-inch Caliper with spring nut.....	1.50
No. 26	12-inch Caliper.....	1.00
No. 27	12-inch Caliper.....	1.00
No. 42	6-inch Caliper.....	1.15
No. 185	Drill Gage.....	1.75
No. 132	12-inch Level.....	1.75
No. 161D	Clamps (pair).....	2.00

No. 65	Center tester.....	\$2.50
No. 510-50	Steel Tape.....	4.00
No. 4	Screw Pitch Gage.....	1.25
Set.....		51.95

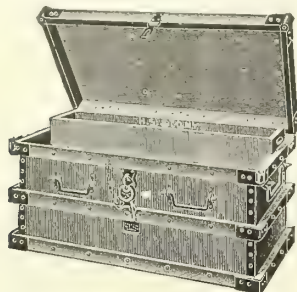
Toolmakers No. 902

No. 320	6-inch Rule.....	\$.65
No. 603	6-inch Rule.....	.65
No. 300	12-inch Rule.....	1.25
No. 422	6-inch Narrow Hook Rule.....	.90
No. 391	Center Gage.....	.35
No. 9	9x12-inch Combination Set.....	4.00
No. 14C	Double Square.....	2.60
No. 20	1 $\frac{1}{2}$ -inch Steel Square.....	1.75
No. 20	4 $\frac{1}{2}$ -inch Steel Square.....	3.50
No. 122	6-inch Vernier Caliper.....	15.00
No. 3	Micrometer.....	6.00
No. 2	Micrometer.....	6.50
No. 124A	Micrometer with case.....	5.25
No. 364A	Bevel Protractor.....	10.50
No. 15	Bevel.....	1.50
No. 6	Screw Pitch Gage.....	1.50
No. 172A	Thickness Gage.....	1.00
No. 446A	Micrometer Depth Gage.....	4.50
No. 161A	Parallel Clamps (pair).....	1.25
No. 161C	Parallel Clamps (pair).....	1.75
No. 160	2-inch Steel Clamps (pair).....	1.75
No. 271C	Drill Blocks and Clamps.....	2.75
No. 145	Hack Saw Frame.....	1.25
No. 70A	Scriber.....	.25
No. 56A	Surface Gage.....	3.00
No. 257B	Surface Gage.....	3.35
No. 277	2-inch Dividers.....	1.00
No. 277	4-inch Dividers.....	1.50
No. 275	2-inch Calipers.....	1.00
No. 275	4-inch Calipers.....	1.50
No. 274	2-inch Calipers.....	1.00
No. 274	4-inch Calipers.....	1.50
No. 42	6-inch Calipers.....	1.15
No. 89	Divider.....	1.75
No. 91A	Tap Wrench.....	.75
No. 117A	Center Punch.....	.20
No. 117D	Center Punch.....	.20
No. 185	Drill Gage.....	1.75
No. 18A	Center Punch.....	2.00
No. 36	6-inch Calipers.....	1.50
No. 37	6-inch Calipers.....	1.50
No. 64	Complete Test Indicator.....	3.50
Set.....		104.55

Steel Tool Chests

Vanderman

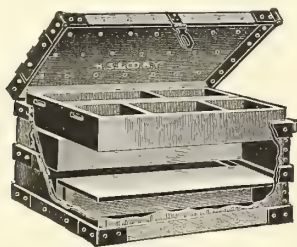
Made from $\frac{3}{8}$ -inch cold-rolled sheet steel with malleable iron corner pieces and hard-wood braces, and fitted with heavy wrought iron hinges and hasp, with cover so arranged as to be held open by support from the back of chest. Each chest is furnished with a first-class brass lock and two keys, and bolts to screw down cover at front corners. They are lighter and cheaper than any first-class make of wood chest, and will outwear several wood chests. They are painted, well proportioned and ornamental in design, and make a first-class tool chest for steam fitters, gas fitters, plumbers and other trades where a light and strong tool chest is required. The size of chests as given are inside measurements of sheet-steel body. Covers are two inches deep. Measurements of cover are not included in depth of chest. Any special size made to order. The price of any intermediate size would be the same as the largest size that it would be ordered between.



Style A

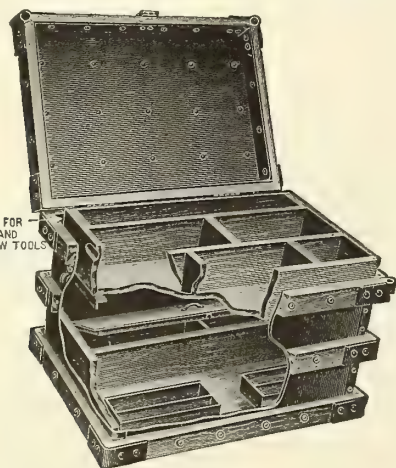
Showing one-drawer style.

Number	Depth Inches	Width Inches	Length Inches	With One Drawer Each	With Two Drawers Each
1	11	12	24	\$12.50	\$14.00
2	14	15	30	17.00	18.50
3	16	17	36	19.00	20.50
4	19	20	42	22.00	23.50
5	20	22	48	25.00	26.50



Style D

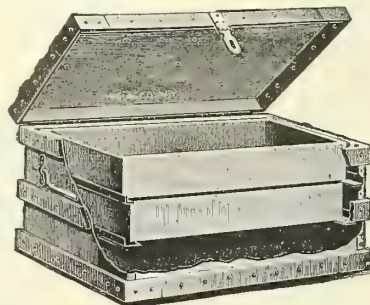
Number	Depth Inches	Width Inches	Length Inches	Each
1	11	12	24	\$15.50
2	14	15	30	21.00
3	16	17	36	23.00
4	19	20	42	26.00
5	20	22	48	29.00



Electricians

This illustration shows a special box made to meet electrical firms and other tradesmens special constructed box. The upper part of the division is of wood construction, and the lower part is of metal construction. We would be pleased to furnish estimates on any special construction of box. Price quoted on application.

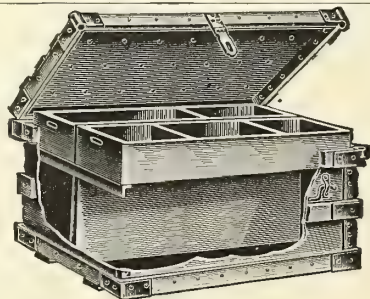
12 inches deep, 11 inches wide.	Each
No. 1 24 inches long, 1 tray	\$24.00
No. 2 25 inches long, 1 tray	26.00
No. 3 30 inches long, 1 tray	28.00



Style B

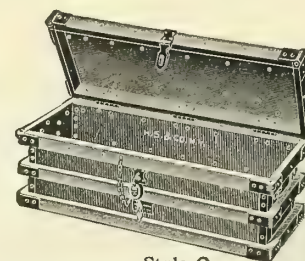
Showing two-tray style.
Sent with two trays unless ordered with one.

Number	Depth Inches	Width Inches	Length Inches	With One Tray Each	With Two Trays Each
1	11	12	24	\$13.00	\$13.50
2	14	15	30	18.50	19.00
3	16	17	36	20.50	21.00
4	19	20	42	23.00	24.00
5	20	22	48	26.00	27.00



Style E

Number	Depth Inches	Width Inches	Length Inches	Each
1	11	12	24	\$14.50
2	14	15	30	20.00
3	16	17	36	22.00
4	19	20	42	25.00
5	20	22	48	28.00



Style C

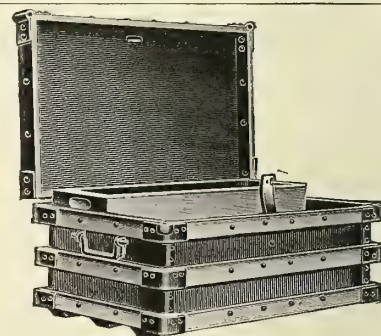
11 inches deep, 12 inches wide.

No.	Length	Each	No.	Length	Each
No. 0	Length 24 inches	\$10.50	No. 5	Length 54 inches	23.00
No. 1	Length 30 inches	12.50	No. 6	Length 60 inches	25.00
No. 2	Length 36 inches	15.00	No. 7	Length 66 inches	27.00
No. 3	Length 42 inches	17.00	No. 8	Length 72 inches	30.00
No. 4	Length 48 inches	20.00			

Special Style C

With two drawers, for special long tools.
11 inches deep, 12 inches wide.

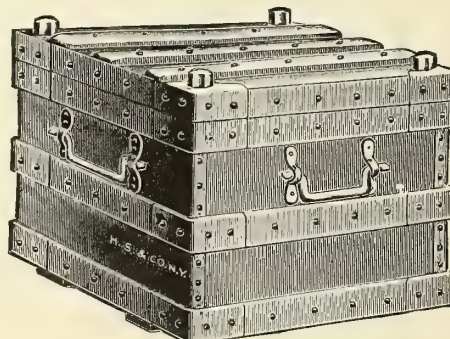
Number	Length Inches	Each	Number	Length Inches	Each
9	30	\$14.50	13	54	\$27.00
10	36	18.00	14	60	29.50
11	42	20.25	15	66	32.00
12	48	23.50	16	72	35.00



Style G

Made especially wide in proportion to length, and has a special Hasp so constructed that the Chest will be locked by means of the Hasp coming through the cover of the Chest.

10 inches deep, 17 inches wide.	Each
No. 1 24 inches long	\$15.50
No. 2 31 inches long	20.00
No. 3 36 inches long	23.00
No. 4 42 inches long	26.00



Machine

Handles put on two sides only, unless ordered on four sides.
The cover is not hinged on these Boxes but is held by four corner bolts.

Length Inches	Width Inches	Depth Inches	Each	Length Inches	Width Inches	Depth Inches	Each
17	12	12	\$16.00	20	20	20	20.00
15	15	20 1/2	18.00	27	26	19	28.00
16	16	19	18.00	20	20	30	26.00
20	20	13	19.00	27	22	24 1/2	23.00
18	18	16	20.00	28	23	23 1/2	28.00
18	18	18	20.00	20	20	21	21.00
23	21 1/2	18	24.00				

Machine Boxes for holding No. 2 and 3 Toledo Pipe-Threading Machine

No. 2 Size, 27x27x11 inches high, each	\$20.00
No. 3 Size, 27x27x20 inches high, each	26.00

Special sizes or styles furnished to meet special requirements. Prices on application.



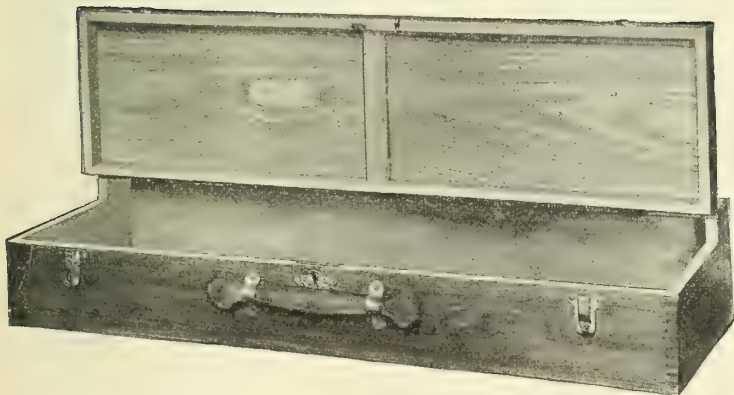
Carpenters Tool Chests

These Chests are made of selected chestnut, substantially constructed with heavy hardwood mouldings, varnish finish. Are fitted with lock and key and drop handles, and have removable sliding trays. Nos. 240 to 270 have dove-tailed corners. Nos. 260 and 270 have saw racks.

Number	Approximate Sizes Inside			Number of Trays	Each
	Long	Wide	Deep		
	Inches	Inches	Inches		
220	18x	8½x	6	1	\$2.25
240	22x10½x	8½		2	4.25
250	25x12½x	9½		2	5.10
260	28x15	x14		2	8.25
270	32x18	x16		2	10.50

House Framers Tool Chests

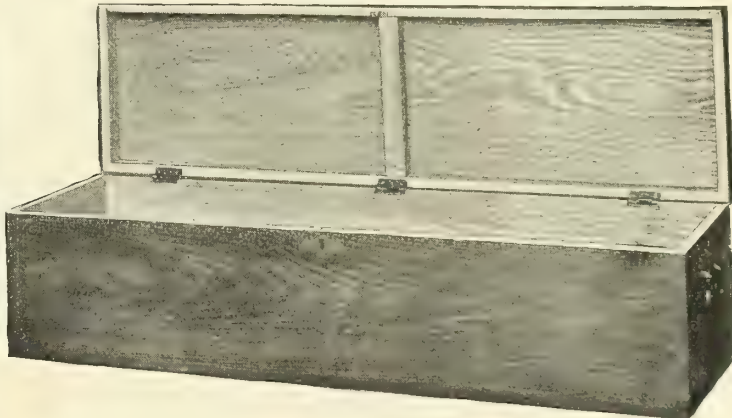
Suit Case Pattern



These Chests are strongly made of ash, with locked corners and leather handles and are conveniently shaped for carrying. All tops are divided as in illustration except style A, which is hinged at back in regular way.

Style	Approximate Dimensions Inside			Each
	Long Inches	Wide Inches	Deep Inches	
A	31	10	5	\$4.00
B	31	10	5	4.00
2B	25	10	5	3.60
XB	31	11½	6	5.00

Shoulder Pattern



These Chests are well made throughout of chestnut, and finished in dark wood filler and shellac. Have strong locks, brass elbows to hold covers up, and drop handles. Are designed especially for holding a set of house-framers tools, having rack on inside of cover for saws. They are so shaped as to be conveniently carried upon the shoulder.

Number	Approximate Dimensions Inside			Each
	Long Inches	Wide Inches	Deep Inches	
10	25	8	8	\$3.40
20	31	8	8	3.75

Electricians Tool Bags

Used by Electricians and Inside Wiremen and Plumbers.

Made of heavy russet grain leather. Has shoulder strap and pad connected to bag by plated snaps and rings which can be detached in an instant. Has two small straps to buckle on the side. Sewed on a hot-wax, lock-stitch machine and cannot rip unless every stitch is cut.

		Each
No. 41	16 inches long x 6½ inches wide x 8 inches high	\$5.40
No. 42	18 inches long x 7 inches wide x 8 inches high	5.80
No. 43	20 inches long x 7 inches wide x 9 inches high	6.30
No. 44	22 inches long x 7 inches wide x 10 inches high	7.20

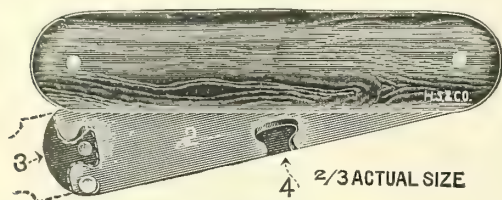


Pocket Tool Kits

Zinn Improved

These sets are furnished in best quality Black-Seal Leather making them neat and attractive. All tools are heavily nickel-plated and any found defective will be replaced free of charge.

Handle



Directions—Spread handles 1 and 2 apart and place desired tool in recess marked 3, then bring the handles together and tool becomes firmly fastened and is ready for use.

For tools requiring a rotary movement use recess marked 4. The tool is held firmly from all sides, and no matter from what direction the pressure is exerted, the tools remain firmly fixed and cannot come out while in use.

No. 2

Contains Tool Handle, Knife Blade, Hammer, Gimlet, Punch, File, Screwdriver $\frac{1}{8}$ inch, Saw.

Each..... \$3.00

No. 4

Contains Tool Handle, Can Opener, Knife Blade, Hammer, Wire Cutter, File, Saw, Chisel $\frac{1}{2}$ inch, Punch, Corkscrew, Screwdriver $\frac{1}{8}$ inch, Flat-Nose Pliers, Soft and Hard-Wood Gimlets.

Each..... \$5.00

No. 5

Contains Tool Handle, Flat File, Rat-Tail File, Can Opener, 2 Screwdrivers, each $\frac{1}{8}$ and $\frac{1}{4}$ inch, Hammer, Chisel $\frac{1}{2}$ inch, Saw, Corkscrew, Knife Blade, Flat-Nose Pliers, Side-cutting Pliers, End-cutting Pliers, Punch, Gimlet.

Each..... \$8.00

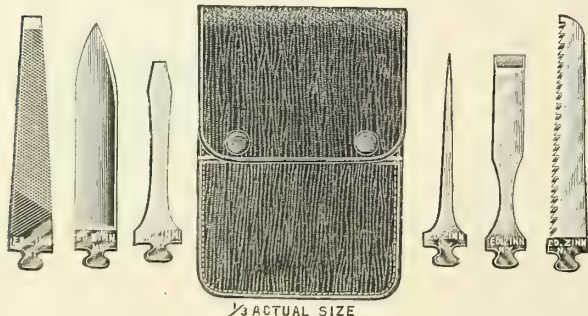
No. 6

Contains Tool Handle, Saw, Knife Blade, Hammer, Can Opener, File, Screwdriver $\frac{1}{4}$ inch, Chisel $\frac{1}{2}$ inch, Gimlet, Punch.

Each..... \$3.50



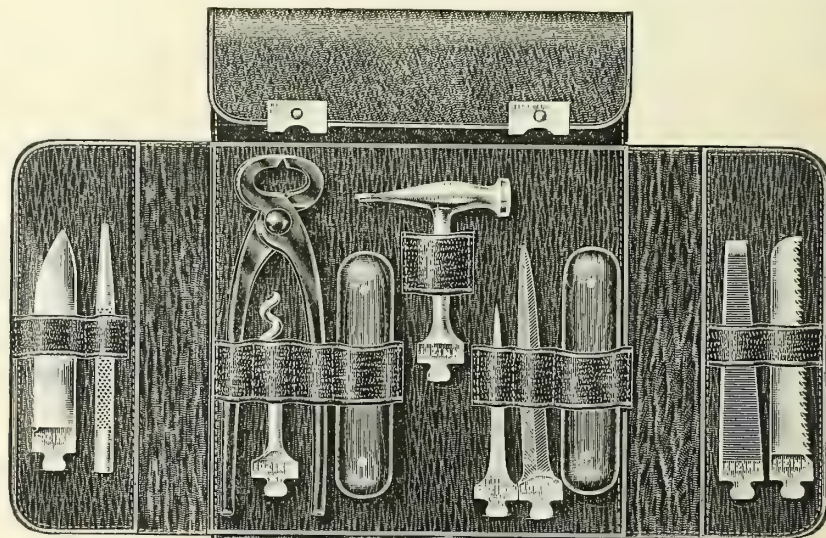
No. 1



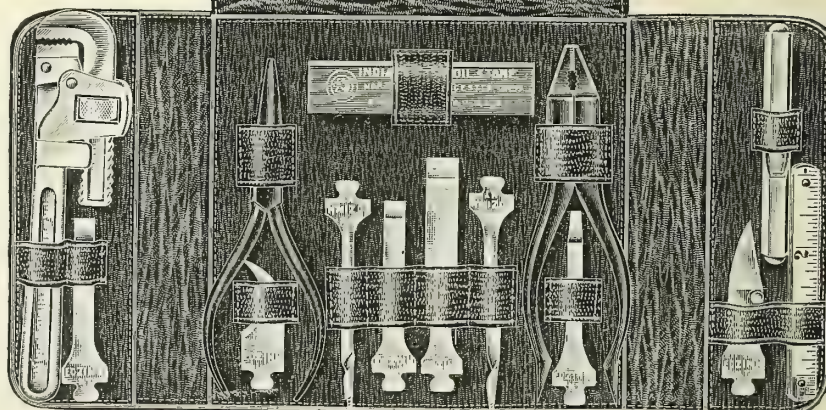
Tool-Kit No. 1

Contains Tool Handle, Saw, File, Knife Blade, Punch, Screwdriver $\frac{1}{4}$ inch, Chisel $\frac{1}{2}$ inch.

Each..... \$2.00



No. 20



$\frac{1}{3}$ Actual Size of No. 20

No. 8

Contains Tool Handle, Flat and Three-cornered Files, Saw, Gun Metal Long-Nose Pliers, Gun Metal Side-cutting Pliers, Gun Metal End-cutting Pliers, Chisel $\frac{1}{2}$ inch, Corkscrew, Hammer, Knife Blade, Wire Cutter, Gimlets for Hard and Soft-Wood, Punch, 2 Screwdrivers, each $\frac{1}{8}$ and $\frac{1}{4}$ inch, Can Opener.

Each..... \$10.00

No. 13

Contains Tool Handle, Knife Blade, Punch, Chisel $\frac{1}{2}$ inch, Saw, Flat File, Screwdriver $\frac{1}{8}$ inch, Hammer, Gimlet, Corkpuller, Can Opener, Scraper, Flat-Nose Pliers, 2-Foot Folding Rule, Nail Set, Each..... \$6.50

No. 19

Contains 2 Tool Handles, Knife Blade, Punch, 2 Screwdrivers, each $\frac{1}{8}$ and $\frac{1}{4}$ inch, 2 Chisels, each $\frac{3}{8}$ and $\frac{1}{2}$ inch, Saw, Hammer, 2 Gimlets, Corkpuller, Can Opener, Scraper, Flat and Three-cornered Files, Gun Metal Long-Nose Pliers, Gun Metal Side-cutting Pliers, Gun Metal End-cutting Pliers, Nail Set, 2-Foot Folding Rule, India Oil Stone, Spirit Level.

Each..... \$12.00

No. 20

Contains 2 Tool Handles, Knife Blade, Punch, 2 Screwdrivers, each $\frac{1}{8}$ and $\frac{1}{4}$ inch, 2 Chisels, each $\frac{3}{8}$ and $\frac{1}{2}$ inch, Saw, Hammer, 2 Gimlets, Corkpuller, Can Opener, Scraper, Flat and Three-cornered Files, Gun Metal Long-Nose Pliers, Gun Metal Side-Cutting Pliers, Gun Metal End-cutting Pliers, 6-inch "Trim" Pipe Wrench, Nail Set, 2-Foot Folding Rule, India Oil Stone, Spirit Level.

Each..... \$15.00

Tool Holders

M. F. Co.



No. 4



Above Tools Are for No. 4

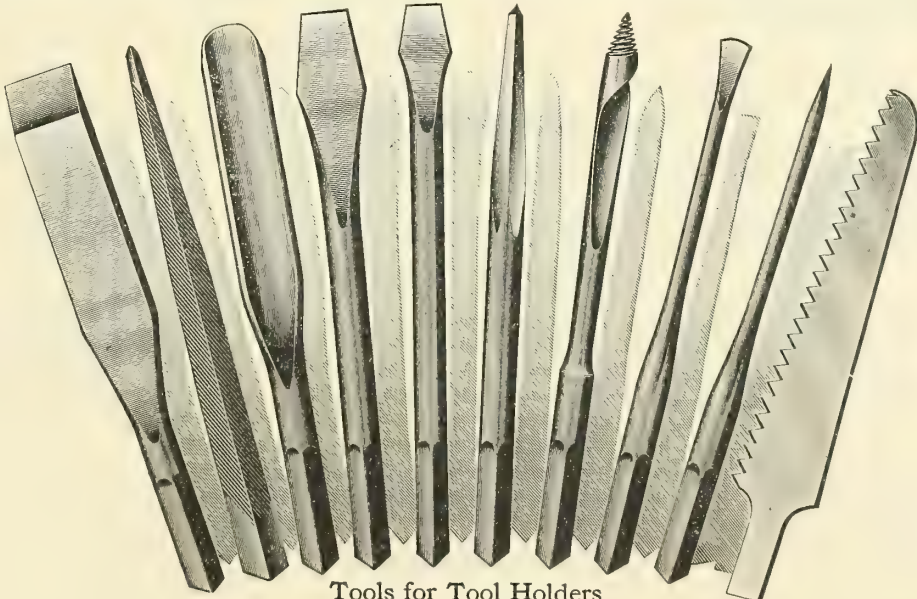
Beautifully polished and finished rare tropical wood; heavily nickeled shell and jaws.
Hollow handle, containing tools and closed with a screw cap.
Jaws holding with vise-like grip tools, as shown in illustrations, also a variety of other kinds of shanks.
Socket and shell threads carefully cut so as to mesh perfectly and prevent shell from working loose and allowing tools to disengage themselves from jaws.
Tools made from best steel and carefully tempered and finished and honed to a fine cutting edge.

Numbers.....	4	5	6
Length of handle, inches.....	6½	7½	4¾
Number of tools.....	10	10	12
Length of tools, inches.....	2½	4	1¾
Dozen.....	\$14.75	19.00	10.00

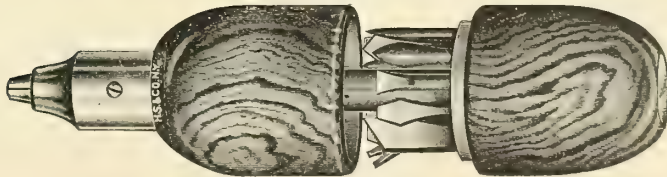
No. 500

The same as Tool Holder No. 5, described above, except that the handle is birch stained to imitate cocobola and that the tools are polished without blue finish. The handle cap has no inserted metal plate.

Dozen..... \$14.40



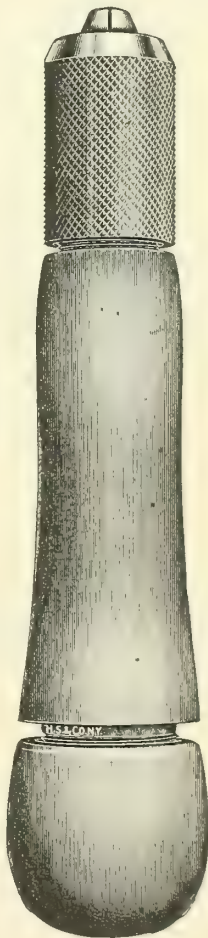
Tools for Tool Holders
Nos. 5 and 500



No. 6



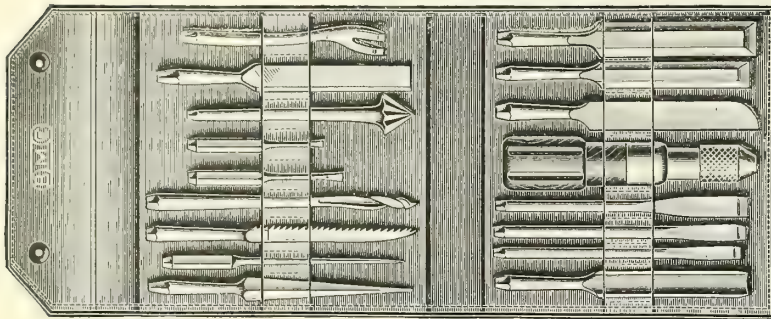
No. 5



No. 500

Combination Tool Set

B. M. Co.



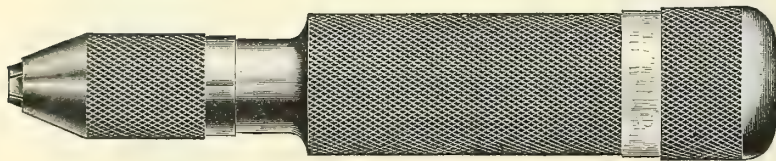
Consists of one round grooved rosewood handle, with chuck, and sixteen useful tools as follows: 2 Wood Chisels, 1 Wood Gouge, 1 Knife, 3 Screwdrivers, 1 Tack Claw, 1 File, 1 Counter-sink, 1 Reamer, 2 Brad Awls, 1 Gimlet Bit, 1 Saw and 1 Scratch Awl.

Tool and handle measures about 8 inches over all. Best material is used throughout.

No. 1 Set..... \$7.00

Tool Holders

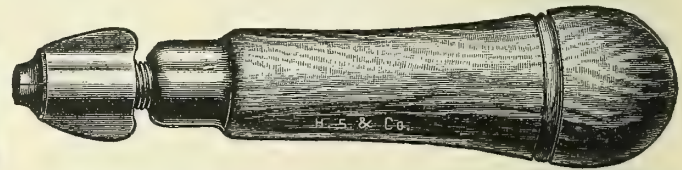
All Steel



Nos. 20 and 35

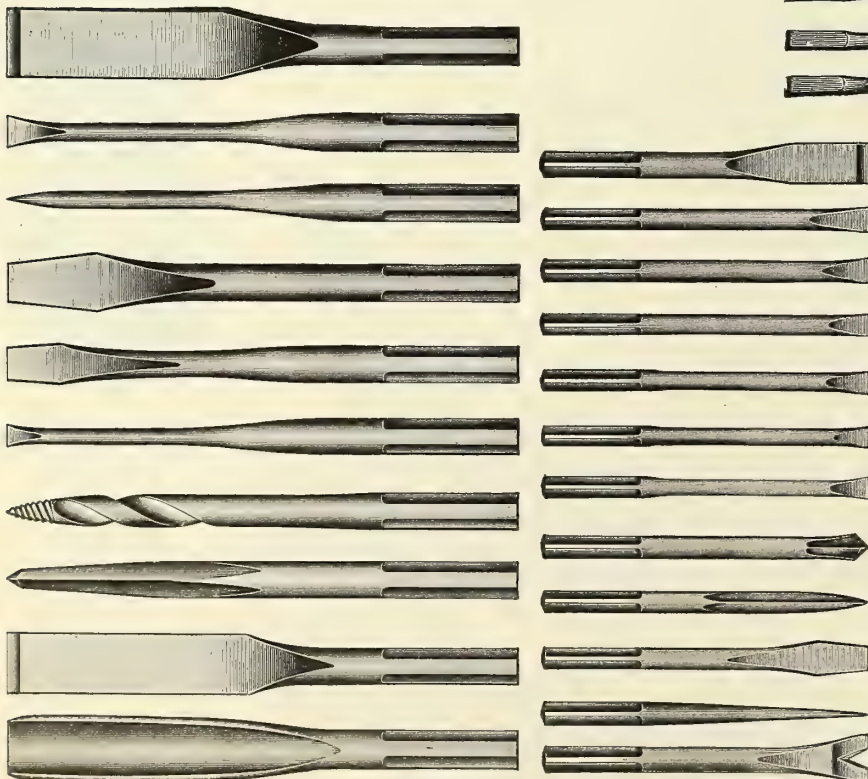
The Chuck has no loose parts or springs to get lost or out of order. Handles are light, strong and indestructible. All Parts are machined from screw steel. The screw cap will not crack, split or break.

Buell



These goods are finely tempered, highly finished and warranted. They are compact in form, useful and have a large sale.

No. 4 Cocobolo Handle, 10 Tools, dozen..... \$7.50



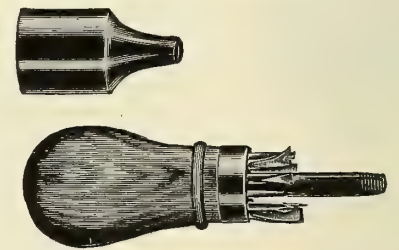
Tools for No. 35

Full Size

Tools for No. 20

No. 20	4 3/8 inches long	.....	\$9.00
No. 35	5 1/4 inches long	.....	12.00

Henry Pattern



No. 22

Made of Cocobolo, finely polished, with Nickel-plated Metal Cap.

Contains twelve tools made of the best Tool Steel, tempered and finished in the most workmanlike manner.

One Chisel, One Screwdriver, One Reamer, One Tack Puller, One Pegging Awl, One Marking Awl, Six Brad Awls, Assorted.

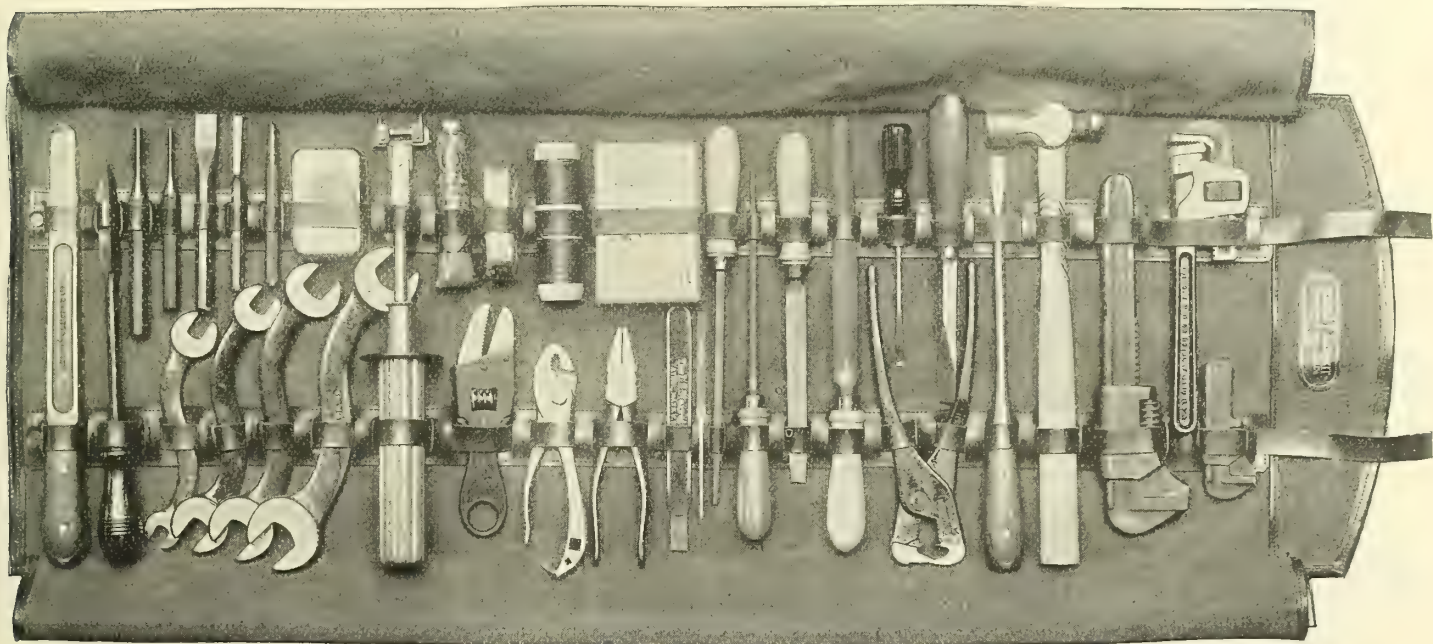
4 inches in length and can be easily carried in the pocket. Being made of solid wood it is not liable to split.

The tools stand upright in holes under the metal cap facilitating selections.

Dozen..... \$9.00

Automobile Repair Outfit

H. S. & Co. "Tourist Autokit"



The H. S. & Co. Tourist Autokit is contained in a heavy serviceable canvas roll, edged with leather. Every tool is especially selected with reference to its quality and adaptability for use in an automobile kit, and we believe we are justified in asserting that the "Tourist" embodies every possible permanent and emergency value that can be included in a kit of this size. Itemized list of contents is as follows;

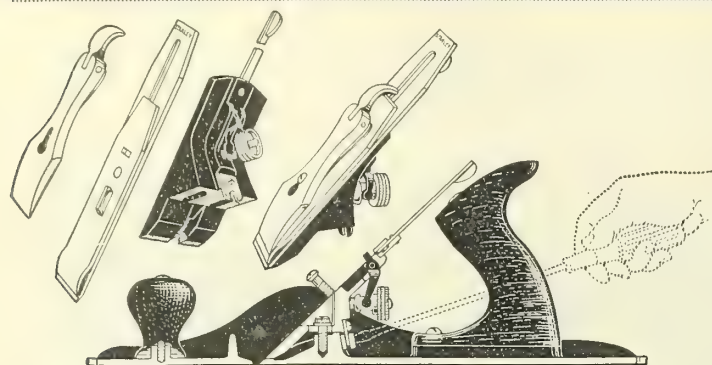
- Perfect Handle Tire Tool.
Bearing Scraper, No. 7, 8 inches, 3-square hollow ground.
English and Metric Measure, 2-foot, 4-fold.
Adjustable Alligator Pipe Wrench, 7 inches, black finish, grips pipe up to $\frac{3}{4}$ inch and rods and nuts up to 1 inch.
Williams Drop-Forged S Wrench, S. A. E. Standard, $\frac{1}{4}$ and $\frac{5}{16}$ inch.
Williams Drop-Forged S Wrench, S. A. E. Standard, $\frac{3}{8}$ and $\frac{7}{16}$ inch.
Williams Drop-Forged S Wrench, S. A. E. Standard, $\frac{1}{2}$ and $\frac{9}{16}$ inch.
Williams Drop-Forged S Wrench, S. A. E. Standard, $\frac{5}{8}$ and $\frac{11}{16}$ inch.
H. S. & Co. Side-Cutting Pliers, No. 1050, 7 inches.
Knight Combination Auto Pliers, No. 50, 7 inches, nickle-plated, suitable for use as screwdriver, wire cutter, pipe wrench, gas and air-tank keys, cotter pin puller and tap wrench.
Starrett Steel Rule, No. 320, 6 inches, graduated in 32nds and 64ths.
Nicholson Coil File.
K. and F. Square Bastard File, 7 inches.
K. and F. Round Bastard File, 7 inches.
K. and F. Flat Bastard File, 6 inches.
K. and F. Half-Round Bastard File, 8 inches.
H. S. & Co. Tire Chain Tool.
Perfect Handle Screwdriver, 7 inches, No. 609.

- Perfect Handle Machinists Screwdriver, No. 9 $\frac{1}{2}$, 4 $\frac{1}{2}$ -inch blade with square for wrench.
New Century Screwdriver, No. 120, 3 $\frac{1}{2}$ -inch slim.
Atha Ball Pein Machinist Hammer, No. 00, 12 ounces.
Billings Automobile Wrench, semi-finish, No. 3, 10 inches, opens 2 inches.
Billings Model 97 4-inch Pocket Wrench, opens 1 $\frac{3}{8}$ inches.
Trimo Pipe Wrench, 10 inches, grips pipe $\frac{1}{8}$ to 1 inch.
Tinol Soldering Outfit.
 $\frac{1}{4}$ -pound Electricians Tape.
 $\frac{1}{4}$ -pound Spool No. 18 Copper Wire.
 $\frac{1}{4}$ -pound Spool No. 20 Copper Wire.
Carborundum Valve Grinding Paste, in tube.
B. M. Co. Valve Grinding Tool, complete.
Box of assorted Spring Cotters.
H. S. & Co. Cold Chisel, $\frac{1}{2}$ inch.
H. S. & Co. Cape Chisel, $\frac{3}{8}$ inch.
H. S. & Co. Octagon Center Punch, $\frac{3}{8}$ inch.
B. M. Co. Pin Punch, $\frac{5}{32}$ inch.
B. M. Co. Pin Punch, $\frac{1}{4}$ inch.

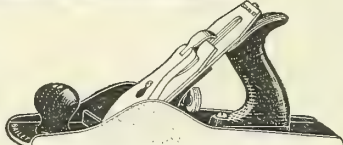
Set complete.....	\$25.00
Roll only.....	7.50

Adjustable Iron Planes

Bailey



No. 3



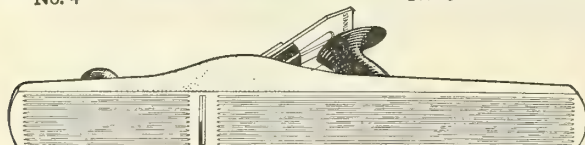
No. 5



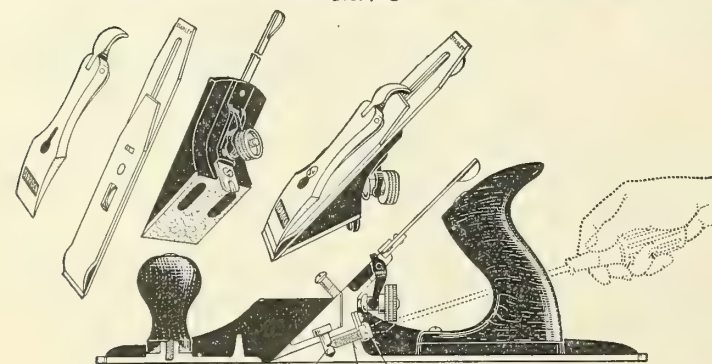
No. 4



No. 6



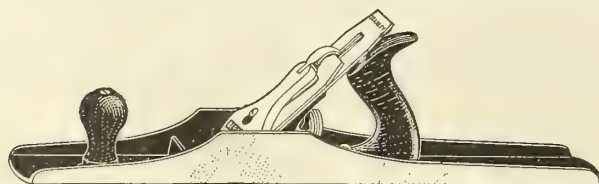
No. 7-C



No. 603



No. 604



No. 607

The Planes described below, generally known as Bench Planes, are divided into four classes, namely: Smooth, Jack, Fore and Jointer.

A Smooth Plane is for finishing or smoothing off flat surfaces. Where the uneven spots are of slight area, its short length will permit it to locate these irregularities, leaving the work with a smooth surface when finished.

A Jack Plane is used to true up the edges of a board in the rough and prepare it for the Fore or Jointer.

A Fore Plane is simply a short Jointer, and being lighter, is preferred by some workmen to the longer plane.

A Jointer is a finishing Plane for large surfaces and is invariably used to true up the edges of boards so that they can be closely fitted or joined together.

"Bailey" Iron Planes have been in use for nearly fifty years and are the recognized standard for planes of this type. While retaining all the original features, many valuable improvements in construction have been added from time to time. Only the finest materials and the best workmanship are used in their manufacture.

In the illustration the detail of construction is very clearly shown. Note that the frog has a support directly at the rear of the mouth, making practically one solid piece from the cap to the bottom. The sides and bottom of the plane are stiffened by means of the cross ribs. The screw bosses on each side of the center rib are very deep, allowing a number of threads to engage, thereby securely holding the frog. The design prevents the plane being drawn out of true when the face of the frog is screwed up hard.

The width of the mouth may be regulated and made wider or narrower as coarse or fine work may require. First remove the lever and cutter and loosen the two frog screws that fasten the frog to its seat. With a screwdriver turn the center adjusting screw (see cut) to the right to close the mouth, and to the left to open it. When the frog is in the position desired, tighten the frog screws and replace the cutter and lever.

The cutter, which is thin and of uniform thickness, is a prominent feature of the "Bailey" Plane.

Briefly, its advantages are: 1. Ease in grinding. 2. Less grinding, as a thin cutter can be kept in condition by honing. 3. Less tendency to "stub off" the cutting edge when honing, hence the original bevel is kept much longer.

The cutter is adjustable endwise by means of the adjusting wheel at the back of the frog. It is also adjustable sidewise by lever located near the top and at the back of the cutter.

It is made of the finest quality English steel, tempered and ground by an improved process, and honed ready for use.

The handle and knob are made of highly-finished, thoroughly-seasoned rosewood.

Planes with bottoms either flat or corrugated (see cut 7C) furnished as desired. The number with a "C" designates Corrugated Bottom.

Numbers		Length Inches	Cutter Inches	Weight Pounds	Each
1		Smooth	5½	1¼	\$1.50
2	or 2 C	Smooth	7	1½	2.00
3	or 3 C	Smooth	8	1¾	2.10
4	or 4 C	Smooth	9	2	2.20
4½	or 4½ C	Smooth	10	2¾	2.50
5	or 5 C	Jack	14	2	2.50
5½	or 5½ C	Jack	15	2¼	3.00
6	or 6 C	Fore	18	2¾	3.25
7	or 7 C	Jointer	22	3¾	3.75
8	or 8 C	Jointer	24	4¾	4.50

Packed one in box.

Stanley Bed Rock

This Plane, owing to its solidity and variety of adjustments, surpasses all others for fine work on all woods.

The cutter, frog and bottom are so designed, machined and fitted that they are practically one solid piece of metal, thus preventing any chance of vibration.

Particular attention is called to the shape of the sides. This new and distinctive feature adds greatly to the strength of the plane as well as affording large bearing surfaces when the plane is used on its sides.

The frog may now be adjusted either forward or backward without removing the lever and cutter; simply slacken the tension of the two frog-clamping screws "B", and with a screwdriver adjust the frog as desired by means of the frog-adjusting screw "C" in the center, and then tighten the frog-clamping screws. (See cut).

The frog is held to its seat by means of two pins "A" of large diameter, each of these has a tapered hole near the lower end. The two frog-clamping screws "B" have tapered points. These points fit in the holes in the pins "A." The center of the tapered hole in these pins is slightly above the center line of the frog-clamping screws, so that when these screws are driven in, they produce the effect of a wedge, drawing the pins downward and clamping the frog absolutely rigid in its place.

The cutter is the regular "Bailey" cutter and is adjustable both endwise and sidewise.

The handle and knob are of well-seasoned rosewood.

Planes with bottoms either flat or corrugated will be furnished as desired. The number with a "C" designates Corrugated Bottom.

Numbers		Length Inches	Cutter Inches	Weight Pounds	Each
602	or 602 C	Smooth	7	1½	\$2.20
603	or 603 C	Smooth	8	1¾	2.30
604	or 604 C	Smooth	9	2	2.50
604½	or 604½ C	Smooth	10	2¾	3.00
605	or 605 C	Jack	14	2	3.00
605½	or 605½ C	Jack	15	2¼	3.50
606	or 606 C	Fore	18	2¾	3.75
607	or 607 C	Jointer	22	3¾	4.40
608	or 608 C	Jointer	24	4¾	5.25

Packed one in Box.

Planes

Bailey Wood

Every Carpenter needs two or more wood planes in his kit for rough outside work. Bailey Wood Planes supply the demand for a wood plane of superior quality. The bottom, handle, and knob are made from selected and well-seasoned beech. The cutters are the regular Bailey type and are adjustable both endwise and sidewise. The frog is held in place by two machine screws which pass through the top iron and screw into two brass lugs. These lugs are screwed and securely pinned into the wood bottom. This is far superior to other methods of fastening, as it holds together firmly the wood bottom, the top iron which strengthens the wood bottom and the frog.

Numbers		Length Inches	Cutter Inches	Weight Pounds	Each
21	Smooth	7	1 3/4	2 1/2	\$1.50
22	Smooth	8	1 3/4	2 1/2	1.50
23	Smooth	9	1 3/4	2 1/2	1.50
24	Smooth	8	2	2 7/8	1.50
25	Block	9 1/2	1 3/4	2 1/2	1.50
35	Handle Smooth	9	2	3 1/4	1.90
36	Handle Smooth	10	2 3/8	4	2.05
37	Jenny Smooth	13	2 5/8	5	2.20
26	Jack	15	2	3 3/4	1.65
27	Jack	15	2 1/8	4	1.90
27 1/2	Jack	15	2 1/4	4 3/4	1.95
28	Fore	18	2 3/8	5 1/2	2.05
29	Fore	20	2 3/8	6 1/4	2.10
30	Jointer	22	2 3/8	6 1/4	2.20
31	Jointer	24	2 3/8	6 1/2	2.25
32	Jointer	26	2 5/8	7 5/8	2.40
33	Jointer	28	2 5/8	8 3/8	2.45
34	Jointer	30	2 5/8	8 1/2	2.60

Nos. 21, 22, 23, 24, 25, 35 and 36 packed one in Box, other Nos. one in Paper Package.

Stanley Adjustable Steel

These Planes are much in demand for outdoor work where tools are apt to get knocked around and are subjected generally to more or less rough usage. The bottoms and sides are one piece of pressed steel, making them practically non-breakable. They weight considerably less than iron planes, and for light work on soft woods will be found very useful. The cutters are of the double type and are adjustable endwise by means of the small lever shown in the cut. The handles and knobs are made of rosewood.

- No. 104 Smooth, 9 inches long, 2 1/8-inch cutter, weight, 3 1/8 pounds.

\$2.05
- No. 105 Jack, 14 inches long, 2 1/8-inch cutter, weight, 3 7/8 pounds.

2.60
- Packed one in Box.

Bailey Adjustable Block

Bailey Block Planes are the highest type of Block Planes manufactured. All numbers have the most improved form of adjustment, which enables the user to accurately adjust the cutter either endwise or sidewise. The cutter rests on its seat at an angle of 20 degrees as against 45 degrees in the ordinary Bench Plane, and the cutter bevel is made on the upper instead of on the lower side. All have adjustable throats which permit of the opening or closing of the mouth as coarse or fine work may require. To close the throat, loosen the thumb screw on the front of the plane, move eccentric plate to right as far as desired, then tighten screw. To open throat move plate to left. The thumb screw also acts as a finger rest while using the plane.

Nos. 9 3/4 and 15 1/2 have an iron handle with rosewood knob extending from the rear (see cut). This enables the user to conveniently work the Plane with both hands if he so desires.

Nos. 18 and 19 are distinctive in the method of fastening the cutter. The knuckle joint in the cap makes it also a lever, and placing the cap in position clamps the cutter securely to its seat.

Numbers	Length Inches	Cutter Inches	Trimmings	Weight Pounds	Each
9 1/2	6	1 5/8	Japan	1 1/2	\$1.10
15	7	1 5/8	Japan	1 5/8	1.20
16	6	1 5/8	Nickel	1 1/2	1.25
17	7	1 5/8	Nickel	1 5/8	1.35
9 3/4	6	1 5/8	Japan, Rosewood Handle	1 5/8	1.30
15 1/2	7	1 5/8	Japan, Rosewood Handle	1 7/8	1.40
18	6	1 5/8	Nickel, Knuckle Joint	1 1/2	1.30
19	7	1 5/8	Nickel, Knuckle Joint	1 5/8	1.40

Packed one in Box.

Stanley Double-End Block No. 130

Has two slots and two cutter seats. The center seat and slot to be used for ordinary block-plane work, the other slot and seat for use when it is desired to work same as a bull-nose plane. The plane has a hardwood knob.

- No. 130 8 inches long, 1 5/8-inch cutter, Japan trimmings, weight 1 5/8 pounds, each.

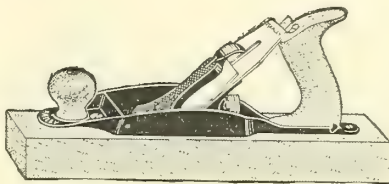
\$.75
- Packed one in Box.

Stanley Adjustable Double-End Block No. 131

Is a combination block and bull-nose plane. It has two slots and a movable cutter seat. Use center cutter seat and slot for ordinary block-plane work. For use as a bull-nose plane remove the cap and cutter, reverse the cutter seat by throwing over the adjusting wheel (see dotted lines in cut), replace the cap and cutter in the new position. The plane has the "Hand-y" feature, a rosewood knob, and the cutter is adjustable endwise.

- No. 131 8 inches long, 1 5/8-inch cutter, Japan trimmings, weight 1 1/2 pounds, each.

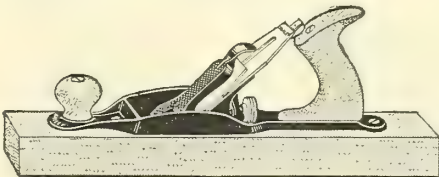
\$1.50
- Packed one in Box.



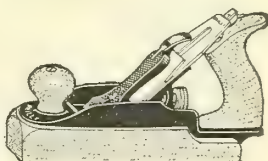
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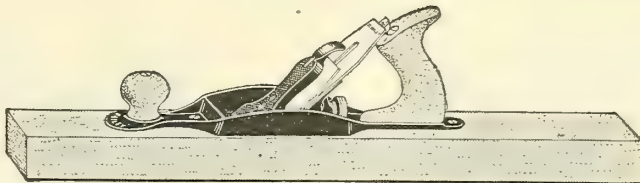
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No. 28



No. 35



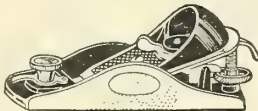
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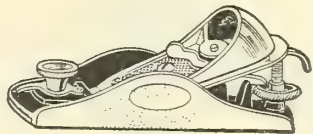
No. 104



No. 105



Nos. 9 1/2 and 16



Nos. 15 and 17



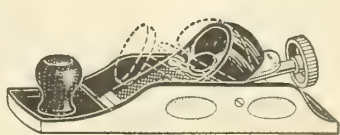
Nos. 9 3/4 and 15 1/2



Nos. 18 and 19



No. 130



No. 131

Planes

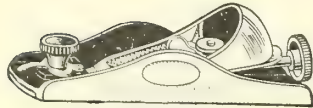
Stanley Low-Angle Block

These Planes are designed to meet the demand for Block Planes having the cutters lying at a still lower angle than 20 degrees.

In the Low-Angle Planes the cutter rests on its seat at an angle of only 12 degrees. This angle permits of great ease in working across the grain on hard woods.

The small planes, designed to be operated with one hand, have the "Hand-y" feature. All cutters are made of high-grade steel and are adjustable endwise by means of the adjusting wheel at the rear of the plane.

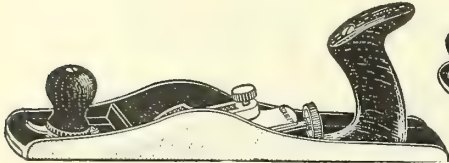
No. 61 is similar to the No. 60½ as regards size and trim, but the throat is not adjustable. The cutter is adjustable endwise and the plane is fitted with the "Hand-y" feature.



No. 65 and 65½



No. 60 and 60½



No. 62



No. 61

Numbers	Length Inches	Cutter Inches	Trimmings	Weight Pounds	Each
65	7	1½	Nickel	1¾	\$1.35
65½	7	1½	Japan	1¾	1.20
60	6	1¾	Nickel	1¼	1.25
60½	6	1¾	Japan	1¼	1.10
62	14	2	Japan	3½	2.85
61	6	1¾	Japan	1¼	1.10

Packed one in Box.

Stanley Adjustable Block

The first plane listed, No. 203, is designed especially for manual training use. The bottoms and sides are ground and it is fitted with the "Hand-y" feature, which aids very materially in providing a firm grip for the hand of the user. The cutter is secured in its place by a lever fastened with a cam. It is adjustable endwise by means of the thumb screw shown at the rear of the plane. The knob is of rosewood and serves as a finger rest.

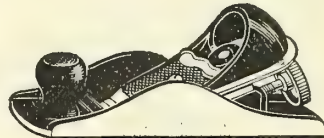
No. 220 is ground on both bottom and sides. The cutter is made of high grade steel, is fastened by a lever and cam, and is adjustable endwise by a screw adjustment operated from the rear of the plane. The finger rest on the front of the plane is rosewood.

No. 103 is for light work. The cutter is adjustable endwise, the form of adjustment being known as the lever adjustment. The small boss cast on the front of the plane serves as a convenient finger rest for the operator. The bottom is ground true and the sides neatly japanned.

No. 120 is similar in design to the No. 103, having the same form of cutter adjustment and cutter-fastening device. The sides are ground, care being taken to have them parallel and, instead of the iron boss on the front of the plane, it is fitted with a rosewood knob which forms a convenient finger rest.



No. 203



No. 220



No. 103



No. 120

Numbers	Length Inches	Cutter Inches	Adjustment	Weight Pounds	Each
203	5½	1¾	Screw	1½	\$.85
220	7½	1¾	Screw	1½	.75
103	5½	1¾	Lever	¾	.55
120	7½	1¾	Lever	1¾	.75

Packed one in Box.

Stanley Non-Adjustable Block

The cutters in all numbers are of a high grade of steel, and are as carefully tempered and ground as are those in the more expensive planes of this class.

No. 101, only 3½ inches in length, is a very handy little plane for household use and many mechanics carry one in their kits for odds and ends of light work. The boss on the front acts as a finger rest. The bottom is ground and the sides japanned.

No. 100 is the same in all respects as the No. 101, except that it has an iron handle which just fits nicely into the palm of the hand, insuring the workman a firmer grip than is possible with the No. 101.

No. 102 is a light, serviceable, plane, 5½ inches long. The bottom is ground and the sides japanned.

No. 110 is the most popular of all the non-adjustable block planes. Both the bottoms and sides are ground, and in place of the boss cast on the front for a finger rest, it has an applewood knob, stained black.



No. 101



No. 100



No. 102



No. 110

Numbers	Length Inches	Cutter Inches	Package	Pounds	Each
101	3½	1	6 only	1½	\$.20
100	3½	1	1 only	¾	.25
102	5½	1¾	1 only	¾	.40
110	7½	1½	1 only	1¾	.55

Stanley Rabbet and Block No. 140

A detachable side will easily change it from a block plane to a rabbet plane, and vice-versa, a combination that will be appreciated by many. The cutter is adjustable endwise and set on a skew. It has a rosewood knob.

No. 140 7 inches long, 1¾-inch cutter, Japan trimmings, weight

1½ pounds, each. \$1.40

Packed one in Box.



No. 75



No. 140

Stanley Bull-Nose Rabbet No. 75

Will be found very useful for working close up into corners or other difficult places. The mouth can be adjusted for different widths by means of the set screw on top of the plane.

No. 75 4 inches long, 1-inch cutter, Japan trimmings, weight

¾ pound, each. \$.40

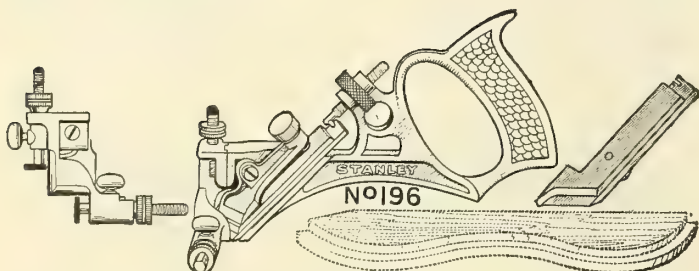
Packed one in Box.

Stanley Curve Rabbet

This Tool will cut rabbets on circular or other curved and irregular edges. It is provided with two cutters. The upper cutter acts as a spur for the lower and also cuts the side of the rabbet. The lower cutter is a skew cutter which follows the spur and cleanly cuts the bottom of the rabbet. The stock and handles are cast in one piece. The plane is fitted with an adjustable depth gauge. The fence is also adjustable and has a curved face.

No. 196 9 inches long, nickel-plated, weight 3 pounds, each. . . \$4.00

Packed one in Box.



Planes

Stanley

Handled Iron Rabbet

These Planes will lie perfectly flat on either side and can be used equally as well with right or left hand while planing into corners or up against perpendicular surfaces. Made in two styles, one fitted with a spur which permits them to be used for working across the grain, and the other without a spur. Both styles are fitted with a detachable depth gauge.

Numbers	Length Inches	Cutter Inches		Weight Pounds	Each
190	8	1½	Japanned, with spur	2½	\$1.25
191	8	1¼	Japanned, with spur	2¼	1.25
192	8	1	Japanned, with spur	2	1.25
180	8	1½	Japanned, without spur	2½	1.10
181	8	1¼	Japanned, without spur	2¼	1.10
182	8	1	Japanned, without spur	2	1.10

Packed one in Box.

Skew Cutter Filletster and Rabbet

This Plane has an extra wide skew cutter. An adjustable spur is fitted to each side. The fence and depth gauge can be attached to either side; the plane is, therefore, suitable for right or left-hand work. The adjustable fence slides under the bottom regulating the width of the cut. Remove arms and fence and a Skew-Cutter Rabbet Plane is obtained.

No. 289, 8½ inches long, 1¾-inch cutter. Japanned. Weight 3¾ pounds. Packed one in box, each..... \$1.75

Duplex Filletster and Rabbet

This Plane has two seats for the cutter, one for regular work and the other where a bull-nose is required. It has a spur and a removable depth gauge. The adjustable fence can be used on either side and slides under the bottom, regulating the width of the cut. To work same as a rabbet plane, remove fence and arms.

No. 78, 8½ inches long, 1½-inch cutter. Japanned. Weight 3 pounds. Packed one in box, each..... \$1.65

Side Rabbet

These will be found to be very convenient for side-rabbeting in trimming dados, mouldings and grooves of all sorts. A reversible nose-piece gives the tool a form whereby it will work close up into corners when required. They have rosewood knobs and are nickel-plated.

Numbers	Length Inches	Cutter Inch		Weight Pound	Each
98	4	½	Right-Hand	½	\$1.00
99	4	½	Left-Hand	½	1.00

Packed one in Box.

Cabinet Makers Rabbet

For fine cabinet or other work where extreme accuracy is required. The sides and bottom being square with each other the planes will lie perfectly flat on either side, and can be worked either right or left hand. They have adjustable throats; this means that the width of the throat opening or mouth can be widened or narrowed as coarse or fine work may require. They also are fitted with the side groove or "Hand-y" grip feature. The cutters are adjustable endwise.

Plane No. 90 is of the Bull-Nose pattern so that it can be used close up into corners or other difficult places.

Numbers	Length Inches	Cutter Inches		Weight Pounds	Each
90	4	1	Nickel-Plated	1	\$2.20
92	5½	¾	Nickel-Plated	1½	2.20
93	6½	1	Nickel-Plated	1¾	2.60
94	7½	1¼	Nickel-Plated	2	3.00

Packed one in Box.

Cabinet Makers Block

For Piano Makers and workmen in kindred trades requiring an extra fine tool for finishing hard woods, etc. The metallic handle can be attached to the top of either edge, and the sides being accurately machined, it can be used for work with a shoot-board in planing mitres, etc. The mouth is adjustable for coarse or fine work and the cutter is adjustable endwise.

No. 9, 10 inches long, 2-inch cutter. Rosewood knob. Weight 4½ pounds. Packed one in Box, each..... \$4.10

Cabinet Makers Edge

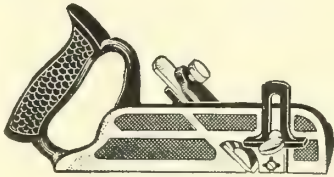
For Piano Makers and all Cabinet Workers. It has a cutter resting on a solid bed practically its entire length. The cutting edge being located at the extreme end of the plane gives the tool the form of a chisel. No other plane can be worked in such a small space or so close up into corners. The cutter is adjustable endwise. Rosewood knob.

No. 97, 10 inches long, 2¼-inch cutter, weight 3¾ pounds. Packed one in box, each..... \$2.20

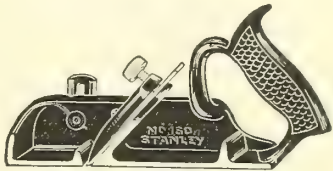
Edge Trimming

Designed especially for trimming or smoothing the ends of boards, such as sidings etc., for a square or close fit. It has a right-angle rest or guide from the cutter edge and the cutter works on a skew giving an easy shaving cut. In the rest or guide are two screw holes to which wood blocks of various bevells may be attached enabling the user to make a slanting cut.

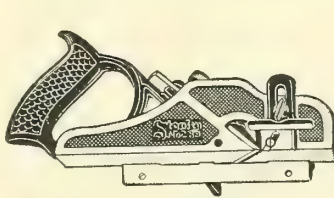
No. 95, 6 inches long, ⅞-inch cutter. Japanned. Weight 1¼ pounds. Packed one in box, each..... \$1.15



No. 190



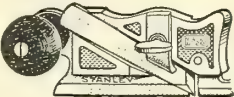
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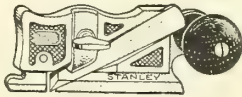
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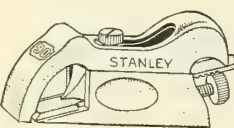
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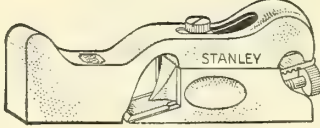
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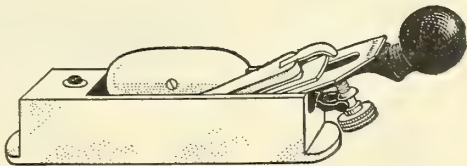
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No. 90



No. 93



No. 9

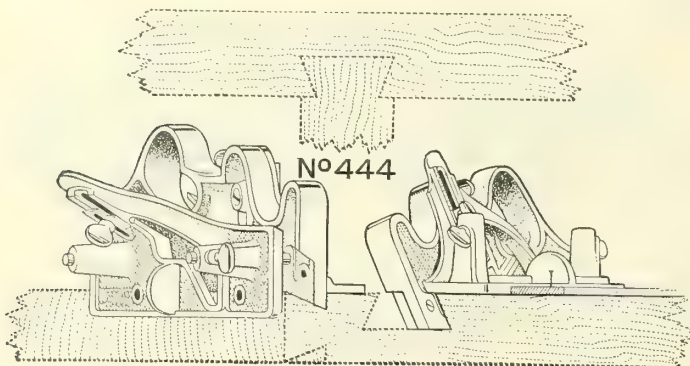


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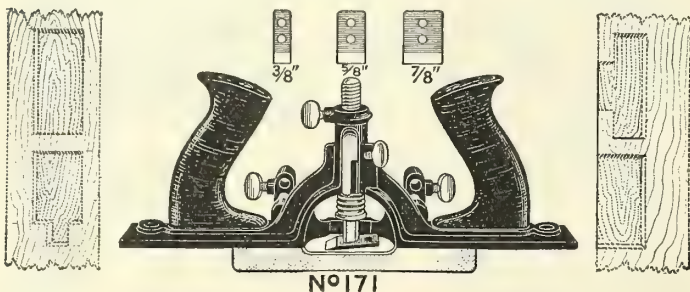


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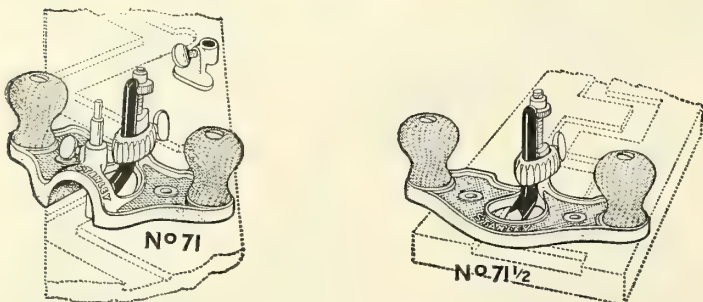
Planes



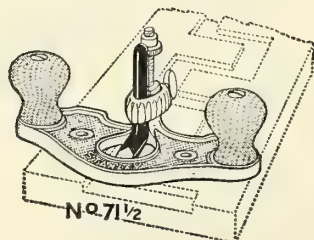
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No 171



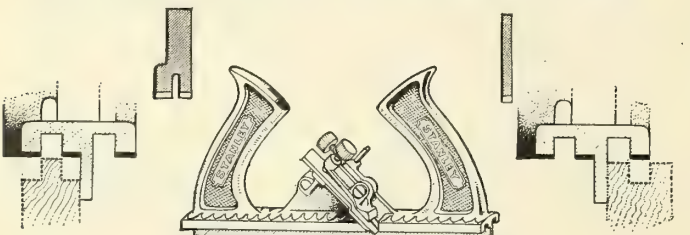
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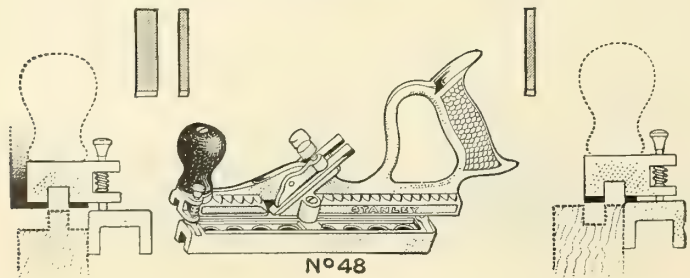
No 71 1/2



No 39



No 148



No 48

Stanley Dovetail Tongue and Groove

This novel tool will cut any size grooves and tongues to fit with sides at flare of 20 degrees, where the width of the neck is more than one-quarter of an inch and the depth of groove not more than three-quarters of an inch. The tongue and groove are cut separately, and can be made with parallel or tapering sides.

The compactness of the tool is shown in the illustration, where the cut on the left shows the plane assembled for cutting the tongue, and that on the right the plane assembled for cutting the groove. All parts are carefully machined and are interchangeable. The entire tool is heavily nickel-plated and, together with its cutters, is packed in a neat wooden box.

Extra parts and cutters for this plane are priced on page 485. Each No. 444, 9 inches long, Nickel-plated, weight 6 pounds. \$6.00

Stanley Door Trim

This plane will make mortises for butts, face plates, strike plates, escutcheons, etc., up to a depth of $\frac{1}{8}$ and a width of 3 inches. Its original feature is the method of mounting the cutter, which can be instantly set to work from either end of the plane or across it. In addition, the cutter is cushioned by a spring which prevents taking a heavier chip than can be easily carried. A fence regulates the position of the cut and insures the sides of the cut being parallel. The depth of the cut is governed by a positive stop.

By removing the fence and locking the cutter post with the thumb screw instead of using the spring a very superior Router plane is obtained. The bottom is designed so that an extra wooden bottom of any size desired can be screwed on, enabling the user to router on large openings.

The two handles as shown in the illustration are of rosewood, and three forged-steel cutters, $\frac{3}{8}$, $\frac{5}{8}$ and $\frac{7}{8}$ inch wide, are furnished with the tool.

Each No. 171, 11 inches long, Japanned, weight 3 pounds. \$2.75
Packed one in box

Stanley Router

These planes are for surfacing the bottom of grooves or other depressions parallel with the general surface of the work. They are made in two styles, differing in the form of throat. The closed throat is the ordinary form of router plane; the open throat an improved design, giving more freedom for chips and a better view of the work and cutter. The latter has an attachment for regulating the thickness of the chip, and a second attachment for closing the throat for use on narrow surfaces. The bottoms of both styles are designed so that an extra wooden bottom of any size desired can be screwed on, enabling the user to router on large openings.

A $\frac{1}{4}$ and $\frac{1}{2}$ -inch cutter are furnished with each plane. Cutters have screw adjustment, and can be held as shown in illustrations, or on the back of the cutter post, for bull-nose work.

Numbers	Length Inches	Weight Pounds	Each
71	7 1/2	2 5/8	\$2.05
71 1/2	7 1/2	2 1/8	1.65

Packed one in box

Stanley Iron Dado

The great advantage of these Dado Planes over those made of wood is that they will keep true under all conditions even in the narrowest widths. They have skew cutters, an adjustable depth gauge, and two adjustable spurs, one on each side of the plane. This adjustable feature permits of the spurs being adjusted to take up wear as well as for the depth of the cut.

The plane is made in seven sizes, from $\frac{1}{4}$ inch to 1 inch in width. In ordering always give the number (39) and width of cutter desired.

Numbers	Length Inches	Cutter Inch	Weight Pounds	Each
39	8	1/4	1 3/4	\$1.65
39	8	3/8	1 3/4	1.65
39	8	1/2	1 3/4	1.65
39	8	5/8	2	1.65
39	8	3/4	2	1.65
39	8	7/8	2 1/4	1.65
39	8	1	2 1/4	1.65

Packed one in box

Stanley Matching

These planes cut a tongue on the edge of one board to fit a groove in the edge of another board, so that when put together the surfaces of the boards come true. The straightness of both tongue and groove, and their distance from the surface, is governed by a fence. This fence is so designed that the distance of the groove from the side the fence engages is practically the same as the width of the groove. The distance of the other side from the groove depends upon the thickness of the board and the capacity of the plane. When grooves are cut on center, the joint is practically of equal strength in all parts.

Double End

This type has two separate cutters, a plow and a tongue tool, both governed by one permanent fence. The tongue tool has one edge wider than the other, which overhangs one side when tonguing on center. Both tongue and groove are cut by working the tool in the same direction by merely reversing it end for end. The planes are nickel-plated and have iron handles cast with the body.

Numbers	Size of Groove Inch	Size of Boards Inch	Centers on Inch	Weight Pounds	Each
146	1/8	3/8 to 1/2	3/8	1 1/2	\$2.20
147	3/16	1/2 to 3/4	5/8	1 7/8	2.20
148	1/4	3/4 to 1	7/8	2 3/8	2.20

Packed one in box

Swinging Fence

This form has two plow cutters of the same width and one extra wide cutter. The fence in one setting exposes two cutters for cutting the tongue and, when reversed, leaves only one exposed for cutting the groove. On thicker boards than the plane works on center, the extra wide cutter is substituted for groove cutter when cutting tongue. Nickel-plated. Rosewood knobs.

Numbers	Size of Groove Inch	Size of Boards Inches	Centers on Inch	Weight Pounds	Each
48	5/16	3/4 to 1 1/4	7/8	3 3/4	\$2.75
49	3/16	1/2 to 3/4	1/2	2 3/8	2.75

Packed one in box

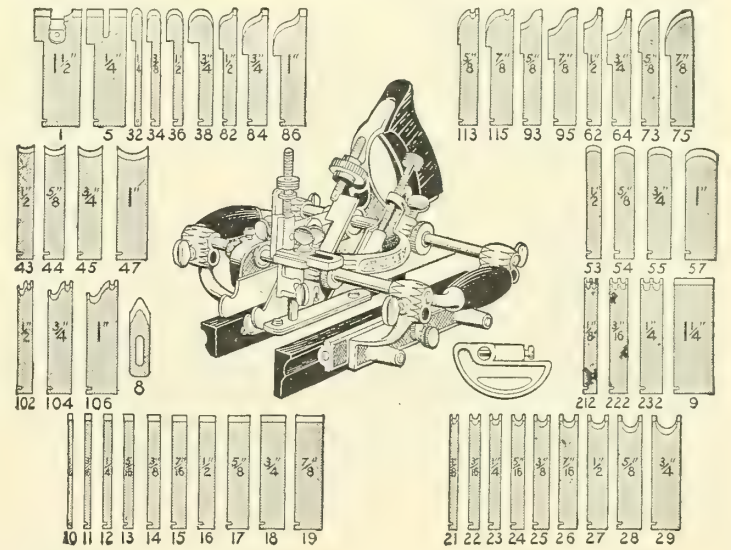
Planes

Stanley. Fifty-five

No. 55 Nickel-plated, with 52 Cutters, weight 15¼ pounds, each..... \$14.00
The following cutters are furnished with each Plane. The price is given in case duplicates should be required.

No.	Size	Style	Each
1	1½-inch	Sash Tool	.50
5	¼-inch	Match Tool	.50
8		Slitting Tool	.30
9	1¼-inch	Filletster	.25
10	⅛-inch	Plow and Dado Tool	.15
11	⅜-inch	Plow and Dado Tool	.15
12	½-inch	Plow and Dado Tool	.15
13	⅝-inch	Plow and Dado Tool	.15
14	¾-inch	Plow and Dado Tool	.20
15	⅞-inch	Plow and Dado Tool	.20
16	1-inch	Plow and Dado Tool	.20
17	⅝-inch	Plow and Dado Tool	.20
18	¾-inch	Plow and Dado Tool	.20
19	⅞-inch	Plow and Dado Tool	.25
21	⅛-inch	Beading Tool	.15
22	⅜-inch	Beading Tool	.15
23	½-inch	Beading Tool	.15
24	⅝-inch	Beading Tool	.20
25	¾-inch	Beading Tool	.20
26	⅞-inch	Beading Tool	.25
27	1-inch	Beading Tool	.25
28	⅝-inch	Beading Tool	.30
29	¾-inch	Beading Tool	.30
32	¼-inch	Fluting Tool	.30
34	⅜-inch	Fluting Tool	.30
36	½-inch	Fluting Tool	.30
38	⅝-inch	Fluting Tool	.30
43	½-inch	Hollow	.20
44	⅝-inch	Hollow	.20
45	¾-inch	Hollow	.20
47	1-inch	Hollow	.20
53	½-inch	Round	.20
54	⅝-inch	Round	.20
55	¾-inch	Round	.20
57	1-inch	Round	.20
62	½-inch	Quarter Hollow	.45
64	¾-inch	Quarter Hollow	.50
73	⅝-inch	Quarter Round	.45
75	⅞-inch	Quarter Round	.50
82	½-inch	Reverse Ogee	.45
84	¾-inch	Reverse Ogee	.50
86	1-inch	Reverse Ogee	.50

No.	Size	Style	Each
93	⅝-inch	Roman Ogee	.45
95	⅞-inch	Roman Ogee	.50
102	½-inch	Grecian Ogee	.45
104	¾-inch	Grecian Ogee	.50
106	1-inch	Grecian Ogee	.50
113	⅝-inch	Quarter Round with Bead	.45
115	⅞-inch	Quarter Round with Bead	.50
212	⅛-inch	Reeding Tool, 2 Beads	.20
222	⅜-inch	Reeding Tool, 2 Beads	.20
232	½-inch	Reeding Tool, 2 Beads	.20



This Tool, in addition to being a Beading and Center Beading Plane, a Plow, Dado, Rabbet, Filletster, and Match Plane, a Sash Plane and a Slitting Plane, is also a superior Moulding Plane, and will accommodate cutters of almost any shape and size. The regular equipment sent with the Plane comprises fifty-two cutters, all of which are shown in the cut. These cutters, together with the Plane and all its attachments, are packed in a neat box.

Cutters of practically any form can be used in the Plane, which the owner can make from blanks or order from sketch. All metal parts of the Plane are nickel-plated. The handle and fences are made of selected rosewood.

Book of instructions supplied with each Plane.

Special Cutters

No.	Size	Style	Each
2	1½-inch	Sash Tool	.50
6	¼-inch	Match Tool	.50
31	⅛-inch	Fluting Tool	.30
33	⅜-inch	Fluting Tool	.30
35	½-inch	Fluting Tool	.30
37	⅝-inch	Fluting Tool	.30
42	¾-inch	Hollow	.20
46	⅞-inch	Hollow	.20
52	1-inch	Round	.20
56	⅝-inch	Round	.20
61	¾-inch	Quarter Hollow	.45
63	⅞-inch	Quarter Hollow	.45
65	1-inch	Quarter Hollow	.50
66	1-inch	Quarter Hollow	.50
71	¾-inch	Quarter Round	.45
72	⅞-inch	Quarter Round	.45
74	1-inch	Quarter Round	.50
76	1-inch	Quarter Round	.50
81	⅝-inch	Reverse Ogee	.45
83	⅞-inch	Reverse Ogee	.45
85	1-inch	Reverse Ogee	.50
91	⅝-inch	Roman Ogee	.45
92	⅞-inch	Roman Ogee	.45
94	1-inch	Roman Ogee	.50
96	1-inch	Roman Ogee	.50
101	⅝-inch	Grecian Ogee	.45
103	⅞-inch	Grecian Ogee	.45
105	1-inch	Grecian Ogee	.50
111	⅝-inch	Quarter Round with Bead	.45
112	⅞-inch	Quarter Round with Bead	.45
114	1-inch	Quarter Round with Bead	.50
116	1-inch	Quarter Round with Bead	.50
213	⅛-inch	Reeding Tool, 3 Beads	.30
214	⅜-inch	Reeding Tool, 4 Beads	.40
215	½-inch	Reeding Tool, 5 Beads	.50

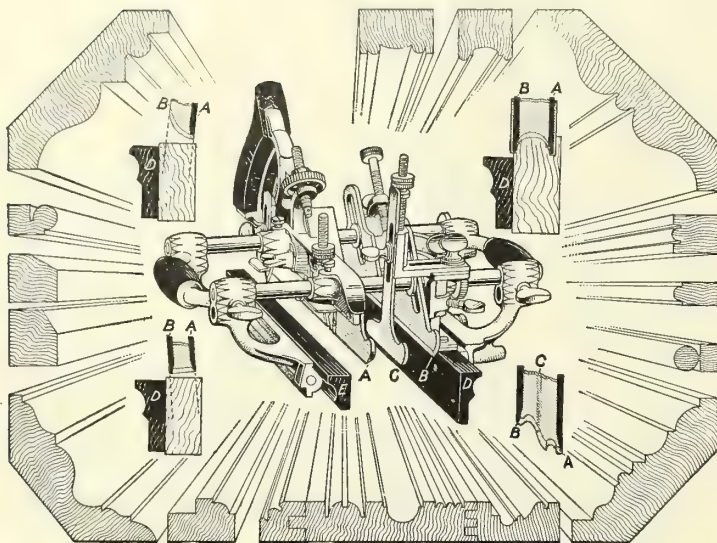
No.	Size	Style	Each
223	⅝-inch	Reeding Tool, 3 Beads	.30
224	⅞-inch	Reeding Tool, 4 Beads	.40
225	1-inch	Reeding Tool, 5 Beads	.50
233	⅝-inch	Reeding Tool, 3 Beads	.30
234	⅞-inch	Reeding Tool, 4 Beads	.40
235	1-inch	Reeding Tool, 5 Beads	.50

These Cutters may be ordered by simply specifying the number required.

Planes

Stanley. Fifty-Five

Some Samples of Work



distance from the edge of the board to keep the Fence from sagging, or on the rear arm on certain work to prevent the possibility of the Plane rocking. All parts are interchangeable.

The four small cuts in the corners, show how the bottoms should be set for different forms of cutters, and the great importance of having the Fences adjusted so that the cutters will not run.

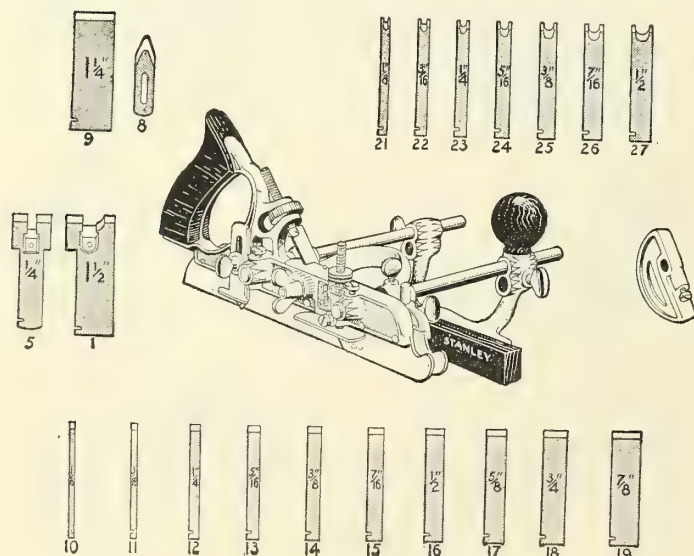
The samples of work illustrated show some of the mouldings that can be made with cutters regularly furnished with this Plane.

When it is considered that in addition to the fifty-two regular cutters and the forty-one special cutters (carried in stock), the plane will take practically any form of cutter desired, its wide range of work will be appreciated.

The Plane has a Main Stock "A", which carries the cutter adjustment, a Handle, a Depth Gauge, a Slitting Gauge, and has a steel bottom forming a bearing for one edge of the cutter. A Sliding Section "B", with a steel bottom, gives bearing for the other edge of the cutter and slides on arms secured in the Main Stock. This bottom can be raised or lowered so that, in addition to allowing the use of cutters of different widths, cutters can be used having one edge higher or lower than the edge supported in the Main Stock. An extra support or stop is necessary for cutters which first enter the wood at a point between the outside edges, and is a benefit for such cutters which, if the Plane were accidentally tilted, would tend to gouge the work. The Auxiliary Center Bottom "C", which can be adjusted for width or depth, fulfills this requirement. Fence "D" has a lateral adjustment by means of screw for extra fine work. The Fences can be used on either side of the Plane, and the rosewood guides can be tilted to any desired angle up to forty-five degrees, by loosening the screws on the face. Fence "E" can be reversed for center beading wide boards.

The Plane is fitted with Spurs for working across the grain, and a special Cam Rest, to be located on the front arm when working at a distance from the edge of the board to keep the Fence from sagging, or on the rear arm on certain work to prevent the possibility of the

Stanley. Forty-Five



Seven Tools in One. In compact and practical form. 1. Beading and Center Beading Plane. 2. Plow. 3. Dado. 4. Rabbet and Filletster. 5. Match Plane. 6. Sash Plane. 7. Slitting Plane.

The Plane has two principal parts, a main stock and a sliding section. The main stock carries the handle, cutter adjustment, a slitting tool, depth gauge, and forms a bearing for one edge of the cutter. The sliding section slides on two arms secured in the stock and has a bearing for the other edge, allowing cutters of different widths to be used. A fence also slides on these arms for use when working as a plow, beader or filletster, to gauge the distance from the cutter to the edge of the board, and to keep the cutter at right angles to same. When used as a filletster, the fence slides under the bottom of the plane and determines the width of cutter exposed to the work.

The Plane is fitted with spurs for use across the grain, etc., and can be used either right or left hand.

With each Plane are furnished twenty-one cutters, all of which are shown in the cut. The cutters, together with the Plane, are packed in a neat box.

All metal parts are nickel-plated. The handle, knob and fence are made of selected rosewood.

For beading at a distance from the edge of a board, attach cam rest (see cut at right of Plane) to the front arm between the sliding section and fence to prevent the fence sagging. In certain work attach same to the rear arm to prevent the Plane from rocking.

No. 45 Nickel-plated, with 21 cutters, weight 9½ pounds, each. \$7.00

The following cutters are furnished with each Plane. The price is given in case duplicates should be required.

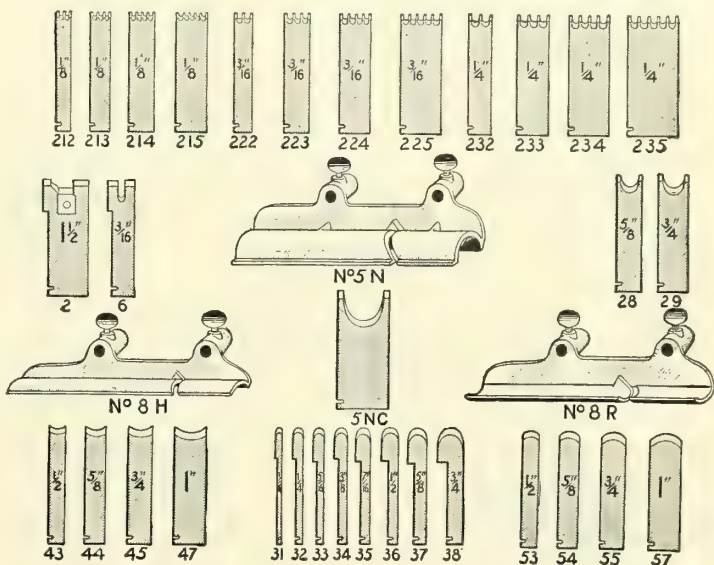
No.	Size	Style	Each	No.	Size	Style	Each
No. 1	1½-inch	Sash Tool.....	.50	No. 16	½-inch	Plow and Dado Tool.....	.20
No. 5	¼-inch	Match Tool.....	.50	No. 17	⅝-inch	Plow and Dado Tool.....	.20
No. 8		Slitting Tool.....	.30	No. 18	¾-inch	Plow and Dado Tool.....	.20
No. 9	1¼-inch	Filletster.....	.25	No. 19	⅞-inch	Plow and Dado Tool.....	.25
No. 10	⅜-inch	Plow and Dado Tool.....	.15	No. 21	⅛-inch	Beading Tool.....	.15
No. 11	⅜-inch	Plow and Dado Tool.....	.15	No. 22	⅜-inch	Beading Tool.....	.15
No. 12	¼-inch	Plow and Dado Tool.....	.15	No. 23	¼-inch	Beading Tool.....	.15
No. 13	⅝-inch	Plow and Dado Tool.....	.15	No. 24	⅜-inch	Beading Tool.....	.20
No. 14	¾-inch	Plow and Dado Tool.....	.20	No. 25	⅝-inch	Beading Tool.....	.20
No. 15	⅞-inch	Plow and Dado Tool.....	.20	No. 26	⅞-inch	Beading Tool.....	.25
				No. 27	½-inch	Beading Tool.....	.25

Planes

Stanley. Forty-Five

Special Cutters

No.	Size	Style	Each
2	1½-inch	Sash Tool	\$.50
6	⅜-inch	Match Tool	.50
28	⅝-inch	Beading Tool	.30
29	¾-inch	Beading Tool	.30
31	⅞-inch	Fluting Tool	.30
32	1-inch	Fluting Tool	.30
33	1⅛-inch	Fluting Tool	.30
34	1¼-inch	Fluting Tool	.30
35	1½-inch	Fluting Tool	.30
36	1⅞-inch	Fluting Tool	.30
37	2-inch	Fluting Tool	.30
38	2¼-inch	Fluting Tool	.30
212	⅜-inch	Reeding Tool, 2 Beads	.20
213	⅜-inch	Reeding Tool, 3 Beads	.30
214	⅜-inch	Reeding Tool, 4 Beads	.40
215	⅜-inch	Reeding Tool, 5 Beads	.50
222	⅜-inch	Reeding Tool, 2 Beads	.20
223	⅜-inch	Reeding Tool, 3 Beads	.30
224	⅜-inch	Reeding Tool, 4 Beads	.40
225	⅜-inch	Reeding Tool, 5 Beads	.50
232	¼-inch	Reeding Tool, 2 Beads	.20
233	¼-inch	Reeding Tool, 3 Beads	.30
234	¼-inch	Reeding Tool, 4 Beads	.40
235	¼-inch	Reeding Tool, 5 Beads	.50



Special Bottoms

In order to work Hollows and Rounds, or a Nosing Cutter in the No. 45 Plane, it is necessary to substitute, for the sliding section, specially formed bottoms which are called by the same name as the cutters they are designed to carry, that is: Hollows, Rounds or Nosing Tools.

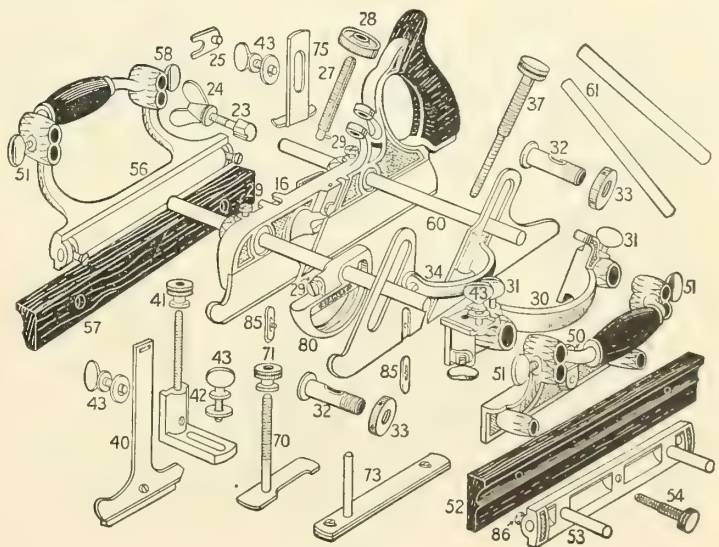
A Hollow and its cutters will form a Round on the moulding being worked. A Round and its cutters will form a Hollow. A Nosing Tool and its cutters will form what might be called an exaggerated Round. It is very largely used for shaping the edges of stair treads. Hollows and Rounds are made in four sizes and are usually sold in sets, a set comprising one Hollow, one Round and two Cutters. The price of a Nosing Tool includes one Cutter.

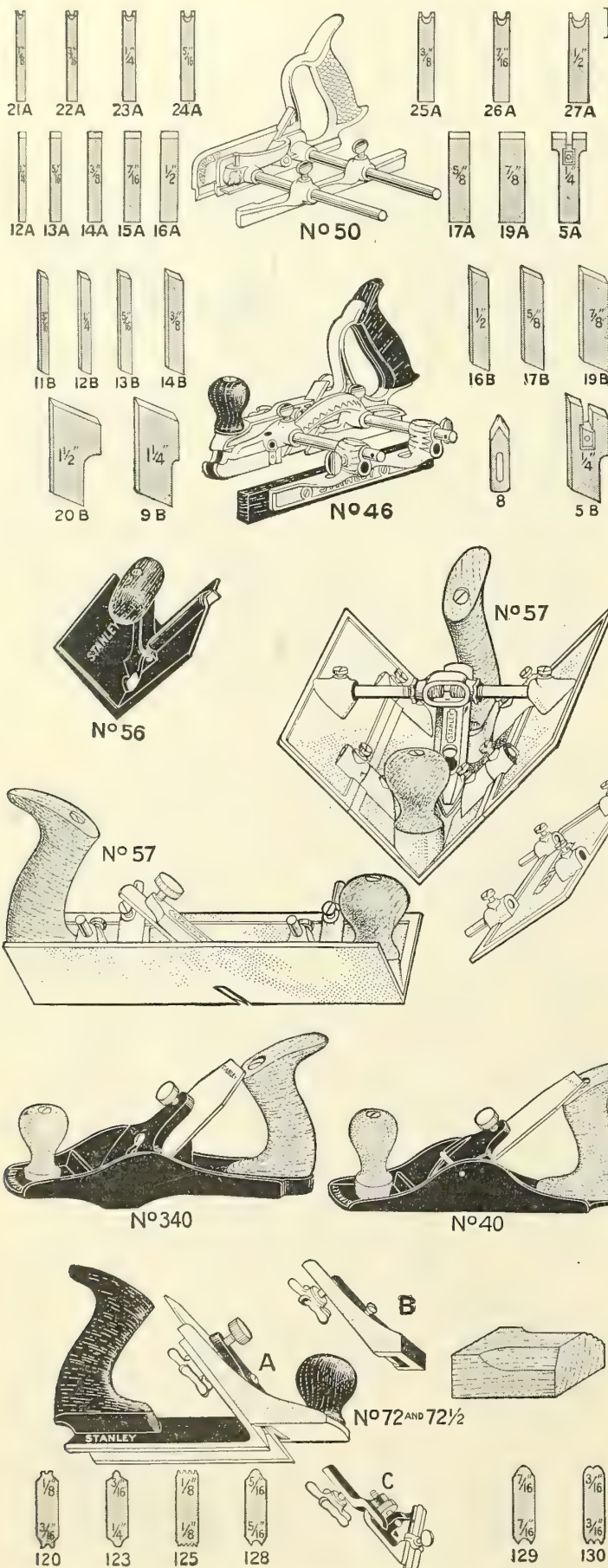
No. 6 Hollow and Round, ½-inch Cutters, work ¾-inch Circle, pair	\$1.40
No. 8 Hollow and Round, ⅝-inch Cutters, work 1-inch Circle, pair	1.40
No. 10 Hollow and Round, ¾-inch Cutters, work 1¼-inch Circle, pair	1.50
No. 12 Hollow and Round, 1-inch Cutters, work 1½-inch Circle, pair	1.50
No. 5 Nosing Tool, 1¼-inch Cutters, work 1¼-inch Circle, Each	1.00

Parts of Stanley Combination

No.	Name of Part	Plane Nos.	45	46	47	50	55	141	143	444
1	Cutters, per set		\$3.50	2.00	1.00	1.75	6.00	2.00	1.25	
16	Main Stock or Bottom		2.50	2.50	2.50	1.25	3.00	3.00	2.50	
23	Cutter Bolt		.15	.15	.15	.15	.15			
24	Cutter Bolt Wing Nut		.15	.15	.15	.15	.15			
25	Cutter Bolt Clip and Screws		.05	.05	.05	.05	.05			
27	Cutter Bolt Adjusting Screws		.10				.10			
28	Cutter Bolt Adjusting Wheel		.10				.10			
30	Sliding Section		1.50	1.50	1.50	.30	.75			
32	Thimble						.15			
33	Thimble Check Nut						.15			
34	Adjustable Bottom						1.25			
37	Adjustable Bottom Screw						.20			
40	Auxiliary Center Bottom						.30			
42	Angle Iron and Adjusting Screws						.30			
50	Left Fence		.75	.75		.75	1.35	1.00	1.00	
52	Tilting Guard Plate (Wood)						.20			
53	Tilting Iron with Swivel						.40			
54	Left Fence Adjusting Screw						.20			
56	Right Fence						1.00		1.25	
57	Right Fence Tilting Plate						.20			
60	Long Arms, per pair		.50	.50	.50	.50	.50			
61	Short Arms, per pair		.25	.25	.25	.25	.25		.25	
70	Adjustable Depth Gauge		.20	.20	.20	.20	.20			
73	Adjustable Beading Stop		.20				.30			
75	Slitting Cutter Stop		.10	.10	.10	.10	.10			
80	Cam Stop		.40				.40			
85	Spurs with Screws		.05	.05	.05	.05	.05		.05	

Screws Nos. 29, 31, 41, 43, 51, 58, 71, 76, 81 and 86, \$.10 each.





Planes Stanley Combination

The following are termed Combination Planes, as they combine different sizes of cutters in one Main Stock.

Cutters for these planes have the same numbers and prices as the No. 55 Plane cutters (see page 483). To designate the plane for which the cutters are used, a letter is added—this letter, together with number, is shown in the cuts. In ordering, specify both the number and the letter. Extra parts are priced on page 485.

Plow, Beading and Matching

This consists of a main stock, carrying a spur and a depth gauge, and forming a support for one side of the cutter; a sliding section, carrying a spur and forming a support for the other side of the cutter, and a fence with a 5-inch adjustment. The handle is metal, being a part of the main stock.

The cutters comprise 7 plow and dado bits, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ inch; 7 beading tools, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$ and $\frac{1}{2}$ inch; and a $\frac{1}{4}$ -inch tonguing tool.

Number	Length Inches	Finish	Number of Cutters	Weight Pounds	Each
50	9 $\frac{1}{4}$	Nickel-plated	15	3 $\frac{1}{2}$	\$5.00

Plow, Dado, Filletster and Matching

Skew cutters are the feature of this plane. It consists of a main stock carrying a spur, a depth gauge and a slitting cutter, a sliding section carrying a spur and forming an extra sole for the plane, and a fence (rosewood face) which can be set for either plow or filletster work. It has a rosewood handle and knob.

The cutters comprise 8 plow and dado bits, $\frac{1}{16}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $1\frac{1}{4}$ inches; a $1\frac{1}{2}$ -inch filletster cutter; a $\frac{1}{4}$ -inch tonguing tool, and a slitting cutter.

Number	Length Inches	Finish	Number of Cutters	Weight Pounds	Each
46	10 $\frac{1}{2}$	Nickel-plated	11	5 $\frac{3}{4}$	\$5.00

Stanley Core Box

These planes are designed for making circular core boxes. The principle by which this result is obtained is that only a right angle may be inscribed in a half circle. The sides of the plane are at right angles, consequently the point of the plane will always cut on the circumference of the circle when the sides rest on the edges of the cut.

To make a core box, first lay out with scratch and compass the lines to which it is desired to work. With the core box plane make a groove $\frac{1}{8}$ -inch deep, working out exactly to the guide line. This defines the edges of the cut. Next with a gouge, chisel or a plow, remove the middle portion of the core, leaving from $\frac{1}{8}$ inch to $\frac{1}{4}$ inch to be cut with the plane. By using care to see that the sides of the plane rest on both edges of the cut an accurate half circle will be planed out. These planes will make tapered core boxes as well as straight, it being merely necessary to lay out and groove to the desired taper instead of parallel.

No. 56 is especially adapted to small core boxes, working semi-circles from $\frac{3}{8}$ inch to 2 inches in diameter. The handle is made of rosewood.

No. 57 is adapted for large core boxes, and is furnished with one pair of extra sides or, as they are called, additional sections (see cut). Without sections, as shown at bottom of illustration, it will work semi-circles from 1 inch up to 2 $\frac{1}{2}$ inches in diameter. With one pair of sections (see cut at top of illustration) it will work semi-circles up to 5 inches in diameter. Additional sections can be supplied, each extra pair adding 2 $\frac{1}{2}$ inches to the diameter of the semi-circle that can be worked up to 10 inches in diameter, the practical limits of the plane. Price, per pair, \$1.00. Handle and knob of beech.

Number	Length Inches	Size of Cutter Inches	Finish	Weight Pounds	Each
56	4	$\frac{3}{8}$	Nickel-plated	2	\$2.25
57	10	$\frac{7}{8}$	Nickel-plated	6 $\frac{3}{4}$	4.40

Packed one in Box

Stanley Scrub

With these planes the user can quickly plane down to a rough dimension any board that is too wide to conveniently rip with a hand saw, an operation that is sometimes called "hogging". This is made possible by reason of the peculiar shape of the extra heavy cutter, the cutting edge of which is rounded instead of square. Handle and knob of beech.

Number	Length Inches	Size of Cutter Inches	Finish	Weight Pounds	Each
40	9 $\frac{1}{2}$	1 $\frac{1}{8}$	Japanned	2 $\frac{1}{8}$	\$1.10
40 $\frac{1}{2}$	10 $\frac{1}{2}$	1 $\frac{1}{2}$	Japanned	2 $\frac{1}{2}$	1.50

Packed one in Box.

Stanley Furring

For preparing lumber as it comes roughly sawed from the mill. The construction of the bottom is such that it will remove the fur, grit, dirt, etc., and in fact "clean up" the surface and get it ready for the bench plane quicker than any other hand tool. Handle and knob of beech.

Number	Length Inches	Size of Cutter Inches	Finish	Weight Pounds	Each
340	10	2	Japanned	2 $\frac{1}{2}$	\$1.65

Packed one in Box.

Stanley Adjustable Chamfer

This plane will do perfect chamfer or stop-chamfer work. It has a ninety degree V-bottom which acts as a mitre guide. To this is attached an adjustable front "A", having a flat bottom which carries the cutter; this front can be set for different sizes of chamfer. Front "A" can be readily detached and a bull-nose front "B" (furnished with the plane) substituted, permitting the plane to be worked close up into corners. Rosewood handle and knob.

An additional front section "C" can be substituted for either "A" or "B". This attachment together with (6) moulding cutters sharpened at both ends make possible the working of a variety of ornamental forms. With this front the plane is known as No. 72 $\frac{1}{2}$. Extra moulding cutters, \$.05 each.

Number	Length Inches	Size of Cutter Inches	Weight Pounds	Each
72	9	1 $\frac{5}{8}$	3 $\frac{3}{8}$	\$2.20
72 $\frac{1}{2}$	9	1 $\frac{5}{8}$	4 $\frac{1}{8}$	3.30

Packed one in Box.

Planes

Stanley Carriage-Makers Rabbet

Especially adapted for the heavy framing required in mining work, for carriage or wagon building, or in any work of similar nature.

They have a cutter of double type and are adjustable both endwise and sidewise. No. 10½ has all the features of Nos. 10 and 10½, and in addition both the handle and knob can be tilted to either side. This permits working close up to perpendicular sides of any height without hurting the hands of the user. It is fitted with spurs on both sides, so that it will rabbet across the grain equally as well as with it.

All have rosewood handles and knobs.

The number with a "C" designates Corrugated Bottom (see cut No. 10½C).

No. 10½ or 10½C, 9 inches long, 2⅞-inch cutter, weight 3 pounds, each..... \$2.50

No. 10 or 10C, 13 inches long, 2⅞-inch cutter, weight 4¼ pounds each..... 3.00

No. 10¼ or 10¼C, 13 inches long, 2⅞-inch cutter, weight 4¼ pounds, each..... 3.50

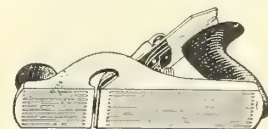
Packed one in Box.



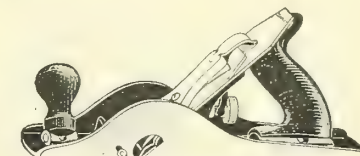
No. 10½



No. 10



No. 10½ C



No. 10¼

Adjustable Circular

Have flexible steel faces which can be accurately adjusted for planing the inside or outside of circles. The cutters are the same as in "Bailey" and "Bed Rock" Planes.

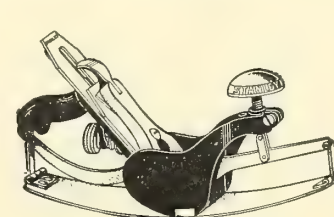
Stanley

The face is fastened at its center to the Plane Body, and adjusted at the ends by means of a screw and levers.

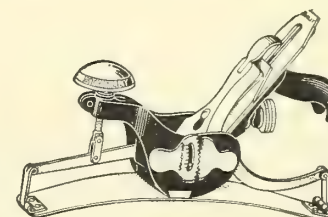
Has graduated scale for setting the face,

No. 113 Japanned, 10 inches long, 1¾-inch cutter, weight 3½ pounds, each..... \$3.00

Packed one in Box.



No. 113



No. 113

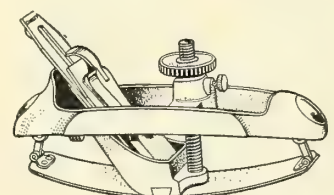
Victor

The face is fastened at each end to the Plane Body, and adjusted by a screw at the center. This construction gives great strength and accuracy.

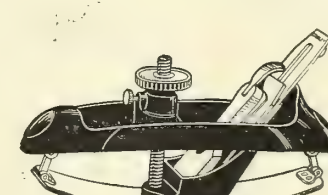
No. 20 Nickel-plated, 10 inches long, 1¾-inch cutter, weight 4 pounds, each..... \$4.10

No. 20½ Japanned, 10 inches long, 1¾-inch cutter, weight 4 pounds, each..... 3.50

Packed one in Box.



No. 20



No. 20½

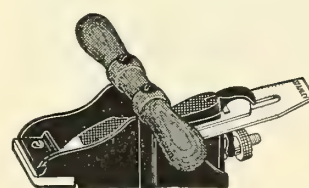
Stanley Floor and Belt Makers

Belt Makers

Designed for chamfering down the ends or laps of a belt before fastening them together. Largely used by belt manufacturers; also a valuable tool for all users of belting, enabling them to make repairs that otherwise would require that the belt be sent to the makers.

No. 11 5¾ inches long, 2⅜-inch cutter, Japanned, weight 3½ pounds, each..... \$2.20

Packed one in Box.



No. 11



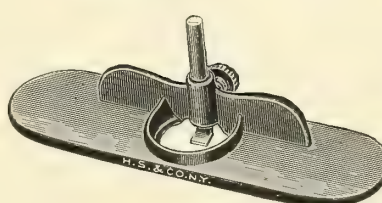
No. 11½

Special Floor

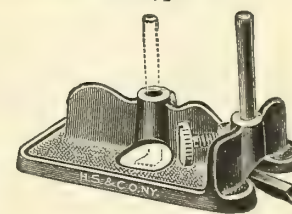
This Plane is fitted with an adjustable throat, permitting a wide or narrow mouth, according as coarse or fine work requires. It is designed for working from a kneeling position

No. 11½ 7 inches long, 2⅜-inch cutter, Japanned, weight 3¾ pounds, each..... \$3.15

Packed one in Box.



No. 1



No. 73

Pattern Makers Routers

B. M. Co.

No. 1 ⅜-inch cutter, each..... \$1.00

Sargent

Provided with two seats for the cutter, one in center with closed throat, other at end with open throat.

No. 73 ¼-inch cutter, each..... \$.50

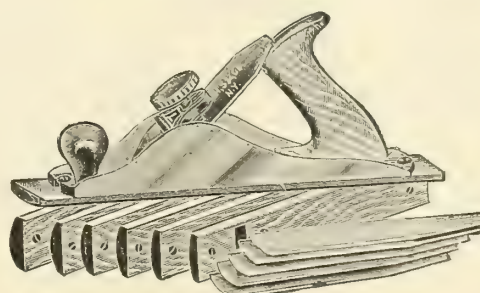
Pattern Makers Sole

Simplex

Covers the requirements of pattern makers and woodworkers who have coved or hollow work to finish.

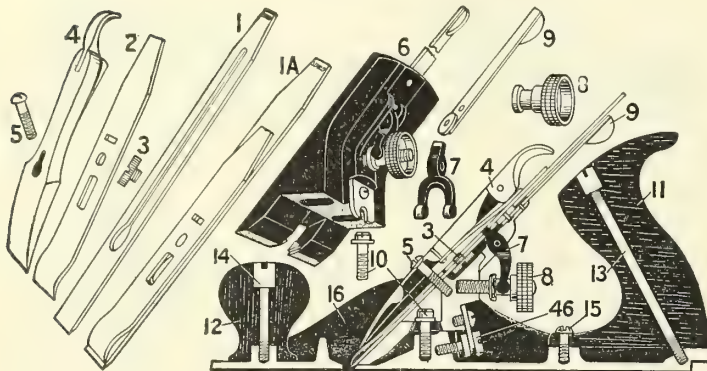
The faces or soles are made of finest seasoned beech and are 13 inches long, 2¼ inches wide and ⅝-inch thick. Six soles are furnished with each plane, rounded to circles of 4, 6, 9, 12, 16 and 20 inches diameter, each sole being stamped with the size. A flat face may be added and the plane used as an ordinary jack plane. Lightly made of cast iron, with steel cutters, 1¾ inches wide.

Complete, with 6 Soles, each..... \$6.50



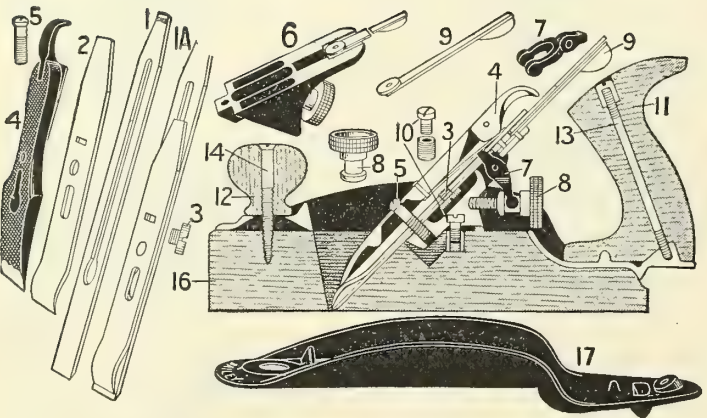
No. 00

Plane Parts



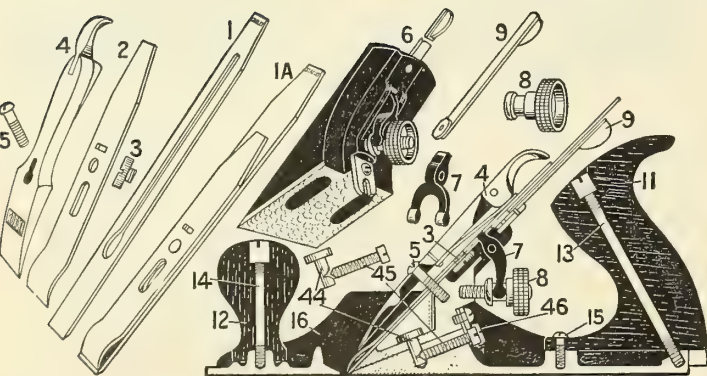
Bailey Iron

No.	Name of Part	No. of Plane	1	2	3	4	4½	5	5½	6	7	8
			2C	3C	4C	4½C	5C	5½C	6C	7C	8C	
1A	Double Plane Iron....		\$.32	.35	.38	.42	.48	.42	.47	.48	.48	.50
1	Single Plane Iron....		.18	.21	.23	.25	.29	.25	.28	.29	.29	.32
2	Plane Iron Cap....		.14	.14	.15	.17	.19	.17	.19	.19	.19	.18
3	Cap Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
4	Lever Cap....		.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
5	Lever Cap Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete....		.35	.35	.35	.35	.35	.35	.35	.35	.35	.35
7	"Y" Adjusting Lever....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
8	Adjusting Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adj. Lever....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
10	Frog Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
11	Plane Handle....		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
12	Plane Knob....		.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
13	Handle Bolt and Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
14	Knob Bolt and Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
15	Plane Handle Screw....						.05	.05	.05	.05	.05	.05
16	Plane Bottom....		.65	.85	1.00	1.00	1.20	1.20	1.20	1.65	2.35	2.85
46	Frog Adj. Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05



Bailey Wood

No.	Name of Part	No. of Plane	21	24	22	25	23	35	26	27	27½	28	30	32	33	34	36	37
1A	Double Plane Iron....		\$.38	.42	.42	.45	.47	.48	.48	.50	.48	.48	.50	.48	.50	.48	.50	.50
1	Single Plane Iron....		.23	.25	.25	.27	.28	.29	.29	.32	.29	.32	.29	.32	.29	.32	.29	.32
2	Plane Iron Cap....		.15	.17	.17	.18	.19	.19	.19	.18	.19	.18	.19	.18	.19	.18	.19	.18
3	Cap Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
4	Lever Cap....		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
5	Lever Cap Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete....		.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
7	"Y" Adjusting Lever....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
8	Adjusting Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adj. Lever....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
10	Frog Screw and Bush'g....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
11	Plane Handle....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
12	Plane Knob....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
13	Handle Bolt and Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
14	Knob Bolt and Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
16	Plane Bottom....		.40	.40	.50	.50	.50	.70	.80	.85	.50	.70	.80	.85	.50	.70	.80	.85
17	Top Casting....		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20



Bed Rock

No.	Name of Part	No. of Plane	602	603	604	604½	605	605½	606	607	608	608
			"C	"C	"C	"C	"C	"C	"C	"C	"C	"C
1A	Double Plane Iron....		\$.35	.38	.42	.48	.42	.47	.48	.48	.50	.50
1	Single Plane Iron....		.21	.23	.25	.29	.25	.28	.29	.29	.32	.32
2	Plane Iron Cap....		.14	.15	.17	.19	.17	.19	.19	.19	.18	.18
3	Cap Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
4	Lever Cap....		.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
5	Lever Cap Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete....		.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
7	"Y" Adjusting Lever....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
8	Adjusting Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adj. Lever....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
11	Plane Handle....		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
12	Plane Knob....		.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
13	Handle Bolt and Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
14	Knob Bolt and Nut....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
15	Plane Handle Screw....					.05	.05	.05	.05	.05	.05	.05
16	Plane Bottom....		1.10	1.25	1.25	1.50	1.50	1.60	2.20	3.10	3.50	3.50
44	Frog Pin....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
45	Frog Clamping Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
46	Frog Adjusting Screw....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05

NOTE—In several of the Planes, the Parts designated by the same name differ in form.

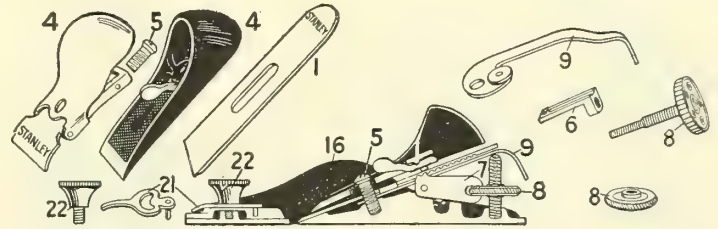
In these cases the corresponding Parts are given the same number, and when the Part is not shown directly opposite the number of the Plane the illustration will be found in another place.

Always give Plane number and Part number when ordering Cutters or parts.

Plane Parts

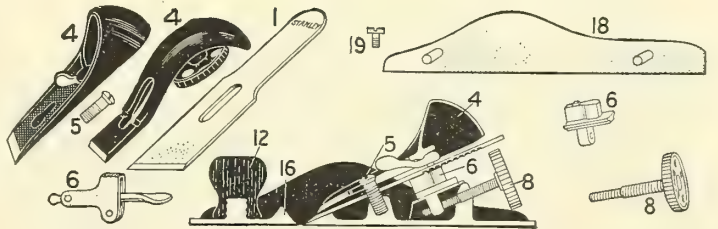
Bailey and Stanley Block

No.	Name of Part	No. of Plane	9½	15	16	18	19	60	60½	61	65	65½
1	Single Plane Iron.....		\$.17	.17	.17	.17	.17	.17	.17	.17	.17	.17
4	Lever Cap.....		.10	.10	.15	.20	.20	.15	.10	.15	.15	.10
5	Lever Cap Screw.....		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete.....		..	..	..	..	..	.10	.10	.10	.10	.10
7	Adjusting Lever.....		.05	.05	.05	.05	.05	..	..	..	..	..
8	Adjusting Nut.....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adjusting Lever		.10	.10	.10	.10	.10	..	..	..	..	..
11	Plane Handle.....		.25	.25	..	..	..	..	..	..	..	..
16	Plane Bottom.....		.70	.75	.75	.70	.75	.60	.60	.40	.75	.75
21	Eccentric Plate.....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
22	Finger Rest Knob.....		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10



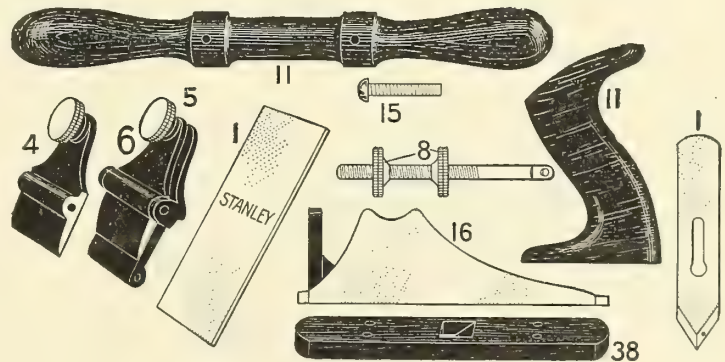
Stanley Block

No.	Name of Part	No. of Plane	100	101	102	103	110	120	130	131	140	203	220
1	Single Plane Iron.....		\$.05	.10	.10	.13	.17	.13	.17	.20	.20	.17	.17
4	Lever Cap.....		.05	.10	.10	.10	.10	.10	.10	.15	.10	.10	.10
5	Lever Cap Screw.....		..	..	..	..	..	..	.05	.05	.05	.05	.05
6	Frog Complete.....		..	..	..	..	.15	..	.15	.10	.10	.10	.10
8	Adjusting Nut.....		..	..	..	..	..	..	.10	.10	.10	.10	.10
12	Plane Knob.....		..	..	..	.10	.10	.10	.15	.15	.10	.10	.10
16	Plane Bottom.....		.10	.15	.20	.25	.30	.35	.70	.75	.25	.30	.30
18	Detachable Side.....		..	..	..	..	..	..	..	.25	..	..	..
19	Side Screw (Pair).....		..	..	..	..	..	..	..	.10	..	..	..



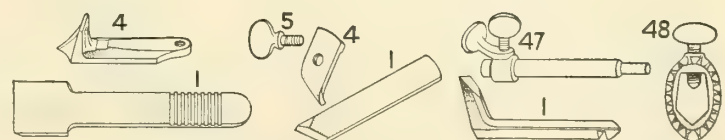
Stanley Scraper and Chamfer

No.	Name of Part	No. of Plane	12	12½	12¼	112	212	85	87	56	57	72	72½
1	Single Plane Iron.....		\$.20	.20	.20	.20	.20	.20	.25	.30	.20	.20	.20
4	Lever Cap.....		.25	.25	.20	.10	.20	.20	.15	.15	.10	.10	.10
5	Lever Cap Screw.....		..	..	..	..	..	..	.05	.05	.05	.05	.05
6	Frog Complete.....		.60	.70	.35	.10	.30	.30	..	..	..	..	..
8	Adjusting Nut.....		.10	.10	.10	..	..	..	..	..	..	..	..
10	Frog Screw.....		..	..	..	..	.05	.05	..	..	..	..	..
11	Plane Handle.....		.50	.50	.20	..	.25	.20	.20	.10	.30	.30	.30
12	Plane Knob.....		..	..	.15	.20	.20	.20	..	.10	.15	.15	.15
13	Handle Bolt and Nut.....		..	..	.10	..	.10	.10	..	.10	.10	.10	.10
14	Knob Bolt and Nut.....		..	..	.10	.10	.10	..	..	.10	.10	.10	.10
15	Plane Handle Screw.....		.05	.05	..	..	..	..	..	..	..	..	..
16	Plane Bottom.....		1.20	.80	1.20	.60	1.00	.80	1.00	2.50	1.50	1.50	1.50
38	Extra Wood Bottom.....		.50	..	..	..	..	..	..	..	..	..	..



Stanley Rabbet and Router

No.	Name of Part	No. of Plane	90	92	93	94	196	98	99	71	71½	75	95
1	Single Plane Iron.....		\$.30	.30	.30	.25	.20	.20	.30	.30	.30	.20	.20
4	Lever Cap.....		.15	.15	.15	.10	.10	.10	.10	..	..	.10	.10
12	Plane Knob.....		..	..	..	..	.15	.15	.15	.15	..	..	..
14	Knob Bolt and Nut.....		..	..	..	..	..	..	..	..	..	.10	.10
16	Plane Bottom.....		1.75	2.10	2.50	1.20	.60	.60	1.00	1.00	.30	.80	.80
27	Cutter Bolt Adj. Screw.....		.20	.20	.20	..	..	..	..	..	..	..	..
47	Extra Attachment.....		..	..	..	..	..	..	..	.25	..	..	..
48	Collar.....		..	..	..	..	..	..	..	.25	.25	..	..

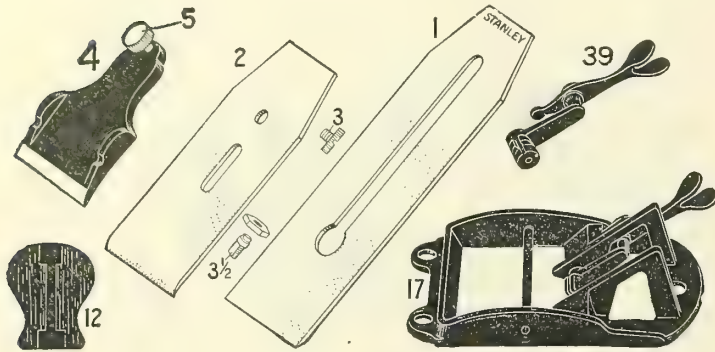


Note—In several of the Planes, the Parts designated by the same name differ in form.

In these cases the corresponding Parts are given the same number; and when the part is not shown directly opposite the number of the Plane, the illustration will be found in another place.

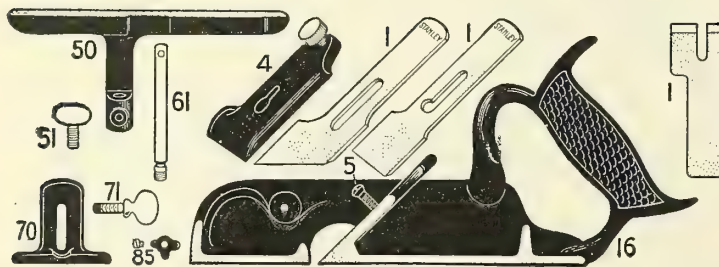
Always give Plane number and Part number when ordering Cutters or parts.

Plane Parts



Stanley Lever Adjustment and Special

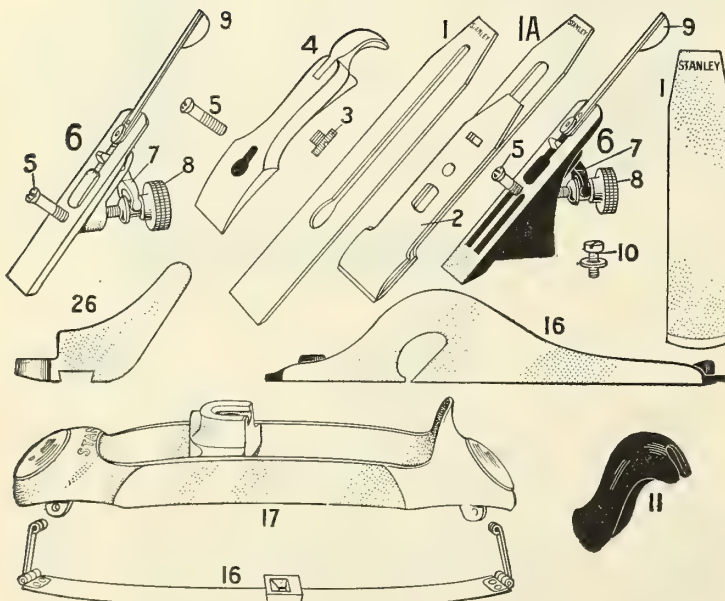
No.	Name of Part	No. of Plane	104	105	122	127	129	132	135	340	62	97
1A	Double Plane Iron...		\$.45	.45	.38	.45	.48	.50	.45			
1	Single Plane Iron...		.27	.27	.23	.27	.29	.32	.27	.30	.30	.45
2	Plane Iron Cap...		.18	.18	.15	.18	.19	.18	.18			
3	Cap Screw...		.05	.05	.05	.05	.05	.05	.05			
3½	Adj. Stud and Nut...		.05	.05	.05	.05	.05	.05	.05			
4	Lever Cap...		.10	.10	.10	.10	.10	.10	.10	.10	.15	.15
5	Lever Cap Screw...									.05	.05	.05
11	Plane Handle...		.20	.20		.10	.10	.10	.10	.10	.30	
12	Plane Knob...		.15	.15	.10	.10	.10	.10	.10	.15	.15	.15
13	Handle Bolt and Nut...		.10	.10		.10	.10	.10	.10	.10	.10	
14	Knob Bolt and Nut...		.10	.10						.10	.10	.10
15	Plane Handle Screw...					.05	.05	.05	.05			
16	Plane Bottom...		.85	1.35	.40	.45	.70	.85	.40	.80	1.75	1.00
17	Top Casting...				.30	.30	.30	.30				
21	Eccentric Plate...										.10	
22	Finger Rest Knob...										.25	
39	Lever Adjustment...		.20	.20	.20	.20	.20	.20				



Stanley Rabbet, Matching and Dado

No.	Name of Part	No. of Plane	39	48	49	78	289	146	147	171	180 to 182	190 to 192
1	Single Plane Iron...		\$.20	.20	.20	.20	.30	*.65	*.65	*.40	.20	.20
4	Lever Cap...		.10	.10	.10	.10	.10	.15	.15		.10	.10
16	Plane Bottom...		1.20	1.20	2.00	1.00	1.20	1.50	1.50	.90	.75	.90
51	Fence...		.50	.50	.25	.20				.30		
50	Fence...				.05	.05				.05		
61	Short Arm...				.10	.10				.20		
70	Adj. Depth Gauge...		.20			.20	.20				.20	.20
71	Depth Gauge Th. Sc'w...		.10			.10	.10				.10	.15
85	Spurs with Screws...		.10			.05	.05					.05

*Set



Stanley Carriage, Circular and Scrub

No.	Name of Part	No. of Plane	10 10C	10½ 10¼	11 “ C	20 11½	40 20½	51 40½	74 51
1A	Double Plane Iron....	\$.45	.45	.45	.48	.38	.38	..	.48
1	Single Plane Iron....	.27	.27	.27	.29	.23	.23	.20	.29
2	Plane Iron Cap....	.18	.18	.18	.19	.15	.15	..	.19
3	Cap Screw.....	.05	.05	.05	.05	.05	.05	..	.05
4	Lever Cap.....	.25	.25	.25	.25	.25	.25	.10	.25
5	Lever Cap Screw....	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete....	.35	.35	.35	.35	.35	.35	..	.35
7	"V" Adjusting Lever..	.05	.05	.05	.05	.05	.05	..	.05
8	Adjusting Nut.....	.10	.10	.10	.10	.10	.10	..	.10
9	Lateral Adj. Lever....	.10	.10	.10	..	.10	..	..	.10
10	Frog Screw.....	.05	.05	.05	.05	.05	.05	..	.05
11	Plane Handle.....	.20	.40	.20	.30	..	..	.10	.10
12	Plane Knob.....	.15	.30	.15	..	..	..	.10	.15
13	Handle Bolt and Nut..	.10	.10	.10	..	..	..	.10	.10
14	Knob Bolt and Nut....	.10	.10	.10	..	..	..	.10	.10
16	Plane Bottom.....	1.65	1.50	1.50	1.30	.60	.60	.70	1.00
17	Top Casting.....	..	..	..	..	1.00	1.50	..	3.00
26	Frog Seat.....	..	..	..	..	..	.50	..	2.20
35	Bottom Adj. Screw....	..	..	..	..	.50	.25	..	..
36	Bottom Adj. Nut.....	..	..	..	..	..	.25	..	..

Note—In several of the Planes, the Parts designated by the same name differ in form. In these cases the corresponding Parts are given the same number; and when the Part is not shown directly opposite the number of the Plane, the illustration will be found in another place. Always give Plane number and Part number when ordering Cutters or parts.

Adjustable Iron Planes

Sargent

Bench

With Patent Frog—Adjustable Without Removing Cutter
Frog Adjustment

Fine work requires a very narrow opening between the front of the mouth and the cutting edge of the cutter. Coarse work requires support close to the cutting edge of the cutter to prevent chattering. By this improved construction, the frog with the cutter still clamped in position on it may be adjusted forward for fine work or backward for coarse work, and at all times it is so supported as to prevent chattering. The frog is moved forward or backward on a line parallel with the base so that no adjustment of the cutter is required after the frog adjustment has been made.

The clamp and cutter may be left fastened to the frog while the adjustment is being made.

Solid—Rigid—Firm

These Planes have the double seat, giving two points of contact of the bottom of the frog with the bed or bottom of plane. At these points both the frog and the bed are profiled or milled, insuring accuracy of fit and a solid, firm seating of the frog on the bed.

All cutters are made from the best double refined English cast steel, tempered by the very best improved process, then highly polished and sharpened ready for use, and are warranted. A slightly heavier cutter is used to avoid the vibration which may occur on spring cap planes

Polished Trimmings, East India Mahogany Handle and Knob

With patent side adjustment, for exact adjusting of the cutter with the face of the plane

Smooth Bottom Number	Corrugated Bottom Number		Each
7	7C	Smooth, 7 inches, 1 $\frac{5}{8}$ -inch cutter	\$3.00
8	8C	Smooth, 8 inches, 1 $\frac{3}{4}$ -inch cutter	3.30
9	9C	Smooth, 9 inches, 2-inch cutter	3.60
10	10C	Smooth, 10 inches, 2 $\frac{3}{8}$ -inch cutter	4.25
Jack, Fore and Jointer			
14	14C	Jack, 14 inches, 2-inch cutter	4.25
15	15C	Jack, 15 inches, 2 $\frac{1}{4}$ -inch cutter	4.60
18	18C	Fore, 18 inches, 2 $\frac{3}{8}$ -inch cutter	5.25
22	22C	Jointer, 22 inches, 2 $\frac{3}{8}$ -inch cutter	6.10
24	24C	Jointer, 24 inches, 2 $\frac{5}{8}$ -inch cutter	7.25

Automatic Setting

The frog is very rigid and the frog and bed at the mouth are in alignment so that the cutter has an even bearing down to the bevel of the cutter. Combines solidity, compactness and simplicity. The meeting surfaces of the frog and bed are all machined so that the fit is absolute.

The Sheffield Steel Cutter requires no cap, as the clamp acts as a breaker for the chip. The clamp is adjustable for fine or coarse work by means of a thumb-screw which permits a quick and accurate adjustment. When the clamp has been adjusted to the proper position, it will remain in this position without change until the adjusting screw has been regulated, even when the clamp and cutter have been taken out and replaced. In this way the cutter may be sharpened without the necessity of readjusting the clamp. This saves time and insures that the clamp is in the proper position at all times.

Lateral adjustment may be secured without removing the hand from the handle and the vertical adjustment, obtained through a direct-acting thumb-screw at the back of cutter, is positive and rapid.

Intended for both heavy and very fine cuts. Is especially adapted for working against the grain on cross-grained hardwood where the absolute rigidity of the cutter avoids any tendency to chatter.

Polished Trimmings, East India Mahogany Handle and Knob

Smooth Bottom Number	Corrugated Bottom Number		Each
707	707C	Smooth, 7 inches, 1 $\frac{5}{8}$ -inch cutter	\$3.25
708	708C	Smooth, 8 inches, 1 $\frac{7}{8}$ -inch cutter	3.50
710	710C	Smooth, 10 inches, 2-inch cutter	4.00
714	714C	Jack, 14 inches, 2 $\frac{1}{8}$ -inch cutter	4.50
718	718C	Fore, 18 inches, 2 $\frac{1}{2}$ -inch cutter	5.50
722	722C	Jointer, 22 inches, 2 $\frac{1}{2}$ -inch cutter	6.50

Block, Knuckle-Joint

Screw adjustment and adjustable mouth. Patent side adjustment for exact adjusting of the cutter with the face of the plane. All steel non-breakable clamp.

Nickel-Plated Trimmings

No.	Each
No. 5306. 6 inches, 1 $\frac{5}{8}$ -inch cutter	\$1.85
No. 5307. 7 inches, 1 $\frac{5}{8}$ -inch cutter	1.95

Block

Screw adjustment and adjustable mouth. Patent side adjustment for exact adjusting of the cutter with the face of the plane.

Nickel-Plated Trimmings

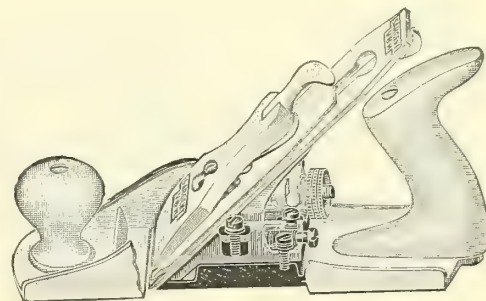
No.	Each
No. 1306. 6 inches, 1 $\frac{5}{8}$ -inch cutter	\$1.75
No. 1307. 7 inches, 1 $\frac{5}{8}$ -inch cutter	1.85

Low-Angle Block

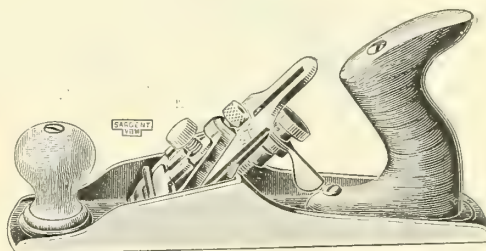
No.	Each
No. 1606. 6 inches, 1 $\frac{3}{8}$ -inch cutter	1.90
No. 1607. 7 inches, 1 $\frac{5}{8}$ -inch cutter	2.10

Polished Trimmings, East India Mahogany Handle and Knob

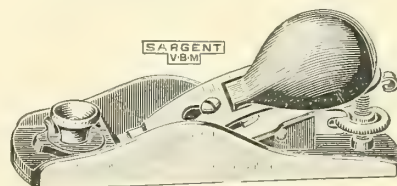
No. 514. 14 inches, 2-inch cutter, each	4.30
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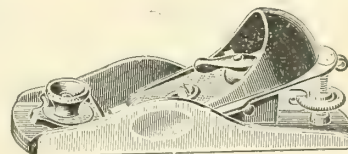
Sectional View of the Improved Iron Bench Plane Showing: Position of Parts



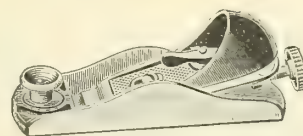
No. 710



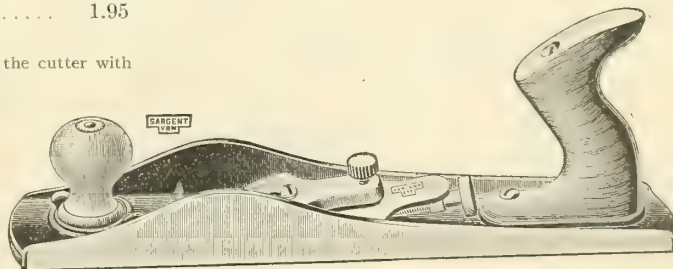
Nos. 5306 and 5307



Nos. 1306 and 1307



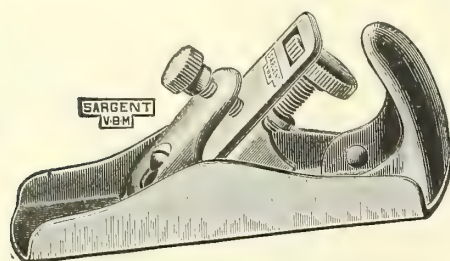
Nos. 1606 and 1607



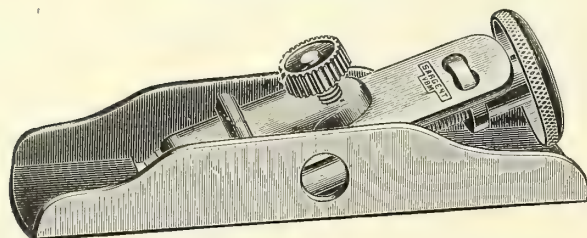
No. 514

Adjustable Planes

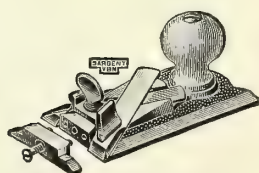
Sargent All Steel Block



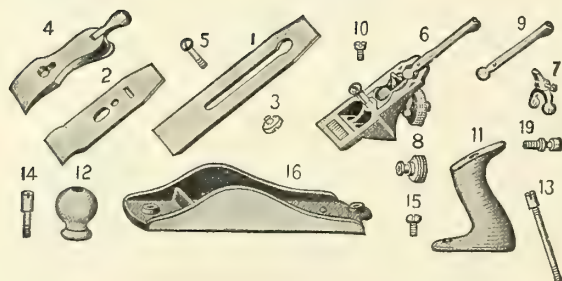
No. 2204, Polished



No. 5206, Nickel-plated



No. 81



Light, unbreakable and indestructible; owing to their shape and size they may be readily carried in the pocket of a carpenter's apron; they are particularly desirable for use in work on scaffoldings, etc. No. 2204 is especially suitable for pattern-makers' use.

Mechanics will find them substantial, serviceable and handy; they are also particularly suitable for amateur work at home.

The clamp is especially powerful owing to the screw construction which takes the place of the cam generally used on block planes. This is indicated by the fact that it is necessary to loosen the clamp screw before making the lateral or up and down adjustment. The side adjustment may be made by moving the cutter with the fingers.

Rapid up and down adjustment obtained by the screw in the rear. The head of this screw is made to serve as a handle.

Highly Polished

No. 2204. 4 1/4 inches, 1 1/8-inch cutter, each \$1.00

Low Angle, Nickel-plated

No. 5206. 6 inches, 1 5/8-inch cutter, each \$2.00

Sargent Double Side Rabbet

Very convenient for side-rabbeting in trimming dados, mouldings and grooves of all sorts. A removable nose-piece gives the tool a form whereby it will work close up into corners when required. They have East India mahogany knob, and are nickel-plated. Having double blades, may be used either right or left hand.

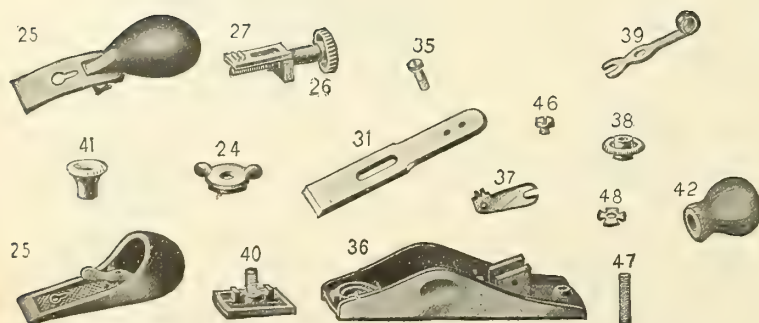
No. 81. 4 1/4 inches long, two 1/2-inch cutters. Each \$1.90
Packed one in box.

Parts For Sargent Bench Planes

Number of Part	For Planes Nos.	7, 7C Each	8, 8C Each	9, 9C 14, 14C Each	10, 10C 15, 15C 18, 18C 22, 22C Each	24, 24C Each
1	Single Steel Cutter.	\$.33	.35	.40	.45	.50
2	Cap for Single Steel Cutter . . . . .	.22	.25	.25	.30	.30
1 and 2	Double Steel Cutter . . . . .	.55	.60	.65	.75	.80
3	Cap Screw . . . . .	.08	.08	.08	.08	.08
4	Clamp . . . . .	.40	.40	.40	.40	.40
5	Clamp Screw . . . . .	.06	.06	.06	.06	.06
6	Frog Complete . . . . .	.55	.55	.55	.55	.55
7	Fork Adjustment . . . . .	.15	.15	.15	.15	.15
8	Brass Adjusting Nut . . . . .	.18	.18	.18	.18	.18
9	Lateral Adjustment . . . . .	.15	.15	.15	.15	.15
10	Frog Screw . . . . .	.06	.06	.06	.06	.06
11	Handle . . . . .	.30	.30	.30	.30	.30
12	Knob . . . . .	.23	.23	.23	.23	.23
13	Handle Bolt . . . . .	.20	.20	.20	.20	.20
14	Knob Bolt . . . . .	.20	.20	.20	.20	.20
15	Handle Screw . . . . .	..	..	..	.06	.06
16	Bottom	1.35	1.60	1.60	1.90	4.50
19	Adjusting Screw . . . . .	.06	.06	.06	.06	.06

Parts For Sargent Block Planes

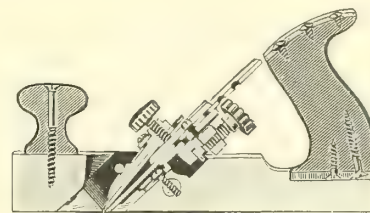
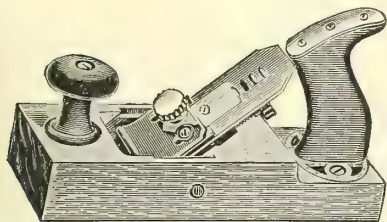
Number of the Part	For Planes Nos.	1306 5306 Each	1307 5307 Each	1606 Each	1607 Each
24	Cam	\$.10	.10	.10	.10
25	Clamp . . . . .	.30	.30	.30	.30
26	Adjusting Screw . . . . .	..	..	.15	.15
27	Slide . . . . .	..	..	.10	.10
31	Steel Cutter . . . . .	.25	.25	.25	.25
35	Clamp Screw . . . . .	.05	.05	.05	.05
36	Bottom	1.10	1.20	1.10	1.20
37	Adjusting Lever . . . . .	.08	.08	..	..
38	Adjusting Nut . . . . .	.15	.15	..	..
39	Lateral Adjustment . . . . .	.15	.15	..	..
40	Mouth Piece . . . . .	.15	.15	.15	.15
41	Knob . . . . .	.15	.15	.15	.15
46	Fillister Head Screws . . . . .	.05	.05	..	..
47	Headless Machine Screw . . . . .	.05	.05	..	..



In ordering specify the number of the Part and the number of the Plane for which the part is wanted

Self-Setting Planes

Gage



Are self-setting in every respect, and can be perfectly set for the finest work without difficulty; the bit simply dropped into position sets the plane with the most minute accuracy.

When properly adjusted, they cannot be set wrong. The cap and cutter may be removed, replaced and accurately set in five seconds, by actual trial; this alone would save many days in the course of a year usually spent in setting the cutter.

The adjustment is such that the cutting-iron may be set square with the face of the plane, even if the cutter is not ground square with itself.

The throat is prevented from wear by being within the adjustable iron bit-holder, which extends through the plane.

The cap is not attached to the cutter, but remains stationary while the cutter is moved up or down by a thumb-screw; thus even while at work the thickness of the cut can be changed by a simple movement of the thumb and finger.

This tool can be changed from a double to a single iron, or from a single to a double iron plane, in two seconds.

	Each
No. 2 Smooth Plane, 10 inches long, 1 $\frac{3}{4}$ -inch cutter.....	\$3.00
No. 4 Smooth Plane, 10 inches long, 2-inch cutter.....	3.25
No. 4 $\frac{1}{2}$ Smooth Plane, 10 $\frac{1}{2}$ inches long, 2 $\frac{1}{4}$ -inch cutter.....	3.50
No. 7 Jack Plane, 14 inches long, 1 $\frac{3}{4}$ -inch cutter.....	3.25
No. 11 Jack Plane, 16 inches long, 2-inch cutter.....	3.50
No. 12 Fore Plane, 18 inches long, 2-inch cutter.....	3.75
No. 16 Fore Plane, 20 inches long, 2 $\frac{1}{4}$ -inch cutter.....	4.00
No. 17 Jointer Plane, 22 inches long, 2 $\frac{1}{4}$ -inch cutter.....	4.25
No. 21 Jointer Plane, 24 inches long, 2 $\frac{1}{2}$ -inch cutter.....	4.50

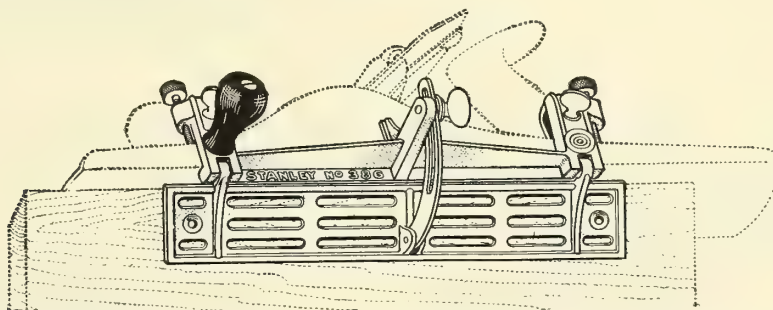
Extra Parts

Inches.....	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$
Cutters, each.....	\$.45	.50	.55	.60
Cutter Cap, each.....	.25	.25	.30	.30

Handle, fitting all sizes, each 45 cents
Knob, fitting all sizes, each 20 cents

Jointer Gauges

Stanley

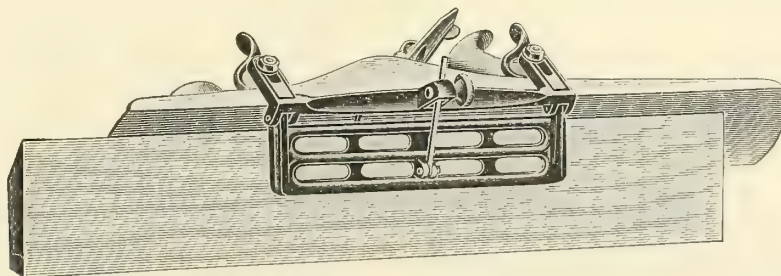


Designed for use in connection with all sizes of Iron, Jack or Jointer Planes. It will enable the workman to plane bevels of any angle between 30 and 90 degrees, or to square up the edges of boards with extreme accuracy. All joints and bearing surfaces are machined. The method of attaching to a Plane is such as to insure its being abso-

lutely rigid when in use, and it is so constructed that it may be attached to either side of the Plane. The wooden knob can be placed at either end of the Gauge. A hole is bored in each end of the Gauge so that a wood face of any desired size may be attached.

No. 386 Nickel-plated, weight 2 pounds, each..... \$1.75

Perfection



Made of iron, black enameled, except some of the smaller parts, which are polished and nicked.

Instantly attached to iron planes of all sizes by adjustable cams and to wood planes with ordinary wood screws.

May be adjusted for planing square or on a bevel.

Each..... \$1.50

Packed one in a pasteboard box.

Suggestions for Grinding Plane Cutters

Many of the complaints about poorly cutting planes are due to improper grinding of the cutters. The bevel should always be at an angle of 25 degrees, which means that it must be exactly twice as long as the cutter is thick.

We are informed by the Stanley Rule and Level Co., that this rule

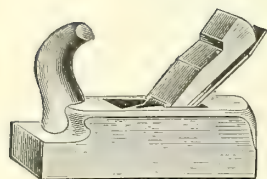
applies to every plane they make and that they believe the rule is a universal one, applying to every plane that is made.

Before condemning any plane, therefore, carefully measure and compare the bevel of cut and thickness of cutter. If the bevel is too long, the plane will "jump and chatter." If too short, it will not cut.

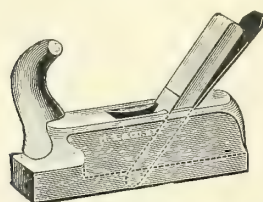
Wooden Bench Planes

H. S. & Co. Extra Quality

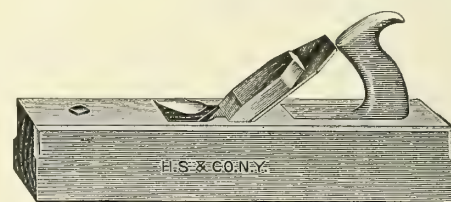
Cutters Sharpened Ready for Use



Horn Smooth

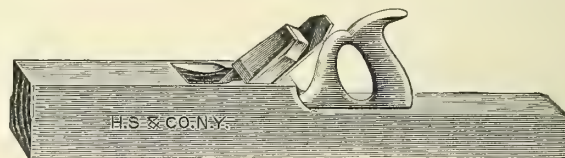


Horn Shrup

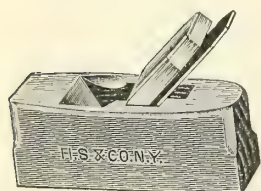


- No. 301 Horn, smooth. Red beech. $8\frac{1}{2}$ inches long. With double $1\frac{3}{4}$, $1\frac{7}{8}$, 2 or $2\frac{1}{8}$ -inch Buck Bros. Cutter. Warranted. Each..... \$1.50
- No. 401 Horn, smooth. White German beech. $8\frac{1}{2}$ inches long. With Double Cutter.
- $1\frac{7}{8}$ inch, each..... 1.80
- 2 inch, each..... 2.00
- $2\frac{1}{8}$ inch, each..... 2.10
- No. 303. Horn, shrup. Red beech. $8\frac{1}{2}$ inches long. With $1\frac{1}{4}$, $1\frac{3}{8}$ or $1\frac{1}{2}$ -inch Buck Bros. Round Nose Cutter. Warranted. Each..... 1.05
- No. 402 Horn, Shrup. White German beech. 9 inches long. With single Round Nose Cutters. $1\frac{3}{8}$ inch, each..... 1.20
- $1\frac{1}{2}$ inch, each..... 1.30

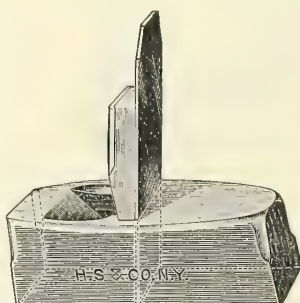
- No. 306 Jack. Red beech. 16 inches long, with double $2\frac{1}{8}$ or $2\frac{1}{4}$ -inch Buck Bros. Cutter. Warranted. Each..... \$1.50
- No. 403 Jack. White German beech. 16 inches long. With double $2\frac{1}{8}$ and $2\frac{1}{4}$ -inch Cutter. Each..... 2.60



- No. 312 Jack. Razee (or Recess) Red beech. 16 inches long, 2-inch Cutter. Buck Bros. Double Cutter. Warranted. Each..... \$1.75

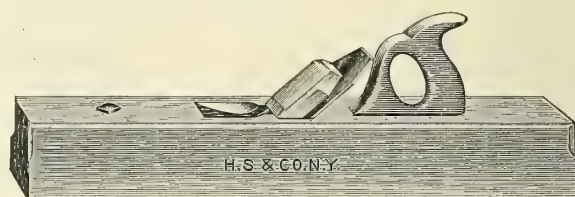


Double Smooth

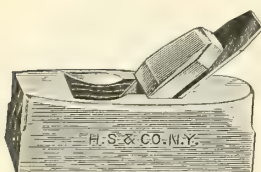


Single Tooth

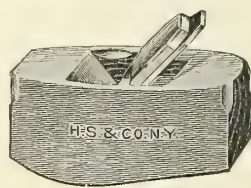
- No. 304 Smooth. Red beech. $7\frac{1}{4}$ to 8 inches long. With double $1\frac{3}{4}$, $1\frac{7}{8}$, 2, $2\frac{1}{8}$ or $2\frac{1}{4}$ -inch Buck Bros. Cutter. Warranted. Each..... \$1.35
- No. 404 Smooth. White German beech. 8 inches long. With double 2-inch cutter. Each..... 2.00
- No. 302 Tooth. Red beech. $6\frac{5}{8}$ inches long. With single $1\frac{7}{8}$, 2, $2\frac{1}{8}$ or $2\frac{1}{4}$ -inch Buck Bros. Cutter. Warranted. Each.. 1.20



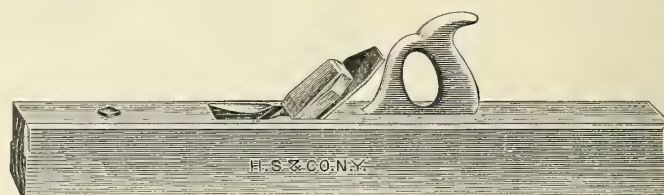
- No. 307 Fore. Red beech. 20 inches long, with double $2\frac{3}{8}$ -inch Buck Bros. Cutter. Warranted. Each..... \$2.15
- No. 308 Fore. Red beech. 22 inches long, with double $2\frac{1}{2}$ -inch Buck Bros. Cutter. Warranted. Each..... 2.15
- No. 405 Fore. German white beech. 20 inches long, with double $2\frac{3}{8}$ -inch Cutters. Each..... 2.80



Straight



Warranted



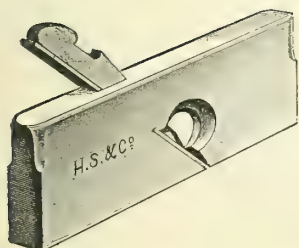
Oval

- No. 1116 Small, for piano makers. Oval. Beech. $5\frac{1}{2}$ inches long. With $1\frac{1}{4}$ -inch Buck Bros. Double Cutter. Each..... \$1.30
- No. 1120 Small, for piano makers. Straight. Beech. $5\frac{1}{2}$ inches long. With $1\frac{1}{4}$ -inch Buck Bros. Double Cutter. Each..... 1.15

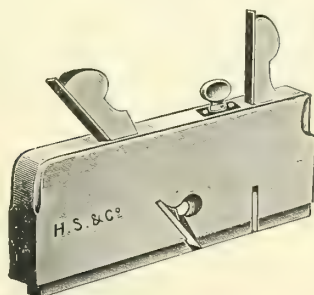
- No. 309 Jointer. Red beech. Buck Bros. Double Cutters. Warranted.. 26 inches long, $2\frac{1}{2}$ inch cutters. Each..... \$2.55
- No. 310 Jointer. 28 inches long, $2\frac{3}{8}$ -inch cutter. Each..... 2.80
- No. 406 Jointer. German white beech. 24 inches long, $2\frac{1}{2}$ -inch cutter. Each..... 3.40

Wooden Moulding Planes

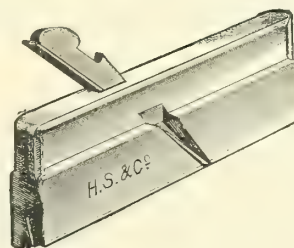
H. S. & Co. Extra Quality
Cutters Sharpened, Ready for Use



No. 317. Rabbet



No. 318. Dado



No. 321. Single Bead

No. 317. Rabbet. Red beech. Square or skew. Warranted. 9½ inches long.

Inches.....	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
Each.....	\$.60	.60	.60	.60	.60	.65	.65	.70	.80	.90

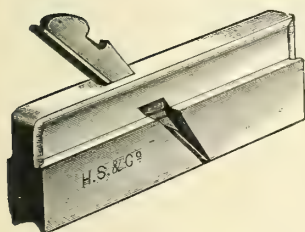
No. 318. Dado. Red beech. Right hand only. Warranted. 9½ inches long.

Inch.....	1/8	3/16	1/4	5/16	3/8	1/2	7/8
Each.....	\$1.75	1.50	1.50	1.50	1.50	1.50	1.50

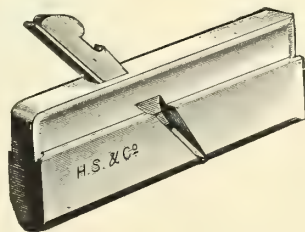
1/8-inch size has iron fence

No. 321. Single Bead. Red beech. Warranted. 9½ inches long.

Inch.....	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Each.....	\$.50	.50	.50	.50	.50	.50	.55	.55



No. 319. Hollow

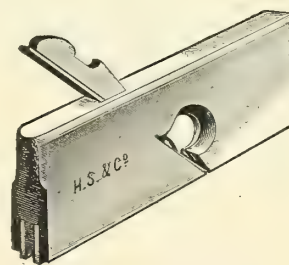


No. 320. Round

No. 319. Hollow. No. 320. Round. Red beech. Warranted 9½ inches long. Both styles at same prices.

Inches...	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	2
Each...	\$.50	.50	.50	.50	.50	.50	.50	.57 1/2	.57 1/2	.67 1/2	.87 1/2

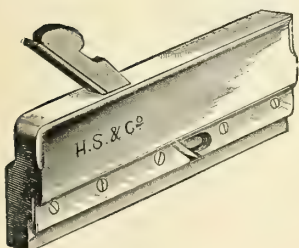
Set of 9 pairs (1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1 and 1 1/4-inch), per set, \$9.30



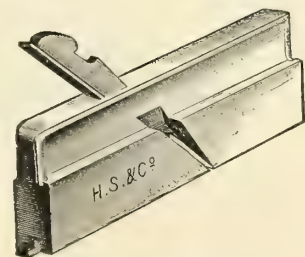
No. 322. Center Bead

No. 322. Center Bead. Red beech. Boxed. Warranted. 9½ inches long.

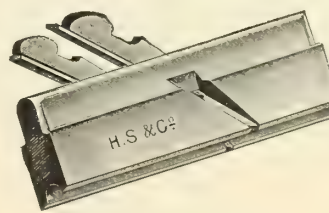
Inch.....	1/4	5/16
Each.....	\$.60	.60



No. 325. Groove



No. 325. Tongue



No. 324. Nosing

No. 23. Match. Red beech. Warranted. 9½ inches long.

Inch.....	1/2	5/8	3/4	7/8	1
Width of tongue or groove, inch....	1/8	3/16	3/16	1/4	1/4
Per pair.....	\$1.50	1.50	1.50	1.50	1.50

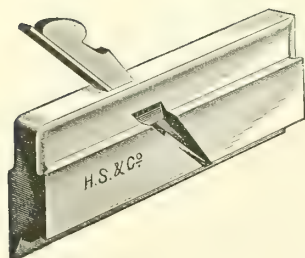
No. 324. Nosing. Red beech. Two irons. Warranted. 9½ inches long.

Inches.....	1	1 1/4
Each.....	\$1.10	1.10

Wooden Moulding Planes

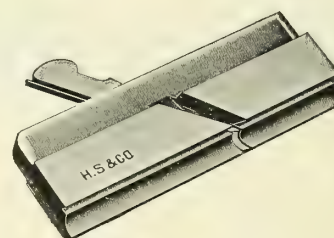
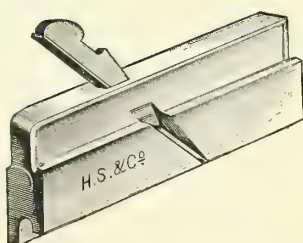
H. S. & Co. Extra Quality

Cutters Sharpened, Ready for Use



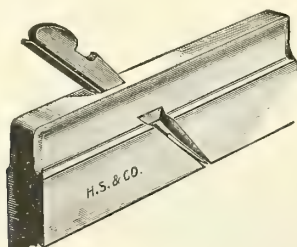
No. 326. Table

No. 326. Table. Red beech. With fence. Warranted.
5/8 inch, pair..... \$1.65



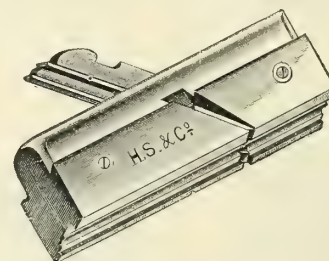
No. 332. Quarter Round

No. 332. Quarter Round. Red beech. Warranted.
Inch..... 1/2 5/8 3/4
Each..... \$.50 .50 .65



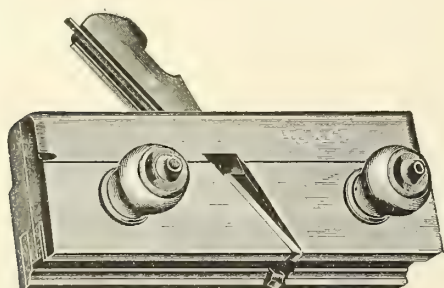
No. 331. Ogee

No. 331. Ogee. Red beech. Warranted.
Inch..... 1/2 3/4 1
Each..... \$.65 .65 .65



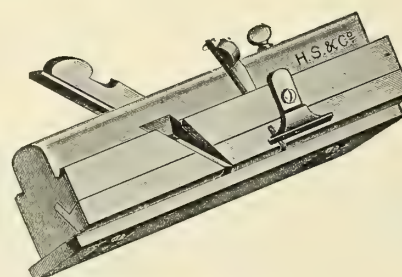
No. 328. Sash

Red beech. Warranted.
No. 328. Sash. Adjustable from 1 1/4 to 1 1/2 inches (see cut), each \$1.50
No. 329. Sash. Adjustable from 1 1/4 to 1 1/2 inches, boxed, each 1.65



No. 330. Sash

No. 330. Sash. Red beech. Adjustable from 1 1/4 to 1 1/2 inches, boxed, with side arms. Warranted. Each..... \$2.00

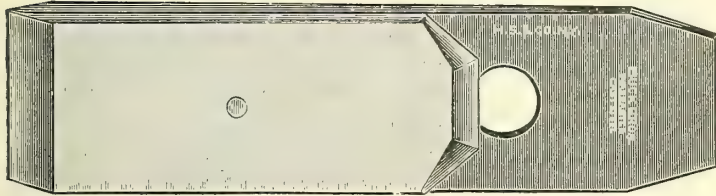


No. 334. Fillister

No. 334. Fillister. Red beech. Screw top, boxed.
Warranted. Each..... \$2.50

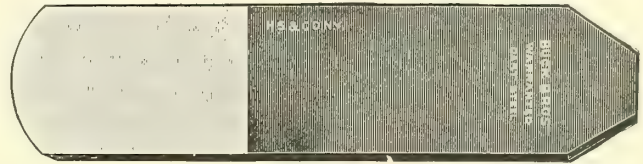
Bench Plane Cutters

Buck Bros. Warranted



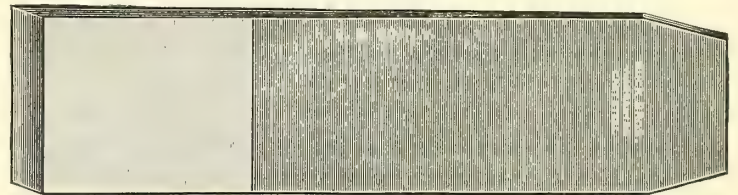
Double

Inches..... 1½ 1⅝ 1¾ 1⅞ 2 2⅛ 2¼ 2⅜ 2½ 2⅝ 2¾
 No. 60. Dozen...\$6.10 6.10 6.30 6.70 6.90 7.20 7.90 8.75 9.30 10.15 11.15
 No. 68. Small, for Piano Planes. 1¼ inches. Dozen..... \$5.75
 Screws for Double Plane Irons. Dozen..... .50



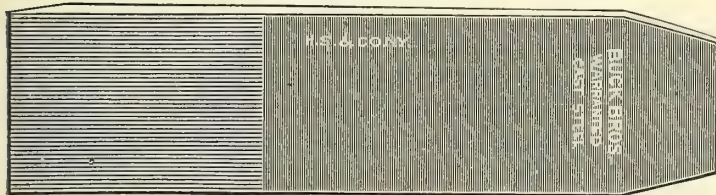
Round Nose

Inches..... 1⅞ 1¼ 1⅜ 1½
 No. 64. Dozen\$3.00 3.00 3.00 3.00



Single

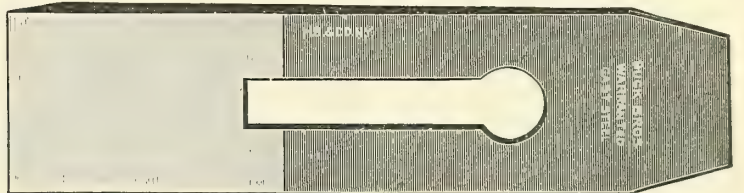
Inches..... 1½ 1⅝ 1¾ 1⅞ 2 2⅛ 2¼ 2⅜ 2½ 2⅝
 No. 61. Dozen.\$3.00 3.00 3.10 3.40 3.60 3.75 4.30 4.80 5.00 5.70



Tooth

Inches..... ½ 1 1¾ 1⅞ 2 2⅛ 2¼
 No. 63. Dozen.....\$6.00 6.00 4.50 4.90 5.25 5.60 6.10

We have the ½ and 1-inch with extra fine teeth; 1-inch with fine teeth and all other sizes with fine, medium and coarse teeth. In ordering be sure to state which is wanted.



Cut

Inches..... 1½ 1⅝ 1¾ 1⅞ 2 2⅛ 2¼ 2⅜ 2½ 2⅝ 2¾
 No. 59. Dozen \$3.15 3.20 3.30 3.60 3.75 3.90 4.50 5.00 5.25 5.90 6.70
 No. 67. Small, for Piano Planes, 1¼ inches. Dozen..... \$3.00

Moulding Plane Cutters

Warranted

Width Inches	Bead Each	Center Bead Each	Dado Cutters Each	Dado Irons Each	Hollow Each	Round Each	Rabbet Square or Skew Each	* Match Pair
⅛	\$.30		\$.16	\$.13	\$.30	\$.30		
⅜	.30	....	.16	.13	.30	.30		
¼	.30	\$.30	.16	.13	.30	.30		
⅝	.30	.30	.16	.13	.30	.30		
⅞	.30	....	.16	.13	.30	.30		
1	.30	....	.16	.13	.30	.30	\$.15	\$.53
1¼	.30	....	.16	....	.30	.30	.15	.53
1½	.30	....	.17	....	.30	.30	.16	.55
1¾	....	....	.18	....	.30	.30	.17	.55
2	....	....	.19	....	.30	.30	.18	.56
2¼	....	....	....	....	....	....	.19	
2½	....	....	....	....	.38	.38	.20	
2¾	....	....	....	....	....	....	.21	
3	....	....	....	....	.38	.38	.22	
3¼	....	....	....	....	.38	.38	.24	
3½	....	....	....	....	.38	.38	.25	

* Grooving Bits only. Each \$.20

Moulding Plane Cutter Blanks

Not Tempered

Inches..... ¼ ⅜ ½ ⅝ ¾ 7⁄8 1 1⅛ 1¼ 1½ 1¾ 2
 Dozen..... \$ 1.50 1.50 1.50 1.70 1.70 1.70 1.70 1.85 2.00 2.00 2.20 2.50 2.85

Scraper Planes

Stanley

Double Handle Veneer. The handles are of rosewood with a double grip, and being placed across the center of the tool, give it a good balance. The blades are adjustable endwise and for angle, and can be firmly locked in position desired.

They can also be used as Tothing Planes, doing excellent work in scraping off old paint or glue, and in roughing up the surface of wood preparatory to veneering same. For price of tothing cutters see below.

No. 12 has for many years been the standard for Scrapers of this design. No. 12½ is the same except that it has an extra bottom or face made of rosewood. This wood bottom is especially adapted for use on very fine work, as it renders less liable the possibility of marring or scratching the surface being worked upon. This bottom is detachable and, when worn, can be readily removed and a new one substituted.

No. 12¼ is the same style as No. 12 but is smaller, consequently lighter, and has a narrower blade. An excellent tool for light work.

No. 12 9½ inches long, 3-inch Blade, Japanned Iron Face,	Each
weight 3¾ pounds.....	\$2.40
No. 12½ 9½ inches long, 3-inch Blade, Japanned Rosewood	
Face, weight 4 pounds.....	3.20
No. 12¼ 6¼ inches long, 2-inch Blade, Japanned Iron Face,	
weight 2½ pounds.....	2.00
Packed one in Box.	

Cabinet Makers. When in use the blade rests against the front edge of the mouth under a slight pressure. In working, the blade springs backward opening the mouth and allowing the shaving to pass through it. As soon as working pressure is released the blade springs back to its normal position. Made in two styles, one a Rabbit Scraper with handle and knob pivoted to allow tilting for convenience when working into corners or up against perpendicular surfaces, and the other without a rabbit mouth and with stationary handle and knob. Handles and knobs of rosewood.

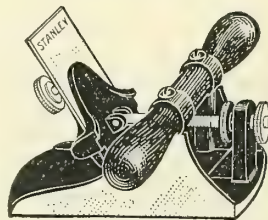
No. 85 8 inches long, 2-inch Blade, Rabbit Mouth, Tilting	Each
Handle and Knob, weight 2½ pounds.....	\$2.30
No. 87 8 inches long, 3-inch Blade, Regular Mouth, Stationary	
Handle and Knob, weight 2½ pounds.....	2.00
Packed one in Box.	

Single Handle Veneer. The No. 112 has a rosewood handle and knob, having the same form as the regular "Bailey" Plane, and is preferred by some users to the two-handle or double-grip form of Scraper Plane.

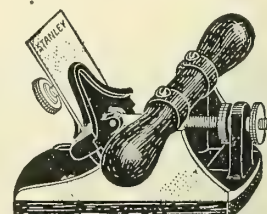
The blades are adjustable endwise and for angle, and can be firmly locked in position desired. It can also be used as a Tothing Plane, doing excellent work in scraping off old paint or glue, and in roughing up the surface of wood preparatory to veneering same. For price of Tothing Cutters see below.

No. 212 is a small handy tool, designed to be used with one hand and well adapted for Violin Makers and all Mechanics requiring a light, adjustable scraper. It has a rosewood knob but no handle. It also has the "Hand-y" feature on both sides.

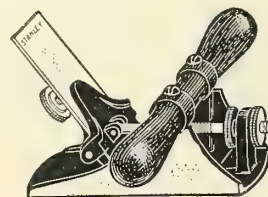
No. 212 5½ inches long, 1⅜-inch Blade, japanned, weight 1½	Each
pounds.....	\$1.50
No. 112 9 inches long, 3-inch Blade, japanned, weight 4 pounds	2.10
Packed one in Box.	



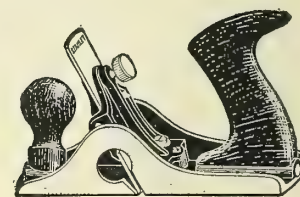
No. 12



No. 12½



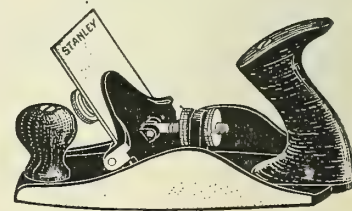
No. 12¼



No. 85



No. 212



No. 112

Scrapers

Stanley Cabinet

Handle No. 80 has a blade that may be sprung to a slight curve by means of a thumb-screw, giving ease of operation and quickness of cut. The handles are raised to protect the user's hands, and pierced so that the tool can be hung up out of the way. Body and handles cast in one piece.

No. 80 11 inches long, 2¾-inch Blade, japanned, weight each	
1¾ pounds, dozen.....	\$12.00
Packed one in Box.	

Handle No. 81 has a rosewood face for use in the finest cabinet work. The handles are raised to protect the hands, and pierced so that it can be hung up out of the way. Body and handles cast in one piece.

No. 81 10 inches long, 2½-inch Blade, nicked, weight each	
2¼ pounds, dozen.....	\$18.00
Packed one in Box.	

Adjustable No. 82 has an adjustable single handle which can be tilted to give the blade any angle desired. Special blades of different forms and widths can be securely held in any position required, thus permitting the tool to be worked in many places inaccessible to other scrapers. Handle and knob of hardwood.

No. 82 14½ inches long, 3-inch Blade, japanned, weight each	
1¾ pounds, dozen.....	\$12.60
Packed one in Box.	

Roller No. 83 has a roller back of the blade which acts as a support to relieve the strain on the wrists of the workman. Handle is made of beech and can be detached for working into corners.

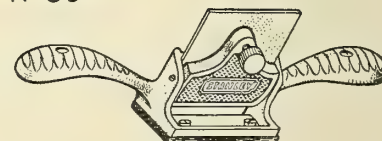
No. 83 9½ inches long, 3-inch Blade, nicked, weight each	
1¼ pounds, dozen.....	\$12.00
Packed one in Box.	



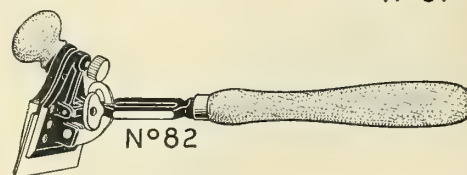
No. 80



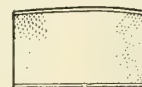
Scraper for No. 80



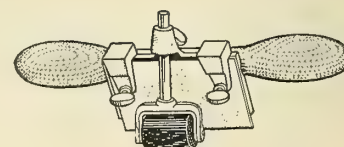
No. 81



No. 82



Scraper for No. 83



No. 83

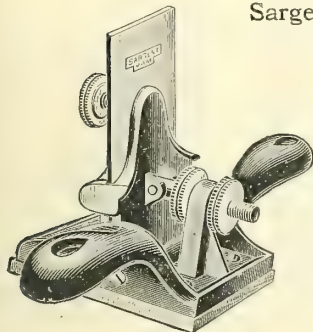
Extra Blades for Above

For Scrapers Nos. 12, 12½, 80, 81, 82, 83, 85, 87 and 112.....	Each
	\$.20
For Scrapers No. 12¼.....	.18
For Scraper No. 212.....	.15

Tothing Cutters 22, 28 or 32 teeth to the inch, for use with	Each
Nos. 12, 12½, 12¼ Scrapers.....	\$.30
Extra faces, rosewood, for No. 12½, each.....	.30

Scrapers

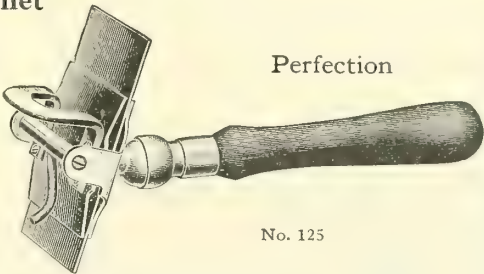
Sargent Adjustable Iron Plane Cabinet



No. 53

Especially suitable for scraping veneers and finishing cabinet and other fine work. They may also be used for removing old paint and glue. Japanned, double-iron handle with wood face. Particularly adapted for stair-maker and floor-finisher use.

Number 53, 3 1/2 inches, 2 1/2-inch cutter.
Each..... \$2.75

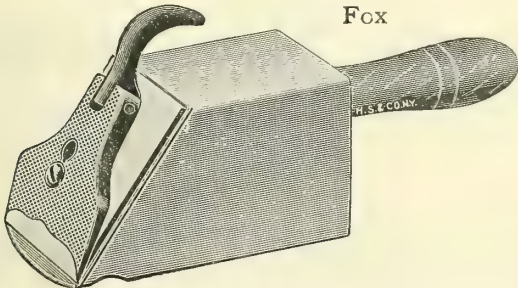


Perfection

No. 125

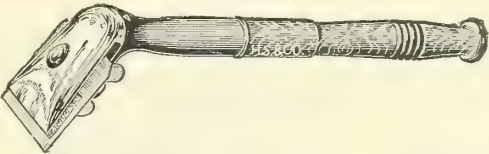
With ball of hand on hand rest, fingers clapping under side, stroke can be regulated and strain on hand and wrist relieved in carrying tool forward. Cutting edge of blade, rigidly held between steel plates which prevents chattering. Any blade up to three inches wide and of proper gauge can be used. Blade furnished 3x5 inches, No. 16 gauge. Handle adjusts instantly to any desired angle, up or down and sideways by a slight turn of handle. Holder being reversible, both ends of blade can be used without removing from holder—one for rough cut, other to finish.

Each..... \$1.25



Fox

Size of body, 6 inches long, 3 1/2 inches high; cuts 3 1/2 inches wide. Body slides on the wood insuring a cut of uniform depth. Blade is fastened with a handy clamp and can be adjusted or reversed in a seconds time. Works equally well in a horizontal or perpendicular position. Never leaves waves. Unequalled for floor, cabinet or bench work where the finest of finish is desired.
Each..... \$1.25

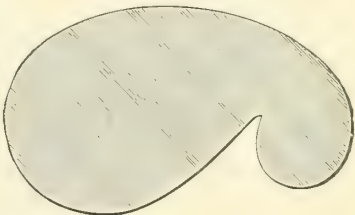


Nicholls

Leather clamped on blade prevents vibration. Can be worked up close to wall or projections. Blade easily adjusted without the use of wrench or screwdriver. Wing nut to loosen blade. No hole in blade, therefore an old piece of saw blade can be used. So constructed that it does not tire the hands of the operator. Rigid and substantial.
Dozen.....\$12.00

Concave and Convex

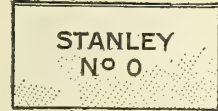
Swan Neck



Inches.....2 1/2x5 2 1/2x6 3x5 3x6
Dozen,....\$1.80 2.25 2.25 2.75
Inches.....3x5
Per dozen..... \$1.80

Rectangular

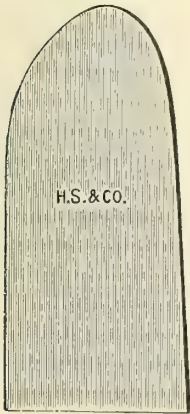
These scrapers are made of high grade steel and great care is taken to give them a special temper for this work.



Inches.....	2 1/2x5	3x4	3x5	3x6	3 1/2x6
Stanley, dozen	\$2.50	2.50	3.00	3.00	3.50
Inches..... 1x6	1 1/4x6	2x6	3x4	3x5	3x6
H. S. & Co. doz.	.60	.60	.60	.60	.60
French, doz.	\$1.45	1.45	1.60	1.80	2.15

Moulding

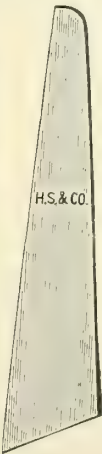
One-half Size Cuts



No. 2



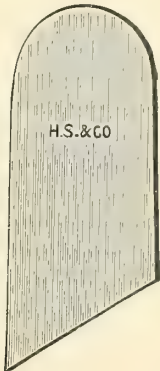
No. 4



No. 5



No. 6



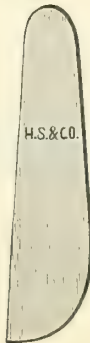
No. 7



No. 8



No. 9



No. 10

Either number, each..... \$.20 Per set of 8, per set..... \$1.20

Cabinet Burnishers

Especially Adapted for Putting the Final Edge on Scraper Blades

Blade 4 1/2 inches long

No. 1. Oval, per dozen	\$3.35
No. 3. Square, with round point, cut on all sides, per dozen	4.15
No. 4. Square, with round point, not cut, per dozen	3.85

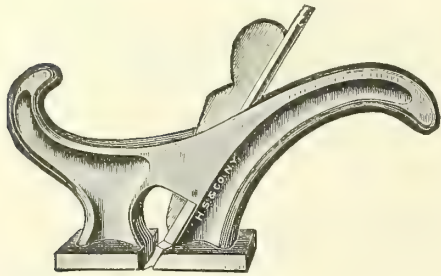


Oval

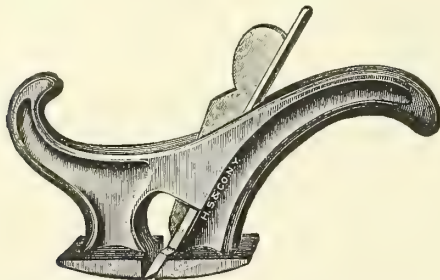
Carriage Makers Tools

T-Planes

Iron

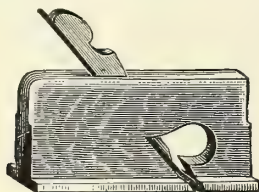


No. 2 Straight, 3½ inches, 1½-inch cutter, will cut ⅞-inch deep, each..... \$1.35



No. 4 Round, 3 inches, 1½-inch cutter, will cut ⅞-inch deep, each..... \$1.35

Wood



No. 5 Straight, 1½-inch cutter, each..... \$1.20
No. 6 Round, 1½-inch cutter, each..... 1.35
Cutters only, for above, 1½-inch, each..... .50

Panel Routers

Wood



No. 5 For ⅝ and ¾-inch moulding. Made especially for heavy work, each..... \$6.00

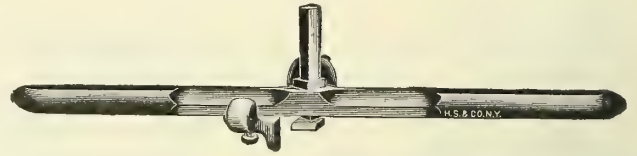
Iron



No. 6 Double, ⅜-inch cutter. Can be set to cut grooves from ⅛ to 1 inch. Gauge can be adjusted either right or left hand, each..... \$3.00

Boxing Tools

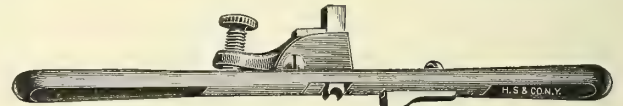
Iron



No. 14 Length 13 inches, width of cutter, ½ inch, each..... \$2.50

Hand Baders

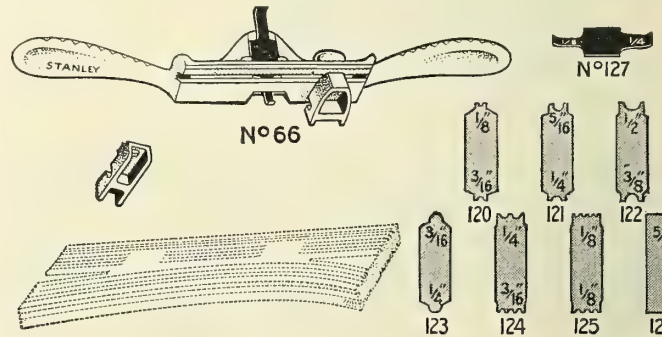
Iron



No. 12 Length 12 inches, width of cutter, ⅝ inch, each..... \$2.50

Universal Baders

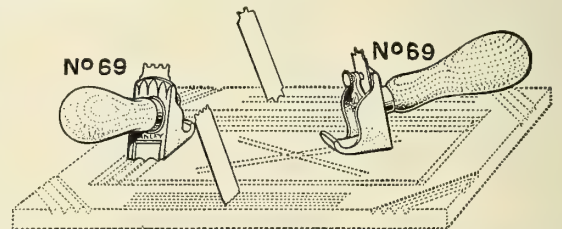
Stanley



Two handed, for beading, reeding or fluting straight or irregular surfaces and for light routing. The sample illustrated shows some of the work that it will do. With each bader are furnished a square gauge for straight work and an oval gauge for curved work. There are also furnished eight cutters sharpened at both ends and embracing the following assortment: 6 single beads, ⅛, ⅜, ¼, ⅝, ¾ and 1½ inch; 2 fluting tools, ⅜ and ¼ inch; 4 reeding tools (2 beads ⅜ inch, 3 beads ¼ inch, and 3 beads ⅛ inch and 4 beads ⅛ inch), 2 routers ⅛ and ¼ inch, and a ⅝-inch blank, which latter cutter the owner can file up as he desires.

The handles are curved so as to insure ample room between the workmans hands and the surface of the work. Made entirely of metal. Extra moulding cutters \$.05 each.

No. 66 11½ inches long, 8 cutters, nickel-plated, weight 1¾ pounds, each..... \$1.00
Packed one in box.



Single handed. All kinds of straight beading, reeding or fluting can be done with this tool. The sample of work shown illustrates some of the usages to which it can be put.

The assortment of cutters is the same as furnished with the No. 66 bader (except that there are no router cutters), comprising 6 single beads—⅛, ⅜, ¼, ⅝, ¾ and 1½ inch; 2 fluting tools, ⅜ and ¼ inch; 4 reeding tools (3 beads ⅜-inch, 2 beads ¼ inch, 3 beads ⅛ inch and 4 beads ⅛ inch), and a ⅝-inch blank.

The body of the bader is of metal and the handle is made of maple and well ferruled. Extra moulding cutters \$.05 each.

No. 69 5 inches long, 7 cutters, nickel-plated, weight ¾ pound, each..... \$.75
Packed one in box.

Carriage Makers Tools

Moulding

Made of Bronze Metal



No. 1 Bead and round. For cutting solid moulding, or moulding before it is put on. Round with square head. Will work on any curve or sweep. Length 9 inches, each..... \$2.00



No. 2 Round. Same design as No. 1, but only for round moulding. Will work on any curve or sweep and will cut a circle about $\frac{1}{16}$ inch to the bottom of moulding. Length 9 inches, each \$1.75



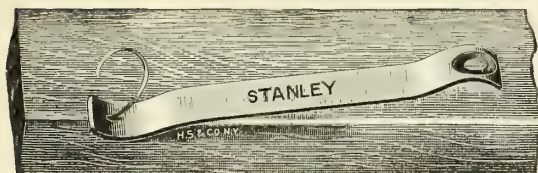
No. 0 Round. Will cut a $\frac{3}{8}$ -inch moulding down to the close edge. Will work with or against the grain. Length 9 inches, each..... \$2.00



No. 3 Square. For cutting square moulding. Will work on any curve or sweep. Length 10 inches, each..... \$2.00

Cornering Tools

Stanley



Used by all wood workers in rounding sharp corners. The tool is made in two numbers, with a different size cutter at each end, so sharpened that it will always cut with the grain without changing position of work.

No. 28 Length $5\frac{1}{2}$ inches, cutters $\frac{1}{16}$ and $\frac{1}{8}$ inch, each..... \$.40
No. 29 Length $5\frac{1}{2}$ inches, cutters $\frac{3}{16}$ and $\frac{1}{4}$ inch, each..... .40

Panel Spokeshaves

Iron



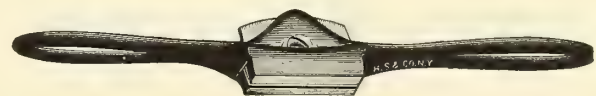
No. 4 Round bottom. For dressing out panels and all heavy work. Length 22 inches, cutter 2 inches wide, each..... \$2.65



No. 7 See note. Length 11 inches, cutter $2\frac{1}{8}$ inches wide, $\frac{3}{8}$ -inch deep, each..... \$2.00



No. 8 See note. Length 10 inches, cutter $1\frac{3}{4}$ inches wide, $\frac{9}{16}$ -inch deep, each..... \$1.80



No. 9 See note. Length 10 inches, cutter 2 inches wide, $\frac{1}{4}$ -inch deep, each..... \$1.00

Note—Nos. 7, 8 and 9 are made expressly for working solid panels where the moulding is cut. They work close up to the edge and can be used for gear work, or smoothing, if edge of blade is properly adjusted. Cutters are made of Jessups best English steel.

Scrapers

Iron



No. 10 Length 9 inches. Made especially for all kinds of light and heavy carriage work. Will do good smoothing if edge of blade is properly adjusted. Cutter $2\frac{1}{8}$ inches wide, each... \$1.20

Iron Spokeshaves

Stanley

These Spoke Shaves have cutters made from a high grade of steel, well-tempered, and sharpened ready for use. The handles are japanned, and through each a hole is made which permits the tool to be hung up out of the way.



Has a cutter and cap iron, fastened by a thumb-screw, in such a manner as to bring an even pressure on the cutter edge, and at the same time allow adjustment without the use of a screwdriver.

No. 51 Double-iron, improved, 10 inches long, 2 1/8-inch cutter, dozen..... \$3.50



Has a cutter and cap iron, fastened by a thumb-screw, in such a manner as to bring an even pressure on the cutter edge, and at the same time allow adjustment without the use of a screwdriver.

No. 52 Double-iron, improved, 10 inches long, 2 1/8-inch cutter, dozen..... \$3.50



By means of a thumb-screw the mouth can be opened or closed as coarse or fine work may be required.

No. 53 Adjustable, 10 inches long, 2 1/8-inch cutter, dozen..... \$4.50

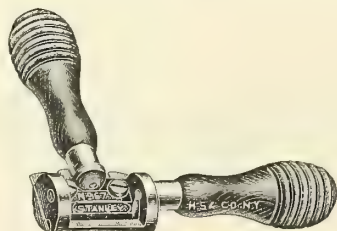


By means of a thumb-screw the mouth can be opened or closed as coarse or fine work may be required.

No. 54 Adjustable, 10 inches long, 2 1/8-inch cutter, dozen..... \$4.50



No. 55 Double-iron, hollow-face, 10 inches long, 2 1/8-inch cutter, dozen..... \$3.00

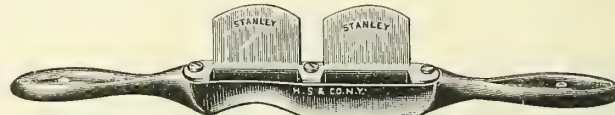


The rosewood handles are detachable, and either one can be screwed into the top of the stock, enabling the user to work into corners or panels, as no other Spokeshave can do.

One handle has a right, the other a left-hand thread, and the proper sockets to receive them are threaded accordingly. This prevents any possibility of the handles working loose when the tool is in use.

Extra Cutters

For Nos. 51, 52, 53, 54 and 55 dozen.....	\$1.00
For No. 60, dozen pairs.....	1.50
For Nos. 64 and 65 dozen.....	.75
For Nos. 67 dozen.....	2.40
For No. 76 dozen.....	6.00



No. 60 Double-cutter, hollow and straight, 10 inches long, 1 1/2-inch cutter, dozen..... \$4.50



Designed especially for light work. Straight handles and cutter and japanned cap-iron are fastened by a thumb-screw.

No. 64 Double, light, 9 inches long, 1 3/4-inch cutter, dozen..... \$2.00



No. 65 Adjustable, 9 1/2 inches long, will chamfer any width edge up to 1 1/2 inches, dozen..... \$6.00

Razor Edge



No. 76

So called from the shape of the cutter, which is hollow ground, giving an exceptionally keen-cutting edge. They have an adjustable front, which can be moved up or down, giving the same effect as if the cutter was raised or lowered. The cutter itself is also adjustable, permitting a narrow or wide opening of the mouth. With these two adjustments a coarse or fine shaving can be cut. Made with two widths of cutters.

No. 75 Iron handle, nickel-plated, 11 inches long, 2-inch cutter, dozen..... \$13.80

No. 76 Iron handle, nickel-plated, 11 inches long, 2 1/2-inch cutter, dozen..... 15.00

Universal



No. 67

The handles as well as the sockets in which they belong are lettered to avoid mistakes. Two detachable bottoms are furnished, one for straight and the other for circular work. A movable width gauge allows the tool to be used in rabbeting.

No. 67 Nickel-plated, 9 1/4 inches long, 1 7/8-inch cutter, weight 3/4 pound, dozen..... \$18.00

Extra Screws

	Dozen
For Nos. 51, 52, 53, 54, 55, 60, 64, 65, 67 and 76.....	\$.50

Iron Spokeshaves

M. F. Co.



Number 2 Four faced

The tropical wood handles are removable for convenience in working in narrow places; all metal parts are polished and nickeled.

Quickly adjustable throat regulator, which may be turned about to present four different faces to the knife—one flat, two oval or convex, and one concave. Wide or narrow throat may be had.

Knife is adjustable with set screws. Length of blade, 2 inches; length of whole tool, 11 inches.

Dozen.....	\$16.00
Extra Cutters, dozen.....	3.00

A. A. Wood

For Carpenters, Cabinet Makers and Pattern Makers



No. F1 adjustable length, 10¼ inches, 2-inch steel cutters.
Dozen \$9.00



No. F2 double, concave and straight cutters, length 10 inches, 1⅞-inch steel cutters.
Dozen \$9.00

Wooden Spokeshaves

Regular



Blades, inches.....	2	2½	3	4
Applewood, regular, dozen.....	\$7.00	7.00	8.00	10.00
Boxwood, regular, dozen.....	10.00	10.00	11.00	12.00

Pattern Makers



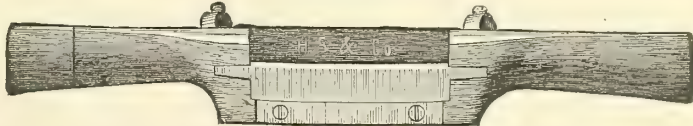
	Dozen
Applewood, 1½-inch blade, flat face.....	\$7.00
Applewood, 1½-inch blade, round face.....	7.50
Boxwood, 1½-inch blade, flat face.....	10.00
Boxwood, 1½ and 2-inch blade, round face.....	10.50

Chair Makers



Illustration shows Convex Blade		Dozen
Concave blade, 3 inches.	Red birch	\$11.50
Convex blade, 3 inches.	Red birch.....	11.50

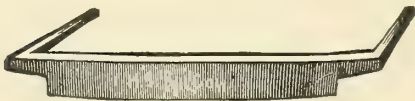
Screw-iron



	Dozen
Applewood, with brass plate (see cut), 2½-inch blade.....	\$18.00
Boxwood, without plate, 2½-inch blade.....	20.00

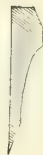
Extra Blades for Above

Best Cast Steel

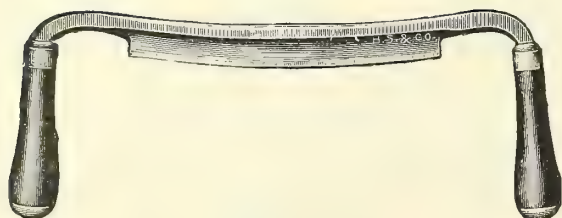


Inches.....	1½	2	2½	3	4
Regular and pattern makers, dozen	\$3.00	3.00	3.00	3.50	6.00
Concave, dozen.....				6.50	
Convex, dozen.....				6.50	
Screw Iron, dozen			6.00		

Carpenters Draw Knives



The above cut shows a sectional view of carpenters drawknife.



Razor blade, $1\frac{3}{8}$ inches wide.

Length, inches.....	6	7	8	9	10	12
White, No. 31, dozen..	\$10.00	11.00	12.00	13.00	14.00	16.00
Witherby, No. 115, dozen	13.50	13.50	13.50	14.40	15.60	18.00

No. 115 is sharpened ready for use.



Genuine Fuchs No. 1

Broad-pattern blade, $1\frac{1}{2}$ inches wide.

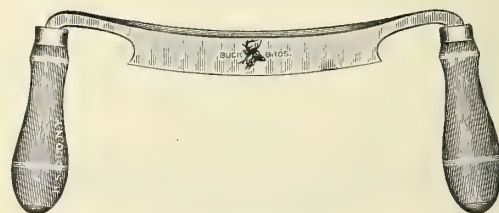
Length, inches.....	8	9	10
Dozen.....	\$18.00	19.20	21.00



Smith Perfect Handle No. 619

Solid crucible steel blades.

Size, inches.....	8	10	12
Dozen.....	\$16.00	18.00	20.00



Buck Bros. No. 71

Solid cast steel.

Length, inches.....	4	5	6
Dozen.....	\$7.00	8.50	10.00



Witherby No. 165

Adjustable handle. Razor blade, $1\frac{3}{8}$ inches wide.

Length, inches.....	8	10
Dozen.....	\$12.00	15.00



Wilkinson

Folding handle. Blade is $1\frac{3}{8}$ inches wide, of best cast steel. Cutting edge protected when folded.

Length, inches.....	6	8
Dozen.....	\$21.00	24.00

Draw Knives

Carriage Makers



Coach Makers



Carriage Makers Coach Makers
The above cuts represent sectional
views of Drawing Knife
Blades

White

Narrow blade, $\frac{3}{4}$ to 1 inch wide.
Walnut handles with polished caps and ferrules.

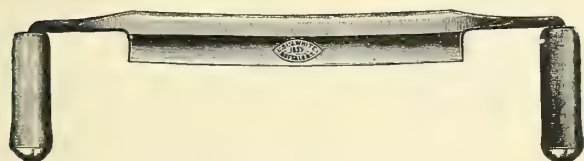
Inches.....	8	9	10
No. 32 Dozen.....	\$12.00	13.00	14.00

White

Razor blade, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches wide.
Walnut handles with polished caps and ferrules.

Length, inches.....	8	9	10
No. 33 Dozen.....	\$13.00	14.00	15.00

Wagon Makers

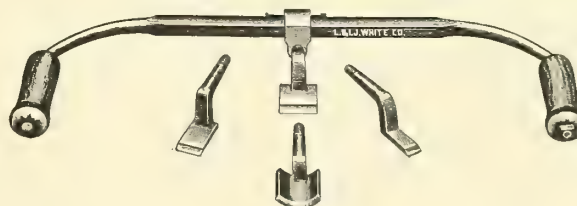


White

Heavy blades, $1\frac{3}{4}$ inches wide.
Walnut handles with polished caps.

No. 34 10 inches long, dozen.....	\$15.00
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Adjustable Auto-Body



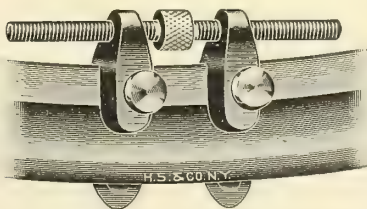
White

Furnished with four cutters, three straight and one gouge. The blades can be adjusted to any position between the handles.
Sizes of straight cutters, $\frac{1}{2}$, 1 and $1\frac{1}{2}$ inches.
Size of gouge, $1\frac{1}{2}$ inches.

No. 35A Dozen.....	\$48.00
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Non-Slipping Chamferer Gauges

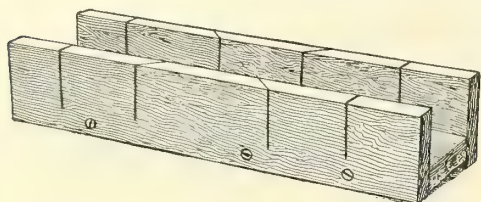
For Draw Knives



With right and left-hand screw. Will fit $1\frac{1}{4}$ and $1\frac{3}{8}$ -inch knives. To chamfer corners of square stock. The depth of the chamfer is regulated by the movable plates.

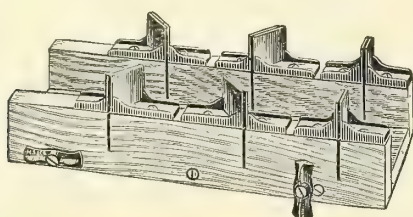
Dozen pairs	\$9.40
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Mitre Boxes



No. 00 Ash, 12 inches long. For 2x3-inch moulding, dozen... \$4.00
No. 0 Ash, 18 inches long. For 2½x3¾-inch moulding, dozen 6.00

Olmsted Improved

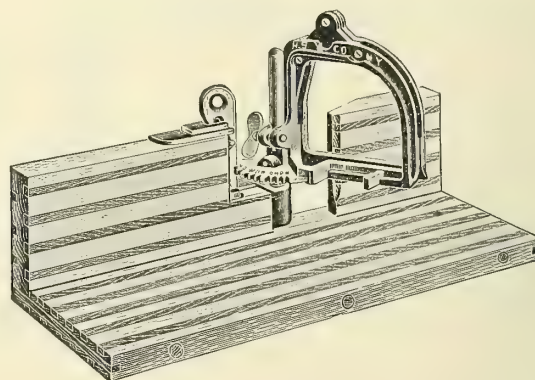


The Frame is made of 1-inch selected hardwood, having 6 fixed irons and 6 movable ones.

Adjustable to any thickness of saw.

No. 3 For moulding, 1½x3 inches, each... \$1.25
No. 4 For moulding, 2½x4 inches, each... 1.75

Perfection



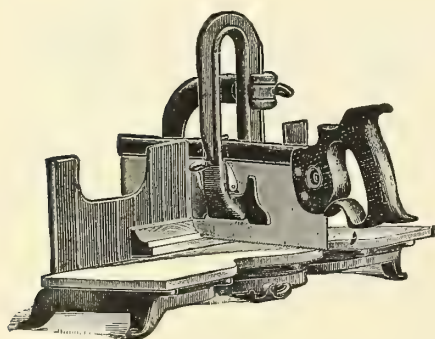
The Saw Guide can be instantly set and rigidly held at any angle by use of the set screw. Any saw may be used, but for cutting to exact depths a back saw is necessary. The back rib resting on the shoulders in swinging guide. Has friction stop. The guide can be detached from the wood box and folded to carry in a tool chest.

Complete, as shown, each... \$4.00
Metal Parts only each... 3.00

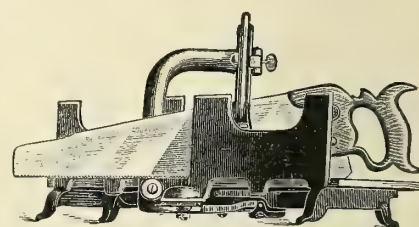
Jacob

Any saw can be used in these boxes and any width of material may be sawed with precision, as guides are close to work. Quickly set for any required angle or for undercuts.

Size Inches	Size of Bed Inches	Takes Work Height Inches	Each
4	4¼x16	4	\$4.00
5	5x21½	5	5.00



Front View

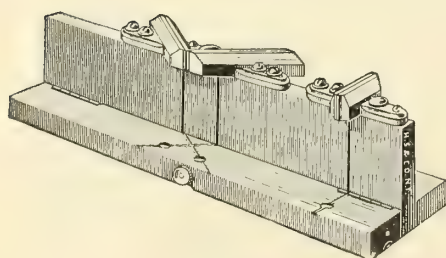


Back View

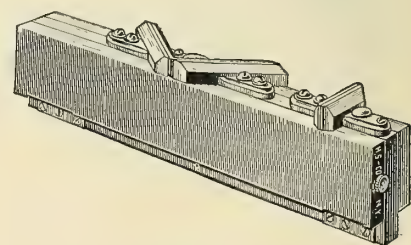
Gem Folding

This is a strong, simple and compact mitre box, and its folding feature will at once be apparent to the mechanic with little room in his tool chest. The steel guides are absolutely true and easily and quickly adjusted. Length 14 inches; takes moulding up to 2½ inches.

Each... \$2.00



Box Open

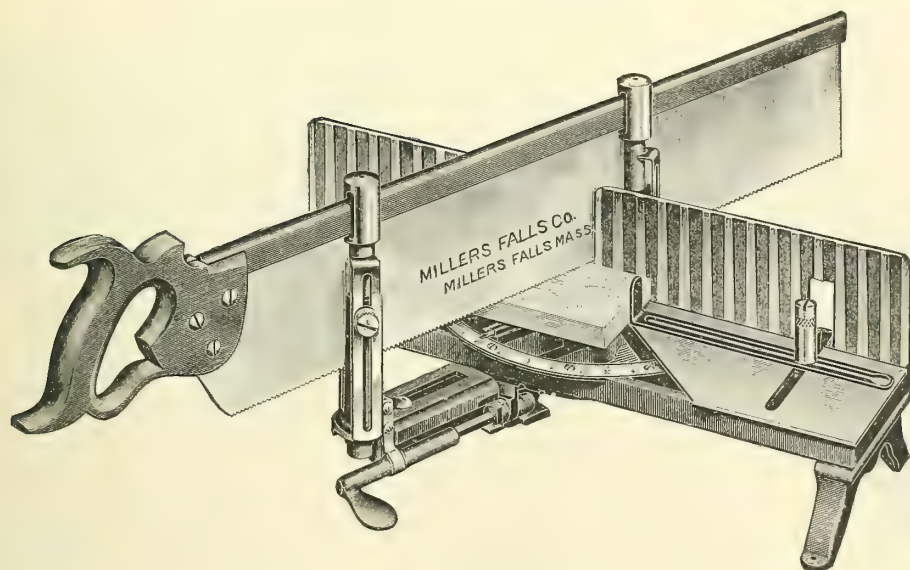


Box Closed

Mitre Boxes

M. F. Co.

Langdon Acme Improved



Iron and steel castings, the main castings with bronze finish; bright parts nicked. Extra long saw guides to give stability when the saw is raised to its highest point.

A simple and effective device automatically catches the saw guides and holds them suspended when they are raised to their highest point and releases them instantly when desired.

Notches in the bed-plate to determine the positive angles most in use.

By the use of a thumb-lever at the front of the box the saw supports may be swung freely and locked at either a positive or an intermediate angle.

Guides to support the work against the back or to be used when angles more acute than 45 degrees are desired. These may be slid out of the way through little gateways in the back when not wanted.

An extension lever with a quick-acting adjustment. (Size 1 box does not have an extension lever.) A length gauge for duplicate lengths.

Steel bottom boards roughened to prevent the work from slipping.

A graduated arc upon the bed and an index plate to tell at what degrees to set the saw for certain desired cuts.

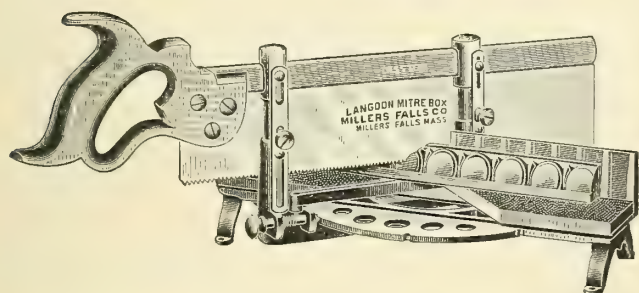
Depth gauge and take-up in case of wear upon the saw.

Number	Size	Dimension of Saw Inches	Capacity at Right Angles Inches	Capacity at Mitre Inches	Weight Boxed Pounds	Weight Net Pounds	Each
68	1	22x4	7 1/2	5	34	23	\$12.00
69	1	24x4	7 1/2	5	35	23 1/2	12.50
70	1	26x4	7 1/2	5	36	24	13.00
71	2	22x4	10 1/4	7	34	23	13.00
72	2	24x4	10 1/4	7	35	23 1/2	13.50
73	2	26x4	10 1/4	7	36	24	14.00
74	2 1/2	28x5	10 1/4	7	37	25	15.50
75	2 1/2	30x5	10 1/4	7	38	25 1/2	16.00

Without Saws

Number	Weight Boxed Pounds	Weight Net Pounds	Each
1	26	20	\$9.50
2	26	21	10.50
2 1/2	27	22	11.50

Langdon



Easily portable and especially adapted to cutting mouldings and other light work. Guaranteed accurate.

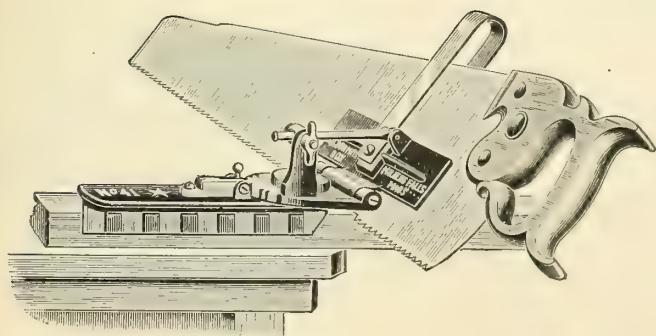
Saw supports may be quickly swung and clamped at any angle from 45 to 90 degrees either right or left, notches being cut in the base plate at the angles most used.

No. 15 1/2, Saw 16 x 2 1/2 inches. Capacity at right angles, 4 1/2 inches. Capacity at mitre, 3 inches. Weights, boxed, 14 pounds; net, 8 pounds.

Each..... \$6.75

Without saw, each..... 4.50

Star



Iron and steel, bright parts nicked and other parts japanned black. Especially useful in places where it is impracticable to use a larger box, as for sawing moulding, cornices, etc., at the top of a ladder.

Bed plate with double shelf or rest permitting the cut to be made at an angle either to the right or to the left.

May be sunk into a bench for stationary use. Notches cut into the shifting arc determine the angles ordinarily used.

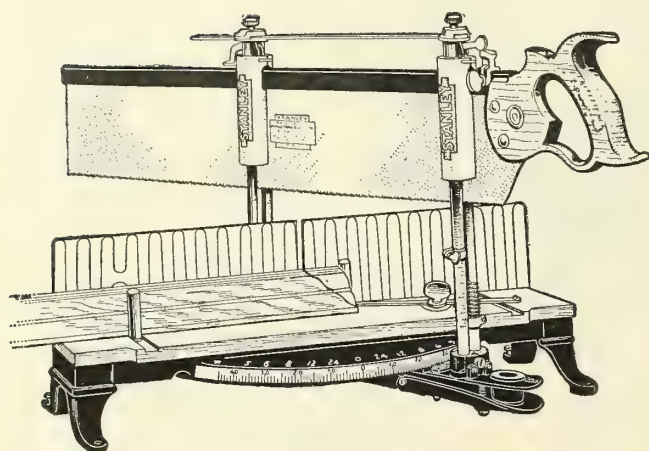
Adapted to either a panel or back saw. The saw clamp is attached to the rest of the tool by a hinge, which permits the saw to be tilted for cutting a wide range of bevels. This is of particular use in jointing floors. Weight, 2 1/2 pounds.

No. 41 Each..... \$3.20

All M. F. Co. Mitre Boxes are equipped with Henry Disston & Sons Saws and are guaranteed only when supplied complete with saw.

Mitre Boxes

Stanley



No. 358

These Boxes are compact, strong and durable and are quickly put together or taken apart for convenience in carrying.

The entire frame is one solid casting, insuring great strength.

The saw-guide uprights are securely clamped in tapered sockets in the swivel arm and can be adjusted to hold the saw without play, and also to counteract a saw that runs out of true, due to improper setting or filing. This is a new feature that will be appreciated.

The second socket in the swivel arm permits the use of a short saw or allows a much longer stroke with a standard or regular saw.

The swivel arm is provided with a tapered index pin which engages in holes placed on the under side of the base. These holes are made at the commonly used angles as designated on top of the base allowing 3, 4, 5, 6, 8, 12 and 24-sided pieces to be cut. The edge of the base is graduated in degrees and the swivel arm can be set and automatically fastened at any degree desired. This automatic fastening device holds the swivel arm firmly to the base in all positions.

The uprights, front and back, are graduated in sixteenths of an inch, and movable stops can be set, by means of thumb-screws to the depth of the cut desired.

Stock guides hold all kinds of ordinary work, as well as irregular forms, and can be used as length gauges for duplicating short pieces.

Automatic catches on the uprights hold the saw up, which allows the use of both hands in placing the work. The adjustable stop on top of the saw, coming in contact with the lever trip, releases the front catch, and the saw in falling pitches slightly forward, automatically releasing the rear catch, without any necessity of taking the hand from the saw or touching the lever trip. Two cone-pointed leveling-screws on the rear feet prevent the box sliding when in use. These boxes are regularly packed with back saws made expressly for this purpose by Henry Disston and Sons, Inc.

Number	Saw Inches	Capacity Right Angle Inches	Capacity Mitre (45°) Inches	Capacity at 30° without Stock Guide Inches	Weight with Saw Pounds	Box Only Each	With Saw Each
240	20x4	8 1/4	5 1/2	3 1/2	28	\$8.50	\$10.50
242	22x4	8 1/4	5 1/2	3 1/2	28 1/4	8.50	10.75
244	24x4	8 1/4	5 1/2	3 1/2	28 1/2	8.50	11.00
246	26x4	8 1/4	5 1/2	3 1/2	30	8.50	11.25
346	26x4	9 1/2	6 1/2	4 1/8	34	9.50	12.25
358	28x5	9 1/2	6 1/2	4 1/8	36	9.75	13.00
460	30x6	11	7 1/2	5 1/8	51	12.50	16.00

Victor

These Boxes are strong and accurate tools, though not having all the refinements of the Stanley Mitre Boxes.

The No. 50, designated as No. 60, when furnished with back saw, has long been favorably known and is now made with several improvements. The roller saw guides, always a feature in this box, are still retained.

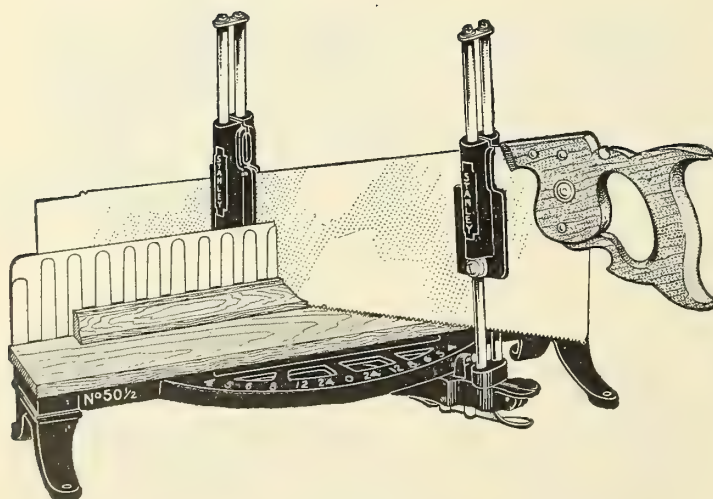
The No. 50 1/2, designated as No. 60 1/2, when furnished with back saw, has a different saw guide from the No. 50. The back, frame, indexed quadrant and swivel-arm bearing are in one piece and accurately machined. The quadrant is indexed for cutting 4, 5, 6, 8, 12 and 24-sided pieces.

The swivel arm can be locked at any point desired between zero and 45 degrees.

The saw guide uprights are securely clamped in the sockets in the swivel and can be adjusted to hold the saw without side play, thus insuring great accuracy in working.

Either a back saw or panel saw can be used in these boxes. To use a panel saw in the No. 50, change the inserted plate which connects the back roller saw guides into the lower groove, and the blade of the saw will be stiffly supported by both sets of rollers and do the work of a back saw. In using a panel saw in the No. 50 1/2, put a nail through the two small holes near the top of the rear saw guide to keep the saw in place.

Movable stops are attached to the saw-guide uprights permitting the saw to cut only to the desired depth.

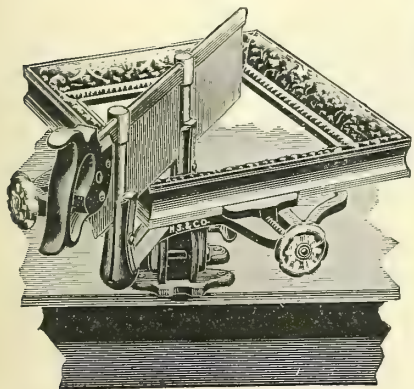


No. 60 1/2
Without Saw No. 50 1/2

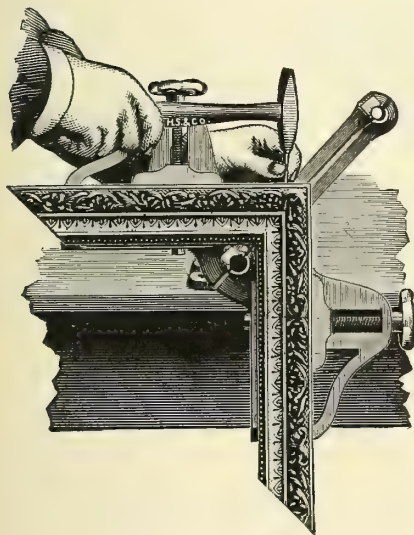
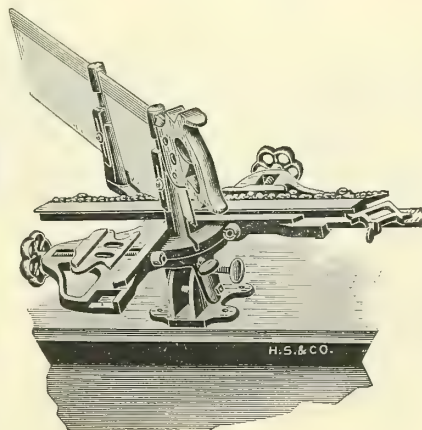
Numbers	Saw Inches	Capacity Right Angle Inches	Capacity Mitre (45°) Inches	Weight Pounds	Each
50	...	7 1/4	4 3/4	20	\$6.00
60	20x4	7 1/4	4 3/4	25	8.00
50 1/2	...	7 1/4	4 3/4	20	5.50
60 1/2	20x4	7 1/4	4 3/4	25	7.50

Mitre Machine and Vise

Marsh



Position in re-sawing last mitre, when necessary

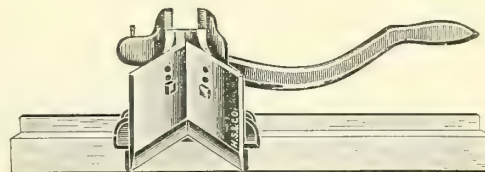


Position for boring and nailing

With this machine the sides and ends of a frame can be measured and cut from one side as well as the other, thus admitting of the machine being placed in any position at either side or end of the bench. It will cut the moulding equally well from the back or outside or from the front or inside. It can be instantly and securely adjusted toward the right or left while either in a horizontal or perpendicular position. The bed plate is $3\frac{1}{2}$ inches above the bench and measures 15x15 inches. It will cut any moulding up to 5 inches in width, and will join any frame not smaller than $7\frac{1}{2} \times 7\frac{1}{2}$ inches. It weighs 20 pounds.

Each	
No. 100 With $4\frac{1}{2} \times 26$ -inch saw.....	\$12.50
No. 101 Without saw.....	10.00

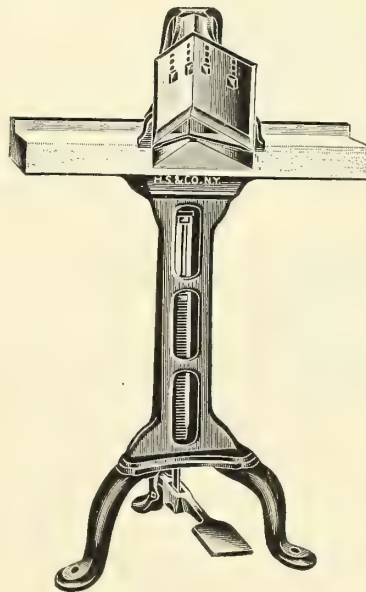
Hand Mitres



For cutting mitres rapidly and accurately. The knives are at right angles and so arranged that by one motion the moulding is cut in two and both angles of the mitre made.

Each	
No. 00 Cutting up to $2\frac{1}{4}$ inches.....	\$20.00
No. 0 Cutting up to 3 inches.....	30.00

Foot Mitres



This is same style machine as shown above, except on stand for foot power. The illustration is on a smaller scale.

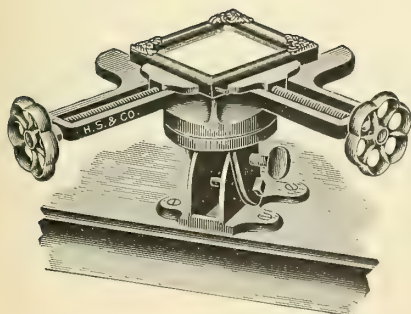
Provided with two knives, set at right angles, and so arranged that by one motion of the treadle the moulding is cut in two and both angles of the mitre made.

It is very rapid and positively accurate.

Each	
No. 1 To cut up to $2\frac{1}{4}$ inches.....	\$20.00
No. 2 To cut up to 3 inches.....	28.00
No. 3 To cut up to 4 inches.....	32.00
Back support for rabbeted door mouldings, extra.	\$5.00

Picture Frame Vise

Marsh

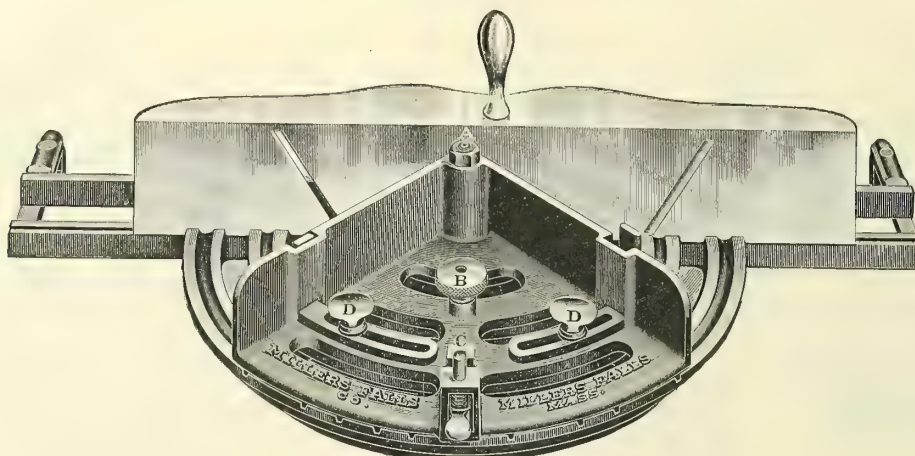


With this vise any frame can be held in proper position for nailing perfectly and with greatest ease. It has the same base with swivel attachment as the Marsh Mitre Machine, allowing the frame to be swung or tipped in any position. Holds frames from $3\frac{1}{2} \times 3\frac{1}{2}$ inches up, and takes any width of moulding up to 4 inches wide.

No. 400 Each.....	\$4.50
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Mitre Planers

Rogers



Used extensively for picture framing.

Made entirely of iron, handsomely finished, for planing straight or curved work.

Principal parts: A semi-circular bed plate with a runway at the rear; a plane sliding upon this runway, and a quadrant swinging to right or left upon the bed plate with the point A, shown in illustration, as a pivot.

Quadrant clamped by catch C, shown in illustration, in notches in the bed plate at the angles most in use and at intermediate points by thumb screw B, also shown in illustration. When set in the middle of

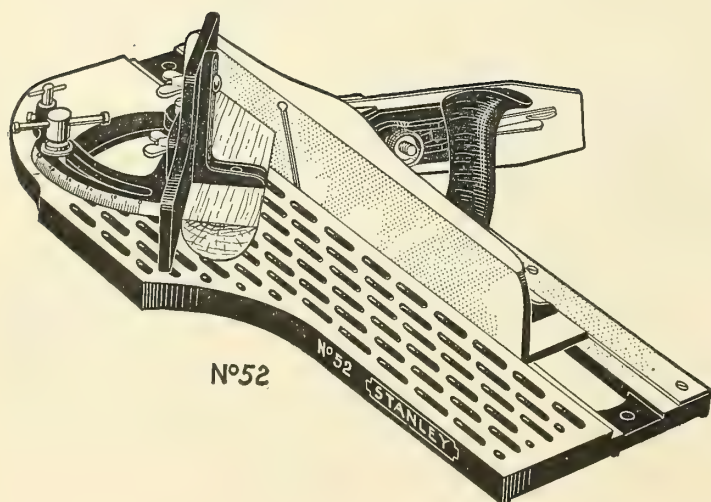
the bed plate, the side elevations of the quadrant form a perfect mitre for four-sided work.

Adjustable arms, clamped with thumb-screw DD, shown in illustration, of especial use in enabling one to finish the ends and angles on curved work with exactness. In preparing pieces for circular or oval work, frames, pulleys, emery wheels, circular patterns, etc., it is necessary to plane the ends of the various segments at varying angles. In planing these the point of the quadrant near the plane and the adjustable guides form the rest required for accurate work.

Size.....	2	3½	4
Width of Knives, inches.....	2	3½	4
Weight, boxed, pounds.....	47	73	75
Weight, net, pounds.....	32	53	55
Each.....	\$26.00	32.00	38.00
Extra Knives, pair.....	3.40	3.60	3.80

Shoot Board and Plane

Stanley



This combination of Plane and Shoot Board (sometimes called a "Jack Board") is a very important tool for all wood workers. The nicety of adjustment, the accuracy with which all parts are made, and the general solid construction, make it particularly valuable for Pattern Makers, Cabinet Makers, Printers, Picture Framers, and Electrotypers. Amateurs will also find this tool very useful.

The Board is made of special iron, is of ribbed construction, and has an adjustable runway, accurately machined for the Plane.

The swivel is indexed at 45 and 90 degrees for planing a mitre or square, but can be securely locked by means of a clamping screw at any angle desired between 0 and 90 degrees, the quadrant being graduated between these points.

The swivel is also fitted with a sliding back that can be adjusted close to the Plane, thus supporting the work to the edge and preventing it from splintering. It is further provided with a sliding back clamp, which is designed to hold any shaped work in position to be planed.

The Plane is especially constructed for the Board, and has rosewood handle and knob.

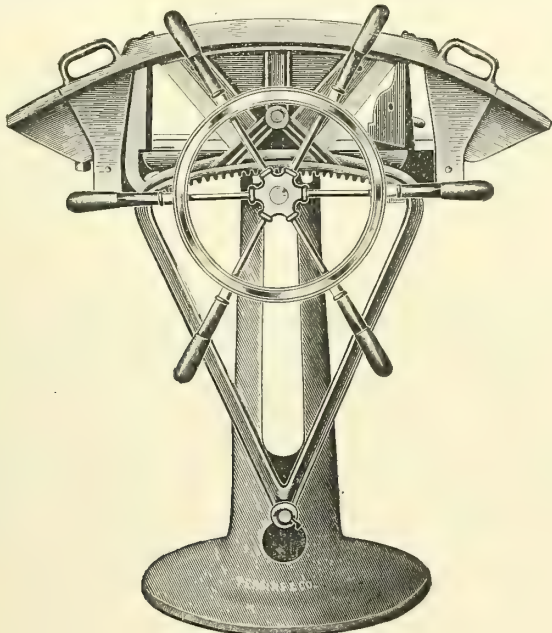
The Cutter is fitted with the regular "Bailey" adjustment for depth of cut, also has a lateral adjustment so that a cut giving any ordinary draft to a pattern can be made and, being set on a skew, will make a very smooth, clean cut.

No. 52 22 inches long, Plane 15 inches long, 2⅜-inch Cutter, weight, 17½ pounds, each..... \$10.00
Packed one in Box.

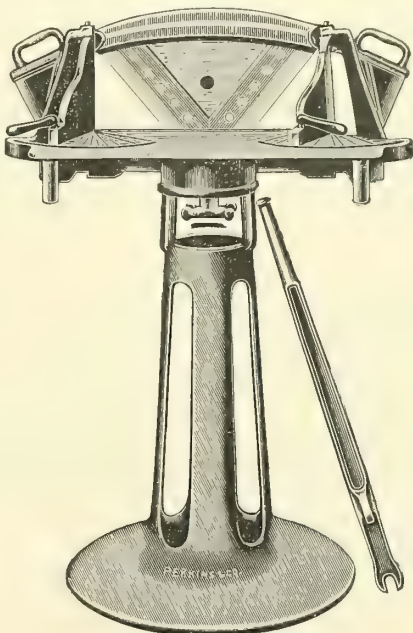
Mitre Trimmers

Perkins

These trimmers have a drawing or shaving, as well as shearing movement of knife when cutting, which gives a clean, smooth finish to the work. The gauges are pivoted at top and bottom and are rigid when clamped to table with bolt. They may be adjusted at any angle to knife from 10 to 135 degrees without changing position of supporting edge with knife-cutting edge.

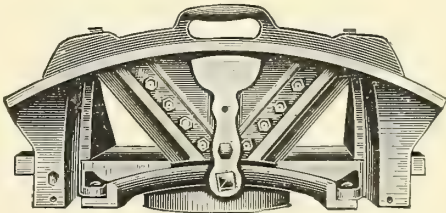


No. 14 Rear View



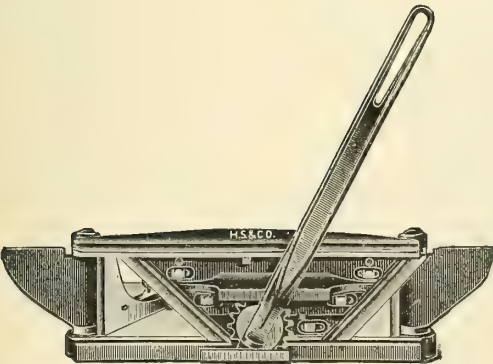
No. 13 Front View on Stand

Number	Boxed without Stand	Weight Net Pounds	Weight Boxed Pounds	Size Bed Inches	Draw of Knife in Cut Inches	Forward Mitre Inches	Back Mitre Inches	Trim Inches
8	\$25.00	65	80	20x8	1 1/8	4 3/8	5 5/8	7 1/2
13	50.00	155	195	22x13	1 5/8	8	8 1/2	12
14	Stand Included 75.00	370	500	22x13	1 5/8	8	8 1/2	12
Stand 8		7.00	85	120				
13	10.00	130	180					

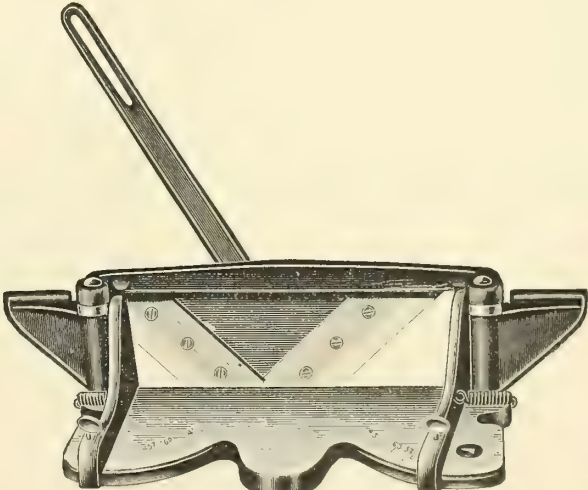


No. 8 Rear View, Showing Circular Guides for Knives which Produce Draw Cut

Lion



Back View



Front View

No. 4

An excellent little machine for pattern makers, cabinet makers, carpenters, etc.—made especially for use on each bench.
Cuts 8 inches wide, 4 inches high. Size of table 17 x 8 inches.
Weight about 30 pounds.
Each..... \$40.00

Suggestions for the Proper Handling of Hand, Band and Circular Saws

Warranty

Each saw is warranted to be as true as it is possible to make it, and to be free from flaws and seams. If found defective in either of these particulars it may be returned, and if on examination we are satisfied the saw is at fault, all necessary repairs will be made free of charge or a new saw will be given in exchange, provided it is returned within 30 days from delivery.

This warranty does not cover cases where circular saws have been cracked in gumming by reason of the punches or dies not being kept in proper order, or by filing square corners in the gullets, or by excessive emery-wheel grinding, reaming or altering the center holes, which is apt to cause the saws to spring.

Hand Saws

The teeth of a crosscut saw should be filed so true that on holding it up to the eye and looking along its edge it will show a central groove down which a fine needle will slide freely the entire length; this groove must be angular in shape and equal on each side or the saw is not filed properly and will not run true.

The proper amount of bevel to give the teeth is very important, for if too much bevel is given the points will score so deeply that the fibres severed from the main body will not crumble out as severed, but be removed by continued rasping, particularly in hard woods, as they require less bevel as well as pitch than soft wood.

Setting Saws. This is an important part of the work of keeping a saw in order and should always be done after the teeth are jointed and before filing. In all cases the set should be perfectly uniform, as the good working of the saw depends as much on this as on the filing. Whether the saw is fine or coarse the depth of set should not go, at the most, lower than half the length of the tooth, as it is certain to spring the body of saw if not break the tooth out.

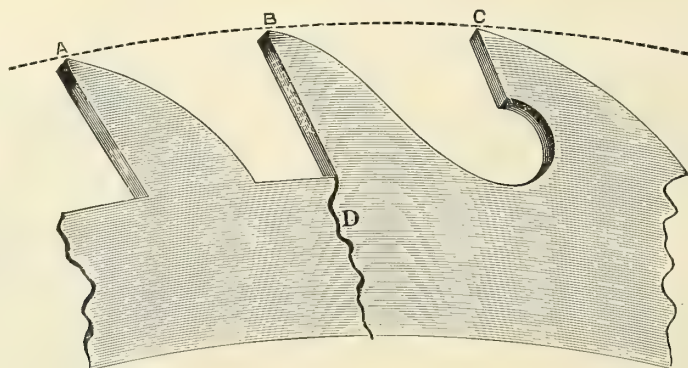
Band Saws

Among the most frequent causes of breakage of Band Saws the following may be named: The use of inferior saws of unsuitable gauge for the work; pulleys being out of balance or too heavy; the use of improper tension arrangements; not slackening saw after use thus preventing the free contraction of saw blades on cooling down after work; the framing of machine column being of too light a section or too high, thus causing excessive vibration; joint in saw not being of the same thickness as the rest of the blade; improper method of receiving the back thrust of saw, consequently case-hardening the back of saw blade and cracking same; using saws with angular instead of rounded gullets at root of tooth; top pulley overrunning saw; working dull saws; feeding up work too quickly to the saw; allowing saw-dust to collect on face of saw wheel, thus causing it to become lumpy and uneven; stopping or starting the machine too suddenly, especially while using a light blade, will almost certainly snap a saw in two.

Do not have sharp gullets to the teeth; this concentrates the bend of the saw as it runs over the wheels too much at one point. Never let the back edge of saw come in contact with back-guard wheel, or any other hard surface, as case-hardening is bound to ensue from which cracks will surely result. Should the saw be accidentally forced against the guard and case-hardened remove the glaze at once by holding a piece of soft emery wheel against back edge while saw is running slowly. Do not take it for granted that the back edge of the saw has not been in contact with guard wheel. Try a file on the edge of saw frequently, as it has only to make one revolution with the back edge against the guard to become case-hardened, and it is done so quickly that it often happens without the knowledge of the operator.

Circular Saws

Dullness is a very general cause of trouble with circular saws, not only of the extreme points but also of the cutting portion of the tooth under the points, as illustrated in the cut.



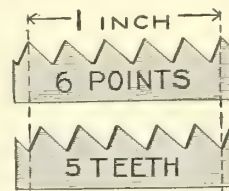
The points of the saw-teeth are the only parts of the saw that should come in contact with the lumber. They must be kept sharp by the frequent use of the file and set by springing, swaging or spreading when necessary, sufficiently to clear the blade of the saw nicely to prevent friction. As the points of the teeth do all the work they become dull and round, the sides of the points wearing away as well as the points themselves.

It will be observed in the cut that in addition to having sharp corners in the gullets, teeth A and B are very dull; tooth C shows how the points and gullets should be dressed.

Do not file square corners in the gullets of the saw, as it is very liable to cause breakage, as shown at D in cut, particularly when the teeth are dull or in frosty weather.

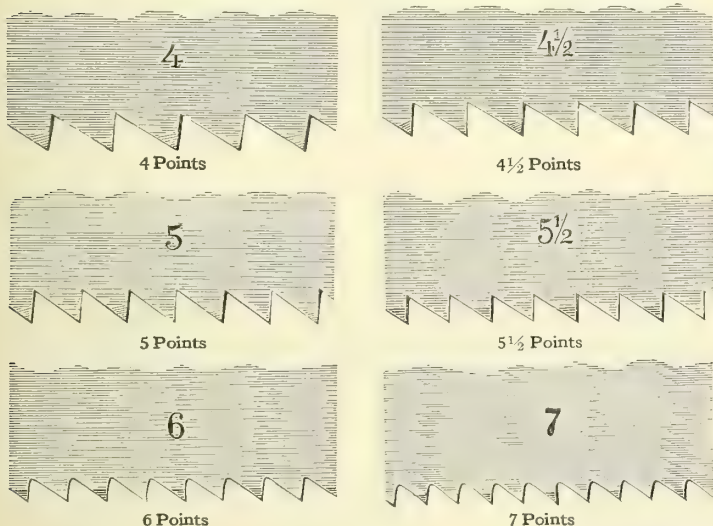
Hand Saws

The following cuts represent the full sizes of the **points** per inch of the Hand Saws which we carry in stock. In ordering care should be taken not to confuse the **points** with the **teeth**, as there is always one more point per inch than there are teeth. (See illustration.)

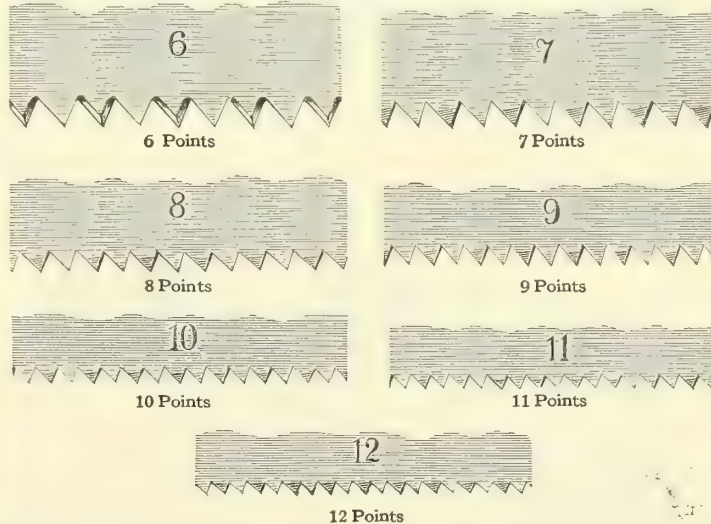


Points and teeth per inch

Rip



Cross Cut



Sizes Carried in Stock

Saws other than those shown in this list must be ordered from factory. In ordering be sure to state number of points wanted "per inch."

Rip

Length Inches	Points Per Inch					
	4	4 1/2	5	5 1/2	6	7
14						
16						
18						H.S.&Co. 7
20				H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
				D8 12 16 112	D8 12 16 112	D8 12 16 112
22			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
			D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 112
24			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	
			D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	
26			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	
			D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	
28	7	7	7	7		
			12 16			

Cross Cut

Length Inches	Points Per Inch						
	6	7	8	9	10	11	12
14				7	7	7	7
16			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
18			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
			12 112	12 112	12 112	12 112	12 112
20			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
			D8 12 16 112	D8 12 16 112	D8 12 16 112	D8 12 16 112	D8 12 16 112
22			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
			D8 12 16 112	D8 12 16 112	D8 12 16 112	D8 12 16 112	D8 12 16 112
24			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
			D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 112
26			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7
			D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 D20 D23 112 D115	D8 12 16 112
28	7	7					
			12 16				

For suggestions, see preceding page

Hand Saws

H. S. & Co.



This Saw has a polished and carved applewood handle, patent-ground, spring-steel, highly-polished blade, thin skew back, is fully warranted and is recommended for excellence of material and care in workmanship.

Length of Blade, inches.....	16	18	20	22	24	26
Crosscut, dozen.....	\$14.50	16.00	17.50	19.50	21.00	22.00
Rip, dozen.....	16.00	17.50	19.50	21.00	22.00	

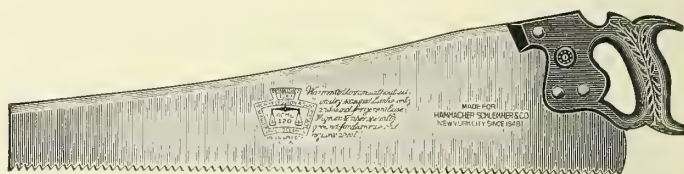
Disston



Disston No. D115

Warranted extra refined London spring-steel, patent-ground and tempered. Skew back. Rosewood handle, carved and polished. Nickel-plated screws.

Length of Blade, inches.....	22	24	26
Crosscut, dozen.....	\$32.00	34.00	36.00
Rip, dozen.....	32.00	34.00	36.00



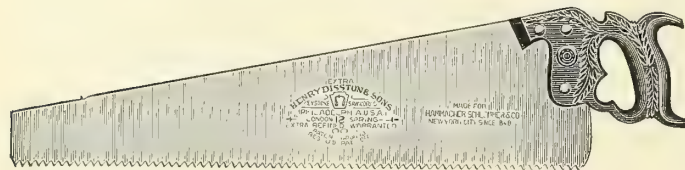
Disston No. 120

Warranted extra London spring-steel, thin skew back, patent-ground and tempered. Selected and highly-polished blade. Carved and polished applewood handle. Improved brass screws.

Note—A fast, smooth-cutting saw, particularly adapted for fine cabinet work, sawing mitres, and in all instances where rapid, smooth cutting is required. It will cut a joint sufficiently smooth to glue without planing. In sharpening, care must be used to file the teeth at the same angle as they leave the factory. These saws are warranted to run without set in dry, seasoned lumber only, and are not for general use. They are high in temper, specially ground for clearance and require no set.

In order to properly file this saw a 6-inch Safe Cant Back File should be used.

Length of Blade, inches.....	24	26
Crosscut, dozen.....	\$31.00	32.00



Disston No. 12

Warranted extra refined London spring-steel, patent-ground and tempered. Selected and highly polished blade. Carved and polished applewood handle. Improved brass screws.

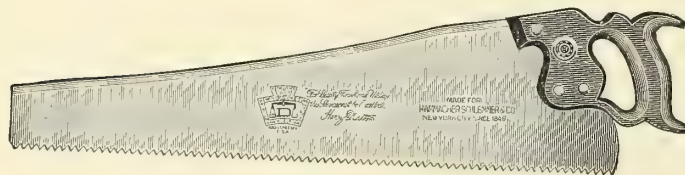
Length of Blade, inches.....	18	20	22	24	26	28
Crosscut, dozen.....	\$20.75	23.00	25.00	27.00	29.00	33.00
Rip, dozen.....	20.75	23.00	25.00	27.00	29.00	33.00



Disston No. 112

Warranted extra refined London spring-steel, thin skew back, patent-ground and tempered. Selected and highly polished blade. Carved and polished applewood handle. Improved brass screws.

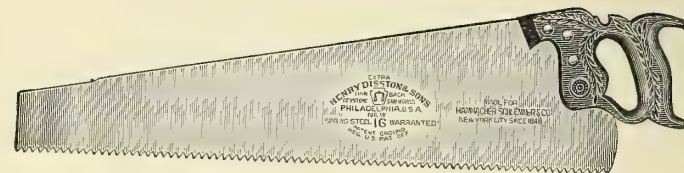
Length of Blades, inches.....	18	20	22	24	26
Crosscut, dozen.....	\$21.75	24.00	26.00	28.00	30.00
Rip, dozen.....	24.00	26.00	28.00	30.00	



Disston No. D8

Warranted refined crucible steel, patent-ground and tempered, skew back, applewood handle, polished improved brass screws. This Saw combines the popular "skew back," the peculiar shaped butt or heel which, with the improved screws, makes it almost impossible to work loose from the handle and gives the full sweep of the saw without the possibility of catching in the work.

Length of Blade, inches.....	20	22	24	26
Crosscut, dozen.....	\$18.00	20.00	21.50	22.50
Rip, dozen.....	18.00	20.00	21.50	22.50



Disston No. 16

Warranted refined crucible steel, patent-ground and tempered, grained blade. Carved and polished applewood handle. Improved brass screws. This saw has the blade set into handle similar to No. D8.

Length of Blade, inches.....	20	22	24	26	28
Crosscut, dozen.....	\$18.00	20.00	21.50	22.50	25.50
Rip, dozen.....	18.00	20.00	21.50	22.50	25.50

For suggestions and information, see two preceding pages

SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Hand Saws

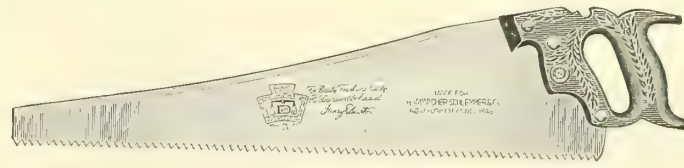
Disston



Disston No. D23

Warranted. Refined crucible steel, patent-ground and tempered, highly-polished blade. Carved and polished applewood handle. Improved brass screws.

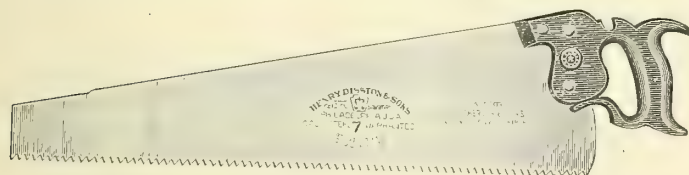
Length of Blade, inches	22	24	26
Crosscut, dozen	\$22.00	23.50	25.00
Rip, dozen	22.00	23.50	25.00



Disston No. D20

Warranted. Refined crucible steel, patent-ground and tempered, highly-polished blade, thin skew back. Carved and polished applewood handle. Improved brass screws.

Length of Blade, inches	22	24	26
Crosscut, dozen	\$22.00	23.50	25.00
Rip, dozen	22.00	23.50	25.00



Disston No. 7

Warranted. Crucible steel, patent-ground and tempered, grained blade, beech handle, polished. Improved brass screws.

Length of Blade, inches	14	16	18	20	22	24	26	28
Crosscut, dozen	\$12.00	13.00	14.00	16.00	18.00	19.00	20.00	23.50
Rip, dozen	14.00	16.00	18.00	19.00	20.00	23.50		

Hack (For Metal)



Made of special temper for cutting metal and is hollow-ground for clearance. Regularly made 12 point for cutting iron and steel, and 10 point for copper and brass. Unless otherwise ordered 12 point will be supplied.

Length of Blade, inches	20	22	24	26
Dozen	\$25.00	28.00	30.25	32.50

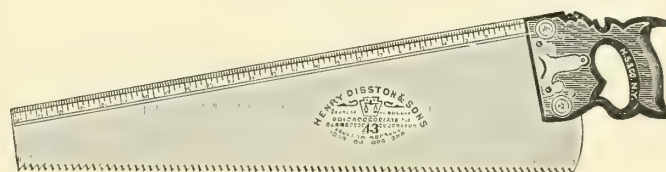
With Gauge



Adapted to tenoning, shouldering, dovetailing, curving, cog-cutting, or any purpose where a definite depth of cut is required. Same quality as the No. 7 Hand Saw.

26-inch Crosscut, 9 point, dozen	\$25.00
----------------------------------	---------

Combination



No. 43

Combines a Crosscut Saw with 24-inch Square and Rule, Straight-Edge and Scratch Awl. Applewood handle, with Plumb and Level Attachment. Blade same quality as No. 7 Hand Saw.

26-inch Crosscut, 9 point, dozen	\$30.00
----------------------------------	---------

Black Diamond



No. 306

Warranted. Cast steel, beech handle, brass screws.

Length of Blades, inches	14	16	18	20	22	24
Crosscut, dozen	\$9.50	10.00	10.60	11.25	11.90	12.50

For suggestions and information, see pages 512 and 513

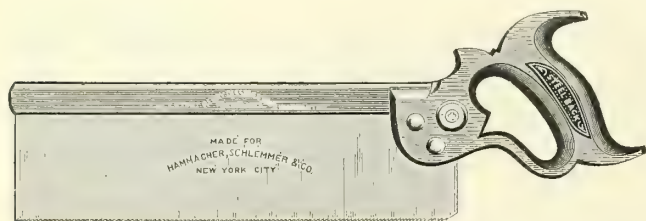
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Back Saws

Disston

For Use in Mitre Boxes



No. 4

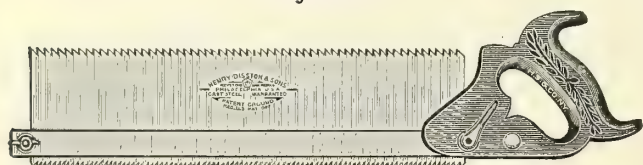
Warranted. Cast steel, blued-steel back; applewood handle, polished edge, three improved brass screws.

Length of blade, inches.....	8	10	12	14	16	18
For wood, dozen.....	\$13.00	14.00	16.00	18.00	20.00	22.00



Nos. 4 and 4M

Adjustable



Disston No. 14

Warranted. Crucible steel blade, one edge toothed 9 point, the other 13 point, to the inch. Nickel-plated lever tightener and wing nut. Carved and polished cherry handle.

The slotted heavy, steel back, by means of the wing-nut and lever tightener, is quickly adjusted to cut any depth required.

Adopted for tenoning, shouldering, dovetailing, cog-cutting, or any purpose where a definite depth of cut is required.

Size of blade, inches.....	8x3	10x3	12x3½	14x3¾	16x4⅛
Dozen.....	\$14.50	15.50	17.25	19.00	20.75

No. 4 For Wood

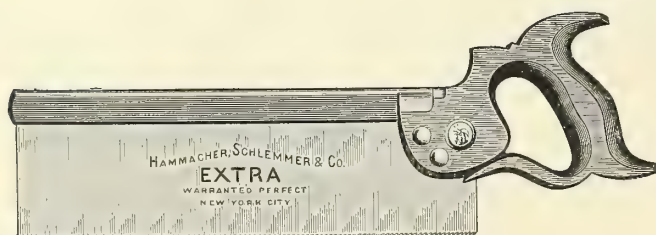
Warranted. Cast steel, blued-steel back; applewood handle, polished edge, three improved brass screws. These saws are measured the full length of blade. The peculiar shape of butt or heel on these saws makes the toothed edge about 2 inches shorter than the full length of the blade.

Length of blade, inches..	20	22	24	24	26	26
Width under back.....	4	4	4	5	4	5
Dozen.....	\$24.00	26.00	28.00	31.00	30.00	33.50

No. 4M For Metal

We also furnish this saw in 24 and 26-inch lengths, either 4 or 5 inches wide under back, with special temper for metal-covered mouldings, and ground thin towards the back so as to run without set. This saw is known as No. 4M and is furnished at same prices as No. 4.

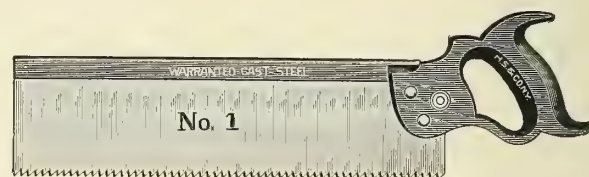
H. S. & Co.



Extra

Warranted. Polished crucible spring-steel blade, heavy blued-steel back; applewood handle.

Length of blade, inches.....	8	10	12
For wood, dozen.....	\$13.00	14.00	16.00



No. 1

Warranted. Cast-steel blade, blued-back, handle, polished edges.

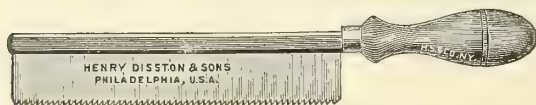
Length of blade, inches.....	10	12
Dozen.....	\$10.00	12.00

Dovetail Saws

Disston

For Wood or Metal

With Straight Handle



No. 69

1½ inches wide under back.

No. 26 English Standard Gauge. Extra quality spring steel blade with special temper for cutting wood and metal. 17 points to inch. Brass-plated steel back. Polished handle.

Length of blade, inches.....	6	8	10	12
Dozen.....	\$8.25	8.75	9.75	10.50

With Offset Handle



No. 71

With offset blade, as in end view. For working close to right-angle obstruction. Offset handle, straight part of blade is 1¾ inches wide.

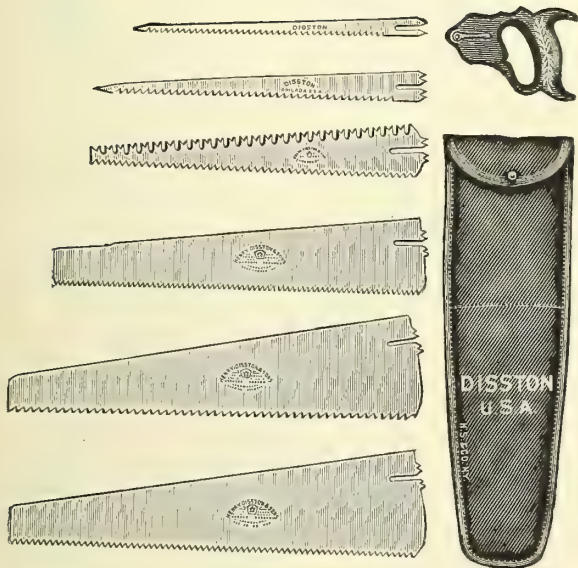
No. 26 English Standard Gauge. Extra quality spring-steel blade, with special temper for cutting wood and metal. 17 points to inch. Brass-plated steel back. Polished handle.

Length of blade, inches.....	6	8	10	12
Dozen.....	\$8.25	8.75	9.75	10.50

Saws

Disston

Handy Kit



The blades are made of first quality crucible steel, carefully ground and polished. Hardwood handle, carved and polished. The butt of blade is specially formed to prevent wobbling, and the lever tightener provides for quick and easy attachment and detachment. The case is heavy canvas, leather-bound edges, and has separate compartments for each blade and a special pocket for the handle.

Parts

	Dozen
12-inch Keyhole Blade.....	\$2.25
14-inch Compass Blade.....	2.75
16-inch Pruning Blade.....	7.00
18-inch Plumbers Blade.....	11.00
20-inch Crosscut Blade, 10 point.....	11.00
20-inch Ripsaw Blade, 7 point.....	11.00
Adjustable Handle.....	4.50
Canvas Case.....	6.00
	Each
Set No. 101 contains all the above.....	\$4.50
Set No. 104 contains all the above except Pruning and Plumbers Blades.....	3.00

Joiner or Bench



Applewood handle, varnished edge. Blade 16x2½ inches at handle, 18 gauge, 15 point.
Dozen..... \$12.00

Flooring

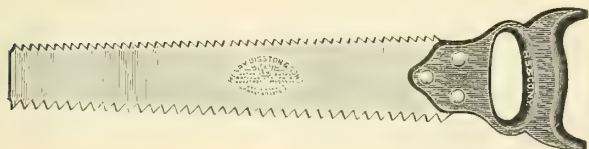


No. D19 9 points to one inch

Cherry handle, carved and polished. Adjustable to various positions. Specially designed to cut out sections of floors, ceilings or partitions to any desired depth, without necessity of boring, chiseling, etc. The blade is warranted cast steel and is reversible, interchangeable and adjustable.

Length of blade, inches.....	18	20
Dozen.....	\$20.00	22.00

Plumbers, for Wood or Metal



No. 6

Beech handle, varnished edges, three brass screws. One edge toothed 6 points; the other 8 points. The coarse teeth are for sawing wood. The fine teeth for sawing wood in which nails are imbedded, lead pipe, etc.

Length of blade, inches.....	16	18
Dozen.....	\$9.00	10.00



No. 10 12 points to one inch

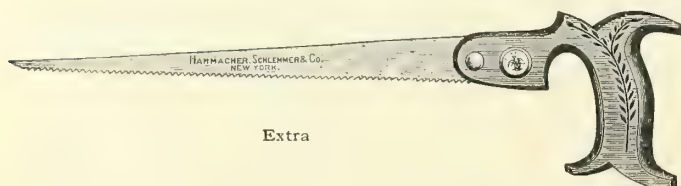
Carved and polished cherry handle, adjustable to various positions. Made particularly for use on work encountered by Plumbers, Steamfitters and Carpenters in making repairs where it is necessary to cut through timbers in which nails may be imbedded or steel-covered moulding.

Length of blade, inches.....	20	24
Dozen.....	\$17.25	20.75

Saws

Compass

H. S. & Co.



Extra

Crucible steel, thin back, polished and carved applewood handle.

Length of blade, inches	10	12	14	16
Dozen	\$5.00	5.40	5.70	6.00

Disston



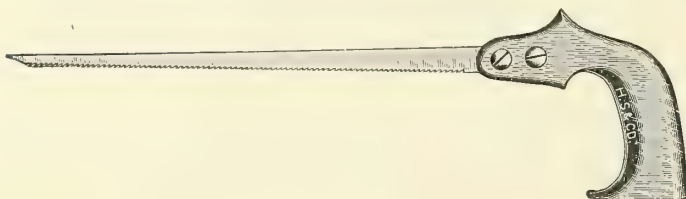
No. 2

Crucible steel, applewood handle, brass screws.

Length of blade, inches	10	12	14	16
Dozen	\$4.25	4.50	4.75	5.00
Blades only, dozen	2.25	2.50	2.75	3.00

Keyhole

Disston



No. 15

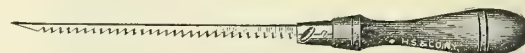
Cast-steel, beech handle, brass screws.

Length of blade, inches	10	12
Dozen	\$2.25	2.50



No. 10

Complete with adjustable handle and blade, per dozen	\$2.40
Extra blades, per dozen	1.40



No. 95

Round hardwood handle, polished, nickel-plated ferrule. The handle is slotted clear through permitting the adjustment of blade for length of cutting edge required. The blade, 10 inches long, ground thin back, is firmly held in place by means of a steel grip inside of handle, tightened by thumb-screw, which is nickel-plated.

Dozen	\$4.00
Extra blades, dozen	2.00



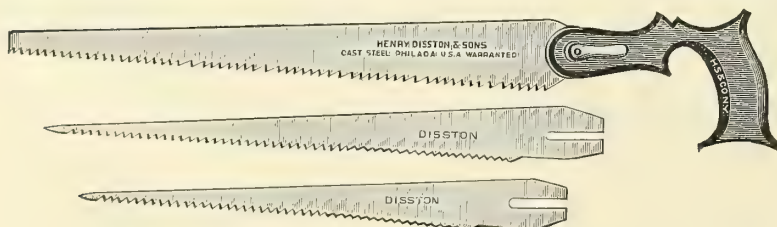
No. 5

An inexpensive and convenient combination of keyhole saw, saw pad and screw-driver.

Complete with handle and blade, dozen	\$2.00
Extra blades, dozen	1.40
Handles, dozen	.60

Nest

Disston

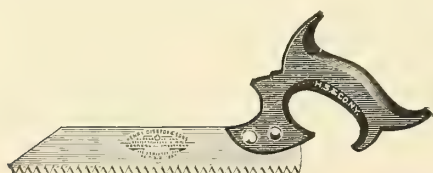


No. 3

Handle and Tightener, dozen	\$1.75
Keyhole Blade, 10 inch, dozen	2.00
Compass Blade, 14 inch, dozen	2.75
Pruning Blade, 16 inch, dozen	5.50
Complete, 1 dozen each of above	12.00

Pattern-Makers

Disston



Plain applewood handle, blade 7½x1¼ inches, No. 21 gauge, 15 points.	
Dozen	\$5.00

Pruning Saws

Disston

Little Giant, with Hook

The knife and saw are made of the best crucible steel, and can be used with or without a pole. The tool is very light and strong. The saw can be detached where its use is not required on large limbs.

The saw blade is attached to the hook by means of two clamp screws, as shown in illustrations; the cuts also show the way the pole or handle should be attached to the hook.

Length of blade, inches.....	12
Hook and saw, without pole, dozen.....	\$18.00
Hook only, without pole, dozen.....	12.00
Hook will take in branch $\frac{3}{4}$ -inch in diameter.	

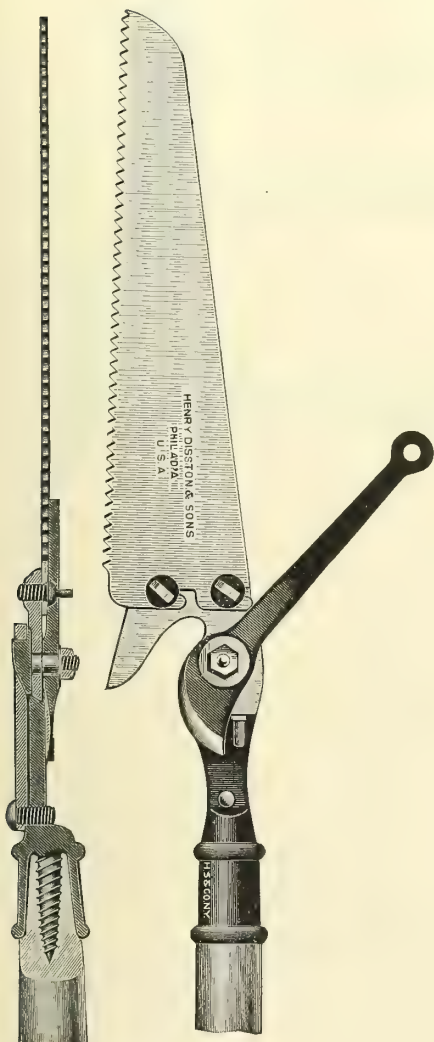
Orchard, with Hook

Made of best crucible steel, very light in construction, but crescent-shaped blade is formed to help draw the teeth into the wood.

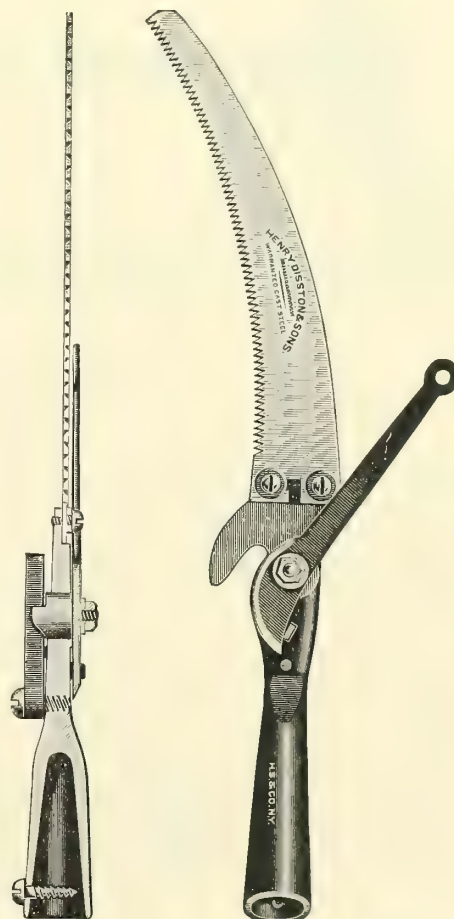
Particularly adapted for sawing the smaller branches in general pruning.

The saw can be readily removed when hook only is required.

Length of blade, inches.....	10
Hook and saw, without pole, dozen.....	\$18.00
Hook only, without pole, dozen.....	11.00
Hook will take in branch $\frac{1}{2}$ -inch in diameter.	



Little Giant



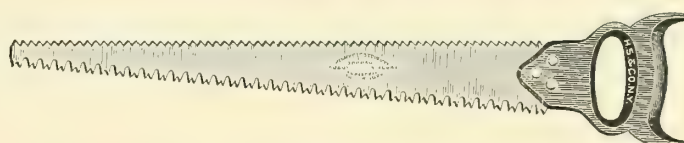
Orchard



No. 1 Adjustable Handle

Cherry handle, carved and polished, adjustable, with lever tightener, crucible steel blade, double-edge, thrust cut on convex draw cut on concave edge.

Length of blade, inches.....	14	18
Dozen.....	\$11.50	13.50



No. 4 Duplex Beech Handle, 3 Brass Screws

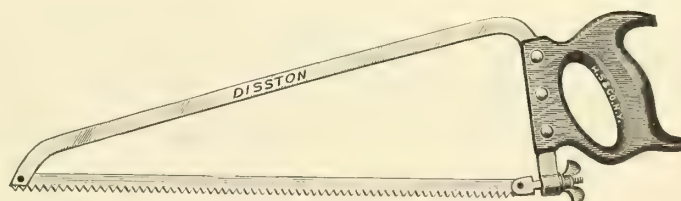
Length of blade, inches.....	14	18
Dozen.....	\$9.00	10.50



D-24

Narrow point, crucible steel blade, copper handle with beechwood grip.

Length of blade, inches.....	20	24
Dozen.....	\$9.30	11.00



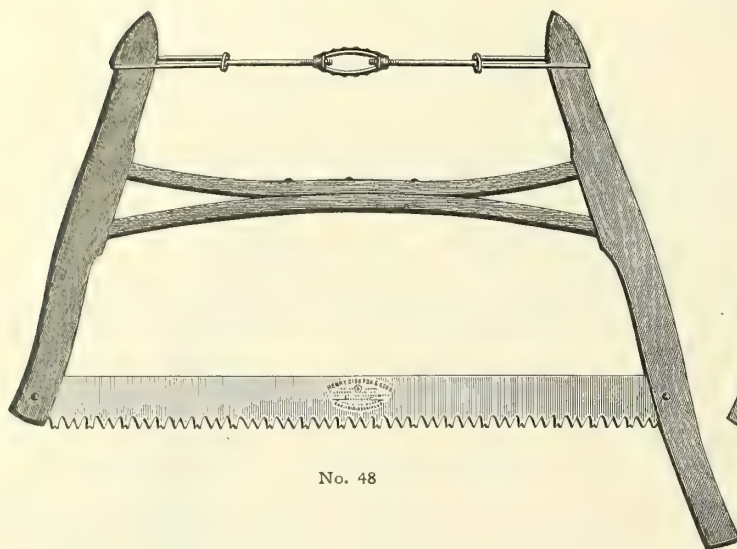
No. 18 New York Pattern

Flat steel back, narrow tapered point, beech handles with varnished edges, three brass screws. Handle has extra large hand hold for use with gloved hand. Blued steel blade. Swivel stretcher.

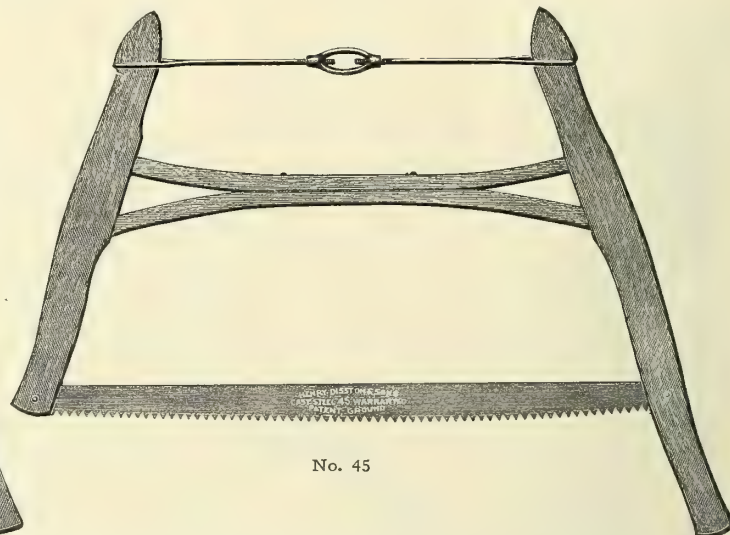
Length of blade, inches.....	18 $\frac{1}{2}$
Dozen.....	\$13.50

Buck Saws

Disston



No. 48



No. 45

Frame, blue stained and varnished. Extra thin-back blade, 30 inches long, $2\frac{3}{8}$ inches wide. Champion tooth, exceptionally strong, tinned loop rod.

Complete.....	Dozen	\$12.00
Blades only, No. 16, 30 inches.....		7.10

Frame, red stained and varnished. Extra thin-back, blue blade, 30 inches long, $1\frac{3}{4}$ inches wide, $4\frac{1}{2}$ points, strong, tinned loop rod.

Complete.....	Dozen	\$10.50
Blades only, No. 45, 30 inches.....		6.00

Crosscut Saws

Disston

Two-Man

Handles for
Two-Man Climax
Pattern No.102 $\frac{1}{2}$



No. 2 With Plain Teeth

These saws are two gauges thinner on the back than on the tooth edge, patent ground and tempered, set and sharpened ready for use.

Length of blade, feet.....	4	4 $\frac{1}{2}$	5	6
Without handles, each.....	\$2.40	2.70	3.00	3.60

No. 2 With Champion Teeth

For illustration of teeth, see below.

Length of blade, feet.....	4	4 $\frac{1}{2}$	5	6
Without handles, each.....	\$2.40	2.70	3.00	3.60

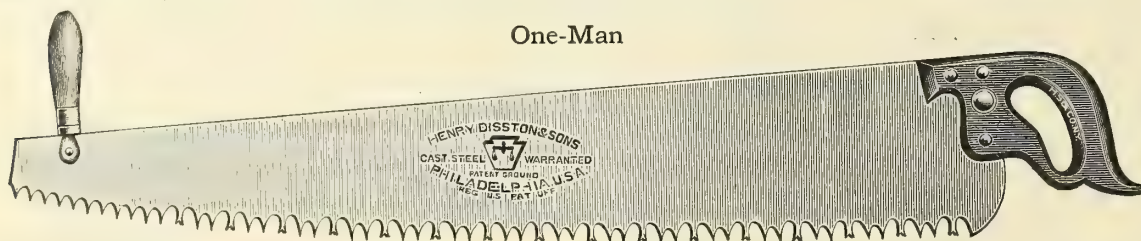
13 $\frac{1}{2}$ inches long, 1 $\frac{3}{8}$ inches diameter at thickest part. Grey iron casting, malleable iron bolt and nut.

Pair... \$.30



One-Man

Extra Handles
For One-Man



No. 2 With Champion Teeth

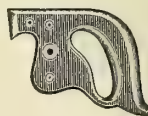
With supplementary handle. These saws are made, ground and tempered on the same principles as the best hand saws. They will stand all necessary thrust pressure without buckling and are rapid, easy cutters.

Length of blade, feet.....	3	3 $\frac{1}{2}$	4
Complete with handles, each.....	\$2.25	2.60	3.00

No. 2 With Plain Teeth

For illustration of teeth, see two-man saw above.

Length of blade, feet.....	3	3 $\frac{1}{2}$	4
Complete with handles, each.....	\$2.25	2.60	3.00



No. 118

Dozen..... \$3.10

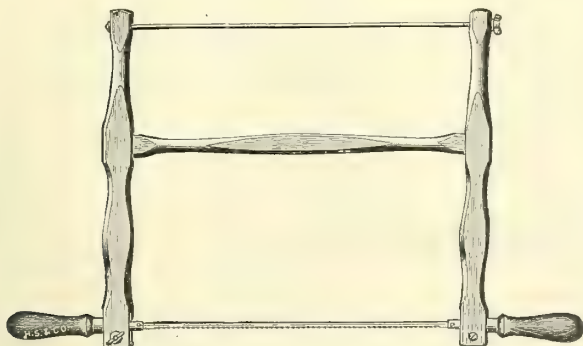


No. 218

Supplementary
5 $\frac{1}{4}$ inches long, 1 $\frac{5}{16}$ inches diameter, malleable-iron ferrule, washer, rod and nut fastened inside.
Dozen..... \$1.75

Turning Saws

M. F. Co.



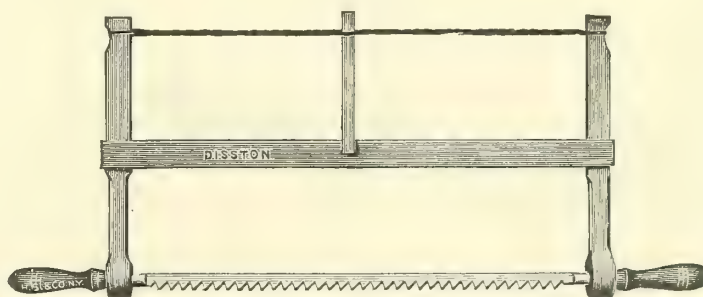
Birch wood; ebony handles; steel tension rod.
Index on each handle to show how far to turn.
Friction regulated by screws.

Length of blade, inches.....	12	14	18	20	22	24
Dozen (including one blade with each frame).....	\$14.40	15.00	15.60	16.40	17.00	17.60

Cabinet Saw Frames

(German Pattern)

Disston



No. 1

Without blades.	Dozen
For 28-inch blades.....	\$9.00
For 36-inch blades.....	10.00

Turning Saw Blades or Chair Webs

Disston



Set and Sharpened Ready for Use

Length of blade, inches.....	10	12	14	16	18	20	22	24	26	28	30	32
Number of gauge.....	22	21	21	20	20	20	20	19	19	19	19	18
1/8-inch wide, 10 points.....	\$1.35	1.45	1.60	1.80	2.00							
1/8-inch wide, 10 points.....	1.35	1.45	1.60	1.80	2.00							
1/4-inch wide, 9 points.....	1.35	1.45										
1/4-inch wide, 8 points.....			1.60	1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
1/8-inch wide, 7 1/2 points.....	1.35	1.45	1.60	1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
3/8-inch wide, 7 1/2 points.....	1.35	1.45	1.60	1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
1/8-inch wide, 7 points.....				1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
1/2-inch wide, 7 points.....							2.50	2.80	3.10	3.45	3.80	4.20

Cabinet Saw Blades or German Pattern Webs With Cut Tangs

Disston



Set and Sharpened Ready for Use

Length of blade, inches.....	26	28	30	32	36
Thickness of blade, number of gauge.....	23	23	23	22	22
Width of blade, inches.....	1 1/4	1 1/2	1 1/2	1 1/2	1 3/4
Dozen.....	\$3.60	3.75	4.00	4.20	4.55

Jig-Saw Blades or Felloe Webs

Disston

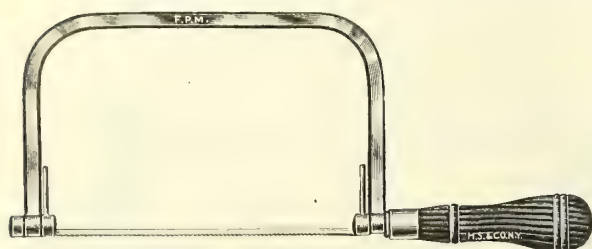


Set and Sharpened Ready for Use. Style of Turning Saw Blade, but Having Beveled Back

Length of blade, inches.....	8	10	12	14	16	18
Thickness of blade, number of gauge.....	19	18	18	17	17	17
1/8-inch wide, 9 points.....	\$1.45	1.60	1.85	2.10	2.35	2.70
1/8-inch wide, 9 points.....	1.45	1.60	1.85	2.10	2.35	2.70
1/4-inch wide, 8 points.....	1.45	1.60	1.85			
1/4-inch wide, 7 points.....				2.10	2.35	2.70
1/8-inch wide, 6 1/2 points.....		1.60	1.85	2.10	2.35	2.70
3/8-inch wide, 6 1/2 points.....		1.60	1.85	2.10	2.35	2.70
1/8-inch wide, 6 points.....					2.35	2.70

Coping Saws

F. P. M.



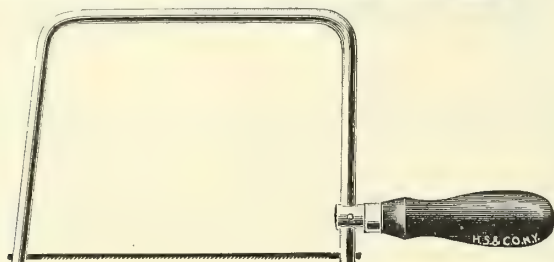
Frame is made of cold-drawn steel, especially tempered and highly finished. Blade is made of the best imported band-saw steel. Too highly tempered to make into loop at ends, so are equipped with pin fastening. Placed on a swivel, adjustable to any angle; $\frac{1}{8}$ inch wide, $6\frac{1}{2}$ inches long and so evenly tempered it will cut light metal as easily as wood.

Depth under back, $4\frac{5}{8}$ inches.

Complete, 1 blade with each frame, dozen \$18.00

Blades, gross 6.00

Griffin

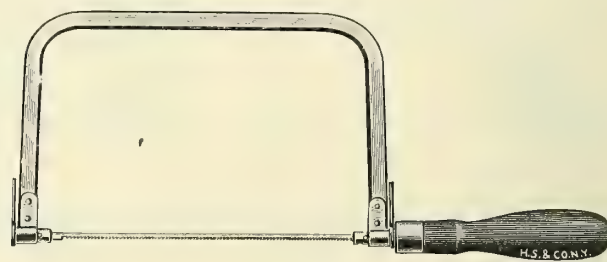


No. 110

Nickel-plated wire frame, black hardwood handle, 4 inches under back. Blades have looped ends to attach to frame.

Complete, 1 dozen extra blades with each frame \$4.00

Blades, gross 1.66



No. 125

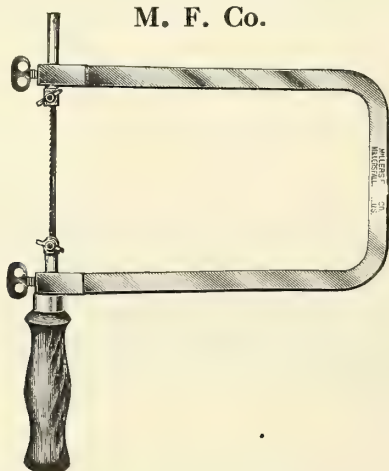
Nickel-plated steel frame, black rubberoid handle, $4\frac{1}{4}$ inches under back. The $6\frac{1}{2}$ -inch blade has same pin fastening as F. P. M. described above.

Complete, 1 blade with each frame, dozen \$14.00

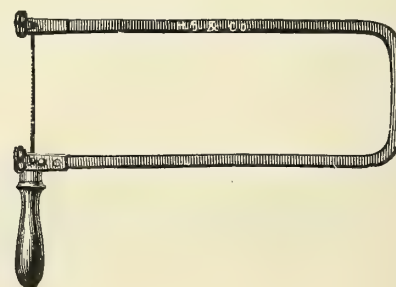
Blades, gross 6.00

Fret or Bracket Saw Frames

M. F. Co.



H. S. & Co.



No. 20

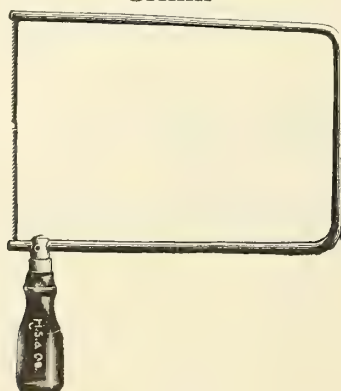
Nickel-plated, from best quality of spring steel.
Holds blades from 3 to 5 inches.

Depth, inches	8	10	12	14	16	8 inches deep, Steel, nickel-plated, without blades.....	\$13.00
Without blades, dozen	\$12.30	12.60	12.90	13.20	13.50	12 inches deep, Steel, nickel-plated, without blades.....	16.00

For blades, see next page

Light, for school use.

Griffin



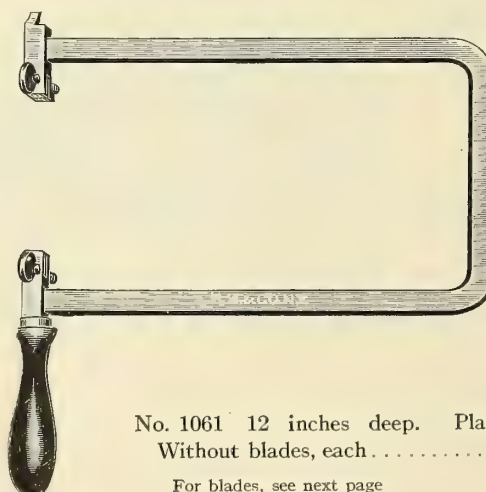
No. 170

Because of their simplicity and the ease with which new blades can be put into these frames, a large number of prominent manual training schools have adopted them.

8 inches deep, steel wire frame, nickel-plated, one dozen extra blades with each frame \$5.50

Blades, gross 1.66

Imported



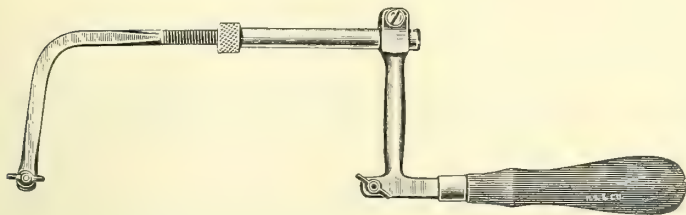
No. 1061 12 inches deep. Plain iron frame.

Without blades, each \$.64

For blades, see next page

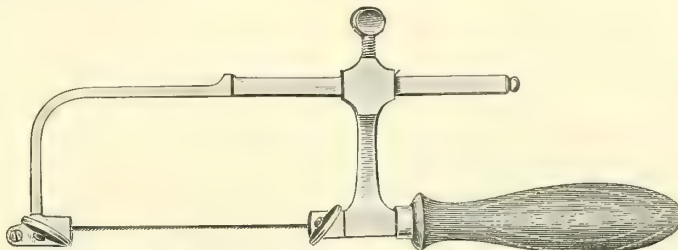
Jewelers Saw Frames

M. F. Co.



No. 600 Forged spring-steel, nickel-plated, cocobolo handle, 2¼ inches under back. Adjustable from 4 to 6 inches. Without blades, dozen \$14.00

Imported



No. 10462 Plain steel, 2 inches under back. Adjustable from 2¾ to 6 inches. Without blades, dozen \$5.00
No. 10465 Plain steel, 5 inches under back. Adjustable from 3 to 6 inches. Without blades, dozen 9.50

Fret or Scroll Saw Wood

(In Sheets)

24 inches long, 16 inches wide, ⅜-inch thick. Fine clear stock.
Bass (single ply), dozen \$ 3.00
Gum (three ply), dozen 3.00

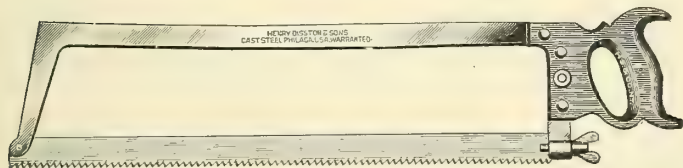
Fret or Scroll Saw Designs

(In Book Form)

Part I (large size) \$.75
Part VI (small size)30

Butcher Saws

Disston

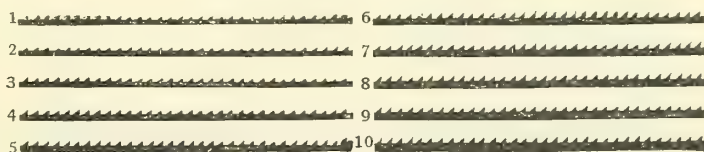


No. 19 Flat Back

Beech handle, polished edge, brass screws. Polished blade 1¼ inches wide, 11 points.
Length, inches 18 20 24 26
Dozen \$19.25 20.00 22.00 23.00
Extra blades, polished steel, 1 or 1¼ inches wide, 11 points to inch.
Inches 18 20 24 26
Dozen \$3.50 3.70 4.10 4.30

Saw Blades

Fret or Bracket, for Wood



Star

Nos.	000 to 6	7	8	9	10	11	12
5 inches, gross.	\$1.00	1.10	1.20	1.30	1.40	1.50	1.60

Griffin

Nos.	6	8	10
8 inches, gross.	\$1.00	1.20	1.40

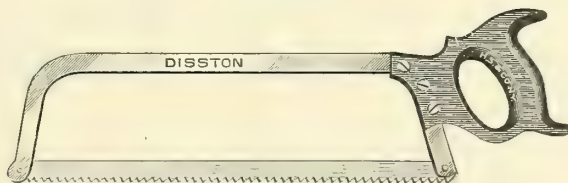
Jewelers, for Metal

Fish Brand

Nos.	0	1	2	3	4	5	6	8
5 inches, gross.	\$1.60	1.60	1.60	1.60	1.60	1.70	1.70	2.20

Kitchen Saws

Disston

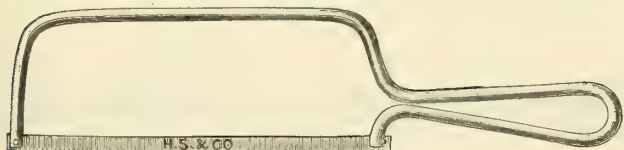


No. 18 Delaware

Heavy flat back, ⅝ x ⅙-inch, bright blade, ¾-inch wide.
Length, inches 12 14 16
Dozen \$6.30 6.30 7.00

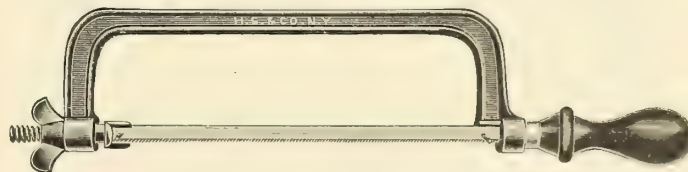
Hack Saw Frames

Spring Steel



Nos. 150 and 151. Nickel-plated Frame

No. 251 With one 8-inch blade. Frame ⅝-inch diameter, 2⅞ inches under back to tooth edge, dozen \$3.50
No. 150 With one 6-inch blade for jewelers use. Frame ¼-inch diameter, 2¼ inches under back to tooth edge, dozen 3.50
Extra blades for No. 150, gross 7.50



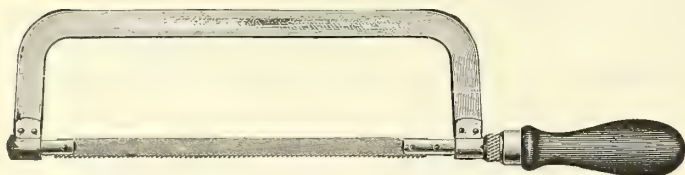
No. 30 Cast Iron, Black Enameled

Holds 8-inch blades, 2⅝ inches between back and tooth edge, back ⅞x1¼ inch.
Without blades, dozen \$2.50

Hack Saw Frames

Rigid

H. S. & Co.

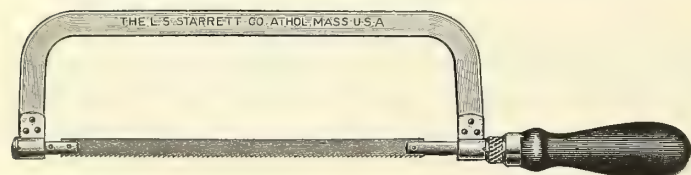


No. 100

Steel, nicked, $2\frac{3}{4}$ inches between back and tooth edge. Holds 8-inch blades in four different positions. The frame is very stiff and cannot be cramped by straining the blade.

With blade, each \$.50

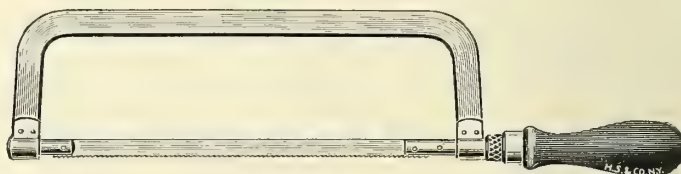
Starrett



No. 140

Frames are finely finished and nickel-plated. Spring plungers overlap the ends of the saw, automatically holding it firmly in place. By pushing them slightly backward the saw may be instantly removed, thus supplying a most convenient way of attaching and detaching the blades. An improved nut within the handle, and turning with it, gives any desired tension to saw, which may be set at any angle. Holds 8-inch blades.

With one blade, each \$.90



No. 141

This solid steel frame is very stiff, the stock being wider than commonly used, and it cannot be cramped by straining the blade. The saws may be set to cut in any one of four directions and tightened by turning the handle. It is well made and in every way just right. Polished and nickel-plated. Holds 12-inch blades in four different positions.

With one blade, each \$.90

Adjustable

H. S. & Co.

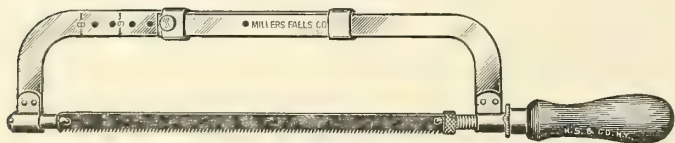


No. 200

Steel, nicked, $2\frac{3}{4}$ inches between back and tooth edge. Holds 8 to 12-inch blades in four different positions. The frame is wider and stiffer than usually used, and has our improved adjustable back.

With blade, each \$.75

Star



No. 10

Compact, stiff frame, polished and nicked steel, with extra strength in the middle of the back where there is the greatest strain.

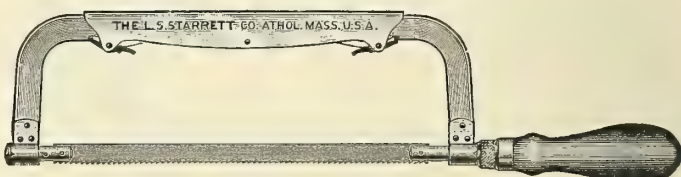
Extensible for blades from 8 to 12 inches, with scale for the different lengths on the back of the frame. Depth under back, $2\frac{3}{8}$ inches.

Blades strained by turning handle may be faced in four directions.

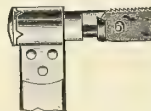
Knurled check nut screwing down and overlapping the end of the blade to hold it in place while it is being inserted in the frame.

Dozen, with 10-inch blade in each frame \$15.50

Starrett

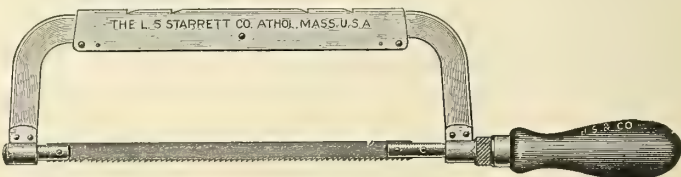


No. 145



Same general construction as Starrett No. 140 shown above, but equipped with adjustable or extension frame with improved spring pawls to securely hold blades from 8 to 12 inches long. Has spring plungers to hold saw as explained under No. 140.

With blade, each \$1.25



No. 146

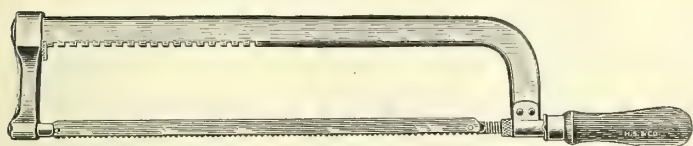
Nickel-plated. Exceptionally stiff and heavy frame. Holds 8 to 12-inch blades in any required angle; $2\frac{1}{2}$ inches between back and tooth edge; back $1\frac{3}{8}$ inch.

With blade, each \$1.00

Hack Saw Frames

Adjustable

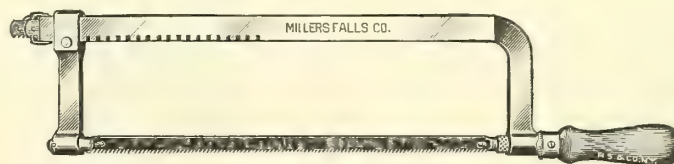
Star



No. 6

Stiff, strong back, of polished and nicked steel. Quickly adjustable for blades from 6 to 12 inches long. Tension by turning handle. Blades may be faced in four directions. Depth under back, $2\frac{3}{4}$ inches.

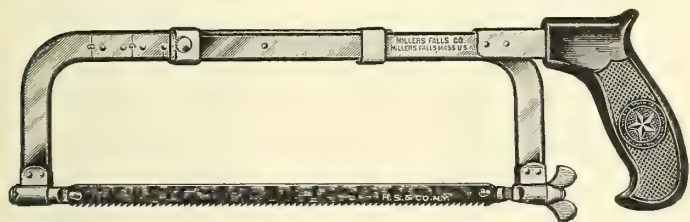
Dozen, with 12-inch blade in each frame \$15.50



No. 29

Polished steel frames, nicked and japanned, with back made of rectangular tubing, giving exceptional strength and lightness. Has receptacle with hinged cap for six spare blades. Sliding clamp adjustable to blades from 8 to 12 inches. Depth under back $3\frac{1}{2}$ inches.

Dozen, 12-inch blade in each frame \$20.00

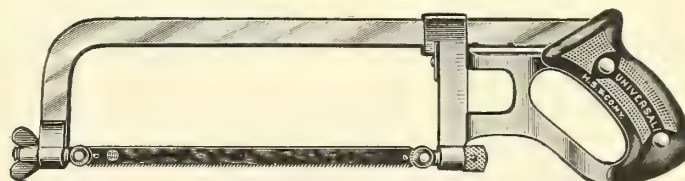


No. 1011

Pistol-Grip handle, black composition. Polished and nicked steel frame. Adjustable for blades 8 to 12 inches with scale for the different lengths on back of frame. Depth under back $3\frac{1}{2}$ inches. Perfect fitting handle secured to frame by a steel rib extending nearly the full length of handle.

Dozen, with 10-inch blade in each frame \$18.00

Universal

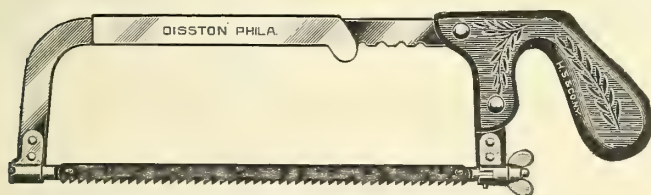


No. 12 Easy Grip

Rigid steel back, full nickel-plated, all small parts case-hardened. "Easy Grip" handles checked with Gun-Butt finish. Adjustable for blades 8 to 12 inches. Depth under back to tooth edge $3\frac{1}{8}$ inches.

Dozen, with 12-inch blade in each frame \$18.00

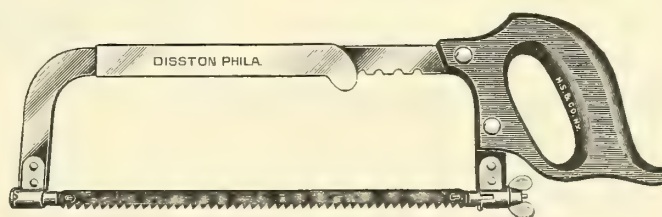
Disston



No. 35 $\frac{1}{2}$

Pistol-Grip handle, applewood, polished edges, steel frame, nickel-plated, adjustable by half inches to take in blades 8 to 12 inches. Riveted sockets. Reversible stretchers, will not fall out while readjusting.

Frame only, dozen \$16.00



No. 36 $\frac{1}{2}$

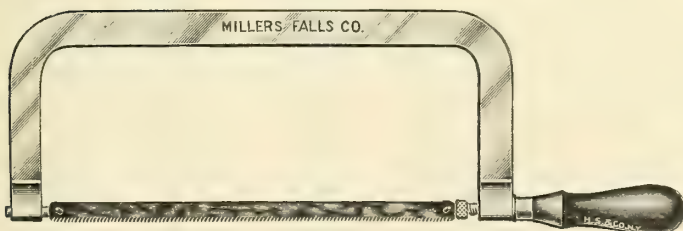
Closed hardwood handle, steel frame, nickel-plated, adjustable by half inches to take in blades 8 to 12 inches. Riveted sockets. Reversible stretchers, will not fall out while readjusting.

Frame only, dozen \$16.00

Rigid

(Deep Cut)

Star

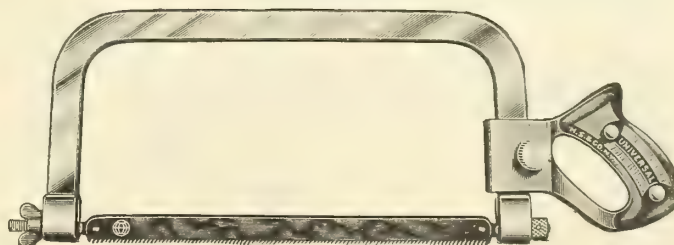


No. 15

Polished and nicked frame of stiff, heavy steel, $1\frac{1}{4}$ -inch. Tension by turning handle. Blades may be faced in four directions. Knurled check nut to screw down and overlap the end of the blade to hold it in place while being adjusted in frame. Depth under back $5\frac{1}{4}$ inches.

Dozen, with 12-inch blade in each frame \$19.50

Universal



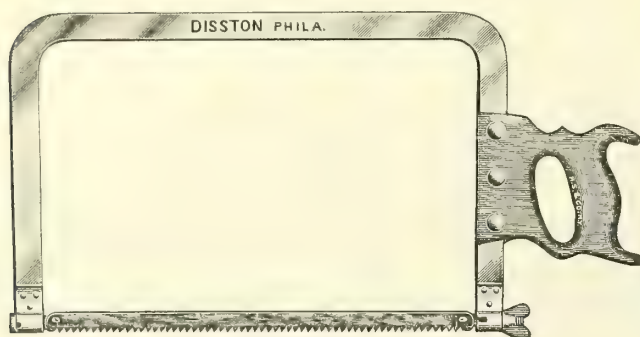
No. 7 Easy Grip

Distance from bottom of frame to tooth edge of saw is 6 inches. Especially designed for Architectural Iron Workers and others requiring a frame of greater depth than the ordinary. The "Easy Grip" movable handle may be raised or lowered as convenience requires. Made of 1 by $\frac{1}{4}$ -inch crucible steel, nickel-plated.

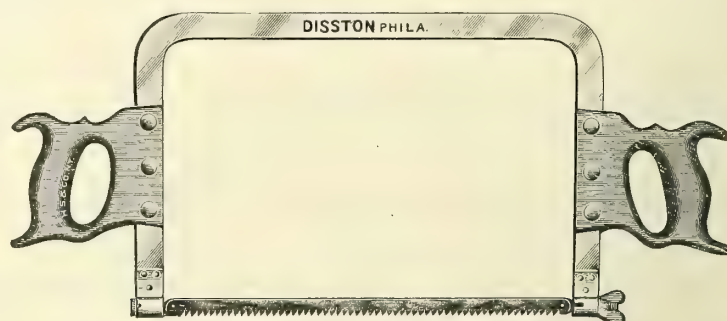
Dozen, with 12-inch blade in each frame \$24.00

Rail Hack Saw Frames

Disston



Nos. 6, 7 and 8



Nos. 9 and 10

Steel frame, polished. Riveted sockets. Specially adapted for cutting off rails, iron beams, girders, etc., and very desirable for contractors use and large work generally.

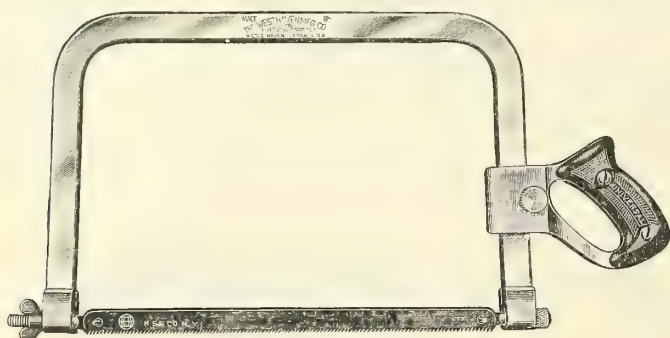
Single-Handle, Frames Only

No. 6	7¼ inches depth of frame, for 9-inch blades, dozen...	\$15.00
No. 7	10¼ inches depth of frame, for 12-inch blades, dozen...	18.00
No. 8	10¼ inches depth of frame, for 14-inch blades, dozen...	19.00

Double-Handle, for Two-Man Use, Frames Only

No. 9	10¼ inches depth of frame, for 16-inch blades, dozen..	\$23.00
No. 10	10¼ inches depth of frame, for 18-inch blades, dozen..	28.00

Universal



No. 8 Easy Grip



No. 9 Easy Grip

Distance from bottom of frame to tooth edge of saw is 10¼ inches. Made of 1x¼-inch crucible steel nickel-plated. For girders, beams and street railroad track work, etc. An important feature is the "Easy Grip" movable handle, which may be raised or lowered to suit depth of work when used for cutting rails in street.

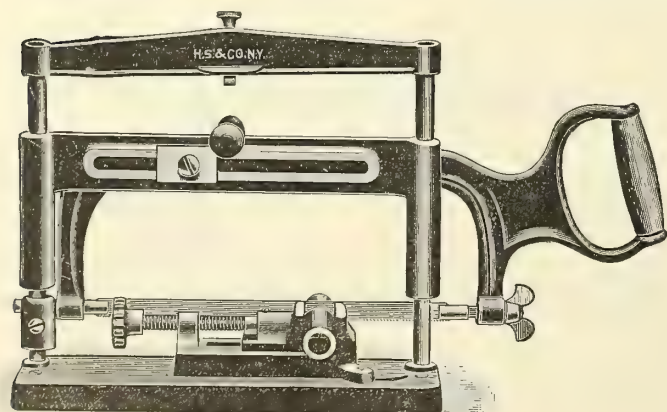
Single-Handle

With 12-inch blade, dozen	\$26.00
With 14-inch blade, dozen	27.00

Double-Handle

With 12-inch blade, dozen	\$28.00
With 14-inch blade, dozen	29.00

Bench Hack Saw



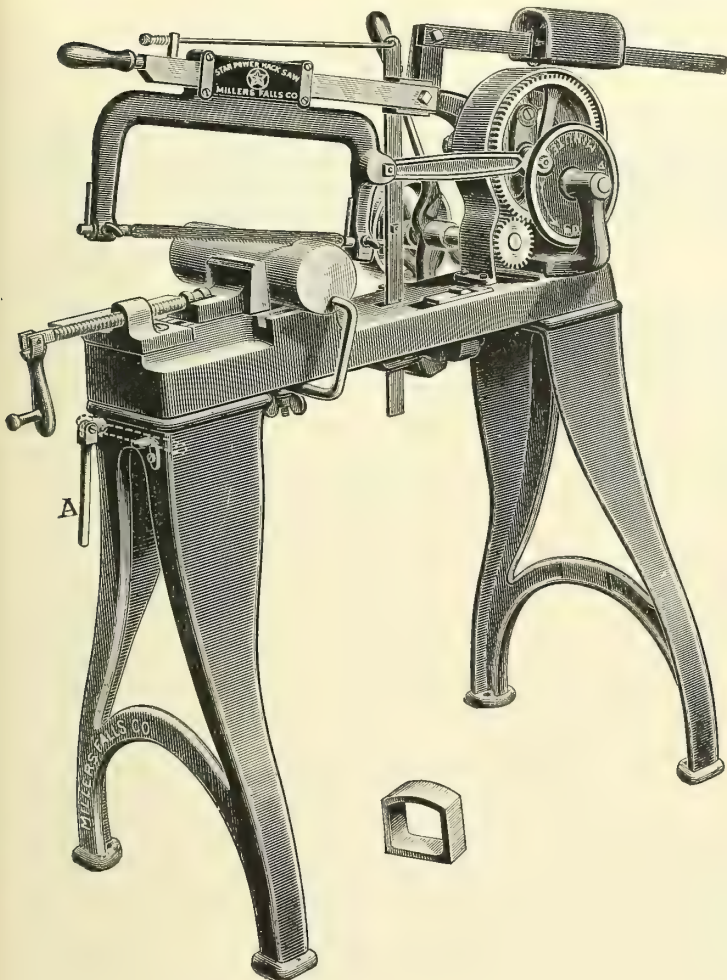
No. 1

This machine is made entirely of iron and steel, and is so constructed that it can readily and securely be fastened to any bench. Particularly suitable for cutting iron, steel or brass rod or tubing. The swivel vise with which it is supplied allows the operator to saw at an angle. The saw should be well strained in the frame when in use. Can also hold 8-inch blades when required. Vise opens 2 inches.

Each, with one 9-inch blade..... \$3.50

Power Hack Saws

Star



Equipped with gear-drive, giving great steadiness to the stroke. Quick return movement of saw frame, thus saving time, the speed of back stroke being just twice that of cutting stroke.

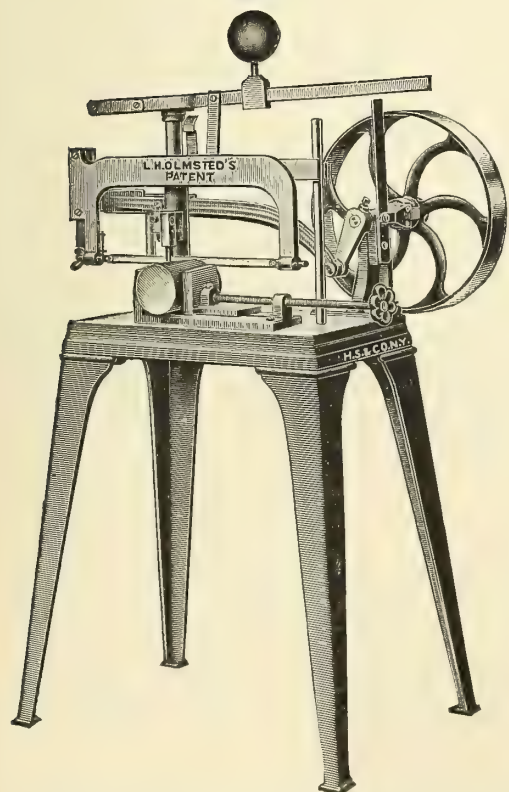
Saw frame slightly lifted on back stroke, prolonging the life of the blade.

Attachment provided which, by lifting lever A, as shown in illustration, holds the blade in suspension a trifle above the work. This permits the use of both hands in adjusting the work, or measuring it, etc. A support on the bed on the cut-off side of the blade to prevent the material from dropping off when cut is nearly finished. An adjusting screw in the head to take up any wear on the arm. A removable vise nut in the bed, which can be replaced in case of wear. Working parts placed under the bed away from dust and dirt.

Stops automatically when cut is made; $\frac{1}{3}$ horse-power required.

Back geared 3 to 1. Height from floor to top of bed, 28 inches; floor space, 20x46 inches; strokes recommended per minute, 60; size of pulley, 2x6 inches; cutting capacity, 5x5 inches; length of blade, 12 inches; weight, boxed, 294 pounds; weight, crated, 258 pounds; weight, net, 215 pounds.

No. 90 Each..... \$40.00



Olmsted Improved

This machine occupies small space and provides a firm support for saw frame and guide, thus insuring a true vertical cut through the work.

It has a swivel vise for holding the work with a pointer to indicate various angles. Is made entirely of steel and iron, working parts polished, other parts painted.

A stout post is firmly fixed in bedpiece and a sleeve, adjustable up and down, embraces post. To this sleeve is firmly secured a horizontal slideway upon which the saw frame slides. The head moves on a slideway that is supported by an upright post and extends into a deep vertical groove in the saw frame.

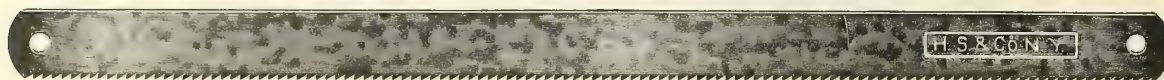
The entire length of the saw is in use when work the full capacity of the machine is being sawed.

Number	Type	Capacity Inches	Length of Saw Inches	Pulley Size Inches	R. P. M.	Space Required Inches	Weight Pounds	Each
*0	Bench	1 $\frac{1}{4}$ x1 $\frac{1}{4}$	4 $\frac{1}{2}$	6	175	7 $\frac{1}{2}$ x9	16	\$8.50
1	Floor	2 x2	6	8	100	12 x15	40	15.00
2	Floor	3 x3	9	12	70	15 x20	75	23.00
3	Floor	4 $\frac{1}{2}$ x4 $\frac{1}{2}$	12	14	50	20 x24	112	30.00
4	Floor	5 x6	14	12	60	20 x24	115	45.00
5	Floor	7 x8	17	14	50	24 x36	325	60.00

* No. 0, bench type, is the same design as illustration, except without legs.

Hack Saw Blades

H. S. & Co.



A high grade, dependable blade, recommended where quality is essential. These saws are made of a special tungsten alloy steel which gives maximum strength and hardness without brittleness. The milled teeth are sharp, with square-cutting points, set evenly and in such a manner that every tooth does its portion of the work. The "set" is just sufficient to insure a free, rapid and smooth cut, removing as little stock as possible.

In using Hack Saw Blades care should be taken to see that they are properly placed in the machine, having the saw stand plumb, with the tension depending on the size.

When used in power machines the blade should be placed with rake of the teeth forward, except when used in machines with draw cut, in which case the blade should be reversed. In hand-frames the blade should also be placed with the rake of teeth forward, bearing down on the forward stroke so that it will not slip, easing pressure on the return stroke, using about 50 strokes per minute. Do not bend sidewise.

When lubricant or compound is used, much greater efficiency can be obtained, as well as higher speed and longer life of the blade.

Coarse blades should not be used on light sheet-metal, tubing, very hard steel, copper, brass, etc.

The speed of saws should be varied according to the material being cut. Saws used in machines can be run to good advantage on soft steel about 100 strokes per minute, on annealed tool steel about 65 strokes per minute, on unannealed tool steel about 60 strokes per minute, when oil, compound or water is used; if saws run dry, about 50 strokes per minute should be the maximum.

Suggestions for Selecting Saws

In ordering, specify style, length, and purpose of use

Style A For general use—on cast-iron and steel, low carbon and cold-rolled steel and all solid metals under 16 gauge.

Style B For tubing, brass, copper and sheet-metal, light angle irons, wrought-iron pipe, 16 to 18 gauge.

Style C For brass tubing, sheet-steel and all metals thinner than 18 gauge.

Style D For heavy hand or light-power work. Will stand a considerable amount of hard work and rough usage.

Style E For use in large power frames.

Styles F and G. For use in high-speed power machines for heavy work.

Style H For extra heavy work in power machines.

Styles FA, FB, and FC. Hardened and tempered on cutting edge only, with flexible back. For general use. Especially recommended for difficult sawing where blade is liable to be strained or used by unskilled labor.

For Hand-Frames

Style A With regular teeth, 18 to inch.

Style B With fine teeth, 24 to inch.

Style C With extra fine teeth, 32 to inch.

Length, inches.....	6	7	8	9	10	11	12
Width, inch.....	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Thickness, English Standard Gauge.....	24	24	24	24	23	23	23
Thickness, decimals of an inch	.022	.022	.022	.022	.025	.025	.025
Styles A, B, C, either style, gross.....	\$7.00	7.50	8.00	9.00	10.00	11.00	12.00

For Heavy Hand-Frames and Light Power Machines

Style D 18 teeth, $\frac{5}{8}$ -inch wide, No. 21½ English Standard Gauge or .030 inch.

Length, inches.....	8	9	10	12	13	14
Style D, gross.....	\$9.00	9.60	10.20	12.60	15.00	16.20

For Hand-Frames—Flexible Back

Style FA With regular teeth, 18 to inch.

Style FB With fine teeth, 24 to inch.

Style FC With extra fine teeth, 32 to inch.

Length, inches.....	6	7	8	9	10	11	12
Width, inch.....	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Thickness, English-Standard Gauge.....	24	24	24	24	23	23	23
Thickness, decimals of an inch	.022	.022	.022	.022	.025	.025	.025
Styles FA, FB, FC, either style, gross.....	\$7.00	7.50	8.00	9.00	10.00	11.00	12.00

For Medium-Weight Power Machines

Style E 14 teeth, $\frac{3}{4}$ -inch wide, No. 21 English Standard Gauge or .032 inch.

Length (center to center of holes) inches.....	10	12	14	16	17
Style E, gross.....	\$12.60	15.00	18.00	21.00	22.20

For High-Speed Power Machines

The lengths given refer to distance from center to center of holes, except in the 14-inch and 17-inch lengths, which are 13½ inches and 16½ inches, respectively, from center to center of holes.

Style F 14 teeth, $\frac{3}{4}$ -inch wide, No. 18 English Standard Gauge or .049 inch.

Length, inches.....	12	14	16	17	18	19	20
Style F, gross.....	\$18.00	21.60	25.20	27.60	29.40	31.50	33.50

Style G 12 teeth, 1-inch wide, No. 18 English Standard Gauge or .049 inch.

Length, inches.....	12	14	16	17	18	19
Style G, gross.....	\$28.80	31.20	33.60	36.00	37.80	39.60
Length, inches.....	20	21	22	23	24	
Style G, gross.....	\$42.00	44.20	46.20	48.00	50.40	

For Heavy Work in High-Speed Power Machines

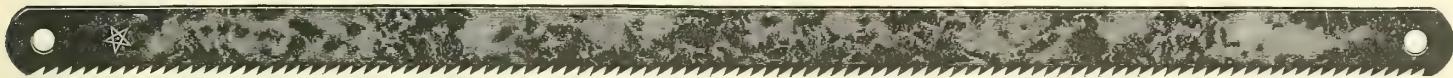
Style H 12 teeth, 1-inch wide, No. 16 English Standard Gauge or .065 inch.

The lengths given refer to distance from center to center of holes, except in 17-inch size, which measures 16½ inches from center to center.				
Length, inches.....	17	18	20	24
Style H, gross.....	\$39.00	40.80	45.20	54.00

Hack Saw Blades

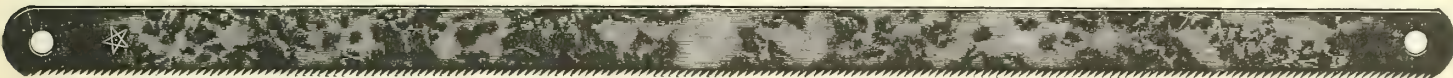
Star

Made with 14 teeth (regular) and 24 teeth (fine) to the inch. 14 teeth to the inch are supplied unless 24 teeth or fine is specified.



14 Teeth (Regular)

Adapted for all kinds of hack saw work and on all materials except thin stock and tubing with thin walls.



24 Teeth (Fine)

Specially designed for thin stock of all kinds, including tubing with thin walls.

Made from the highest grade of steel, tempered to the utmost without injuring the toughness and toughened to the utmost possible without injuring the temper. Teeth perfectly milled and patent set; scientifically designed and absolutely correct as to width, thickness, and number of teeth to the inch.

Length of blade, inches.....	6	7	8	9	10	11	12	*12
Width of blade, inches.....	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$
Weight of one gross, pounds.....	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$4\frac{5}{8}$	5	$5\frac{1}{2}$	10
Dozen.....	\$.60	.65	.70	.75	.85	.95	1.00	1.35
Gross.....	7.00	7.50	8.00	9.00	10.00	11.00	12.00	16.00

*12x $\frac{5}{8}$ -inch blade, made with 14 teeth only, for use in power machines.

Rail Hack Saw Blades

Disston



With Milled Teeth

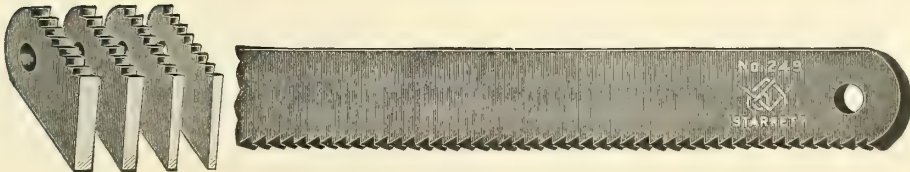
$\frac{3}{4}$ -inch wide, 21 gauge, 15 points

Length of blade, inches.....	9	12	14	16	18
Dozen.....	\$.95	1.25	1.50	1.75	2.00

Length of blades measured from center to center of holes

Screw Slotting Saw Blades

Starrett



No. 249

Made for cutting slots in screw-heads and can be used in any adjustable or 8-inch hack saw frame. They are hardened throughout, have 14 teeth to the inch, and taper in thickness from the teeth to the back, thus providing good clearance, which prevents binding and allows the blades to cut easily and quickly. All blades are 8 inches long by $\frac{1}{2}$ -inch wide. They are made in four different thicknesses, covering a wide range of work, and will be found invaluable in any machine shop.

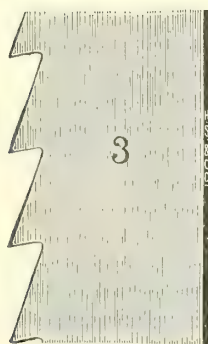
No. 249A	Thickness at teeth, .049 inch, dozen	\$1.50	Gross \$18.00
No. 249B	Thickness at teeth, .065 inch, dozen	1.67	Gross 20.00
No. 249C	Thickness at teeth, .083 inch, dozen	1.83	Gross 22.00
No. 249D	Thickness at teeth, .109 inch, dozen	2.00	Gross 24.00
No. 249E	Set of four blades, one of each thickness,.....Set	.75	

SINCE
1848

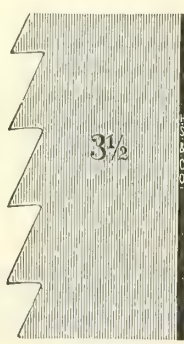
HAMMACHER SCHLEMMER & CO. NEW YORK

Narrow Band Saws

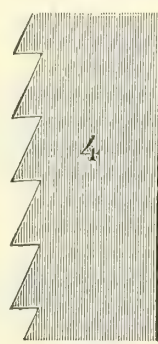
French
Genuine Peugeot Aîné



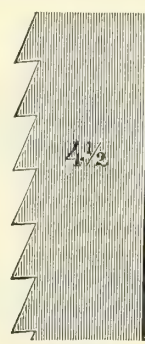
3 Points



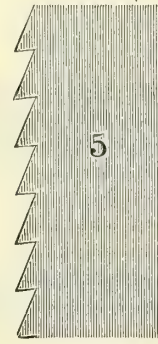
3 1/2 Points



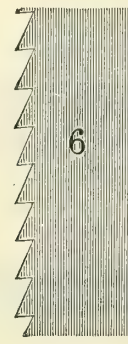
4 Points



4 1/2 Points



5 Points



6 Points

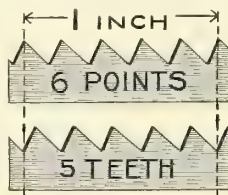


7 Points

The above cuts show the full sizes of the number of points per inch. In ordering, care should be taken not to confuse the points with the teeth, as there is one tooth less per inch than there are points. See illustration.



8 Points



9 Points

These are genuine celebrated Peugeot Aîné Band Saws, which we import direct, and of which we always carry a large and complete stock.

For general excellence of quality, for toughness and great endurance, finest of detail in manufacture, absolute uniformity, correctness of size and, in fact, for every-known point of necessity and perfection in Band Saws, these French Saws for years have been pre-eminently the best.

†Not Joined, Set or Filed

In Lengths of 19 3/4 Feet

In Lengths of 21 1/2 Feet

Num- ber	Width Inch	Gauge* Num- ber	Points per Inch	Each	Num- ber	Width Inches	Gauge* Num- ber	Points per Inch	Each	Num- ber	Width Inch	Gauge* Num- ber	Points per Inch	Each	Num- ber	Width Inches	Gauge* Num- ber	Points per Inch	Each
8	1/8	21	9	\$1.06	33	1/2	19	4 1/2	1.50	85	1/8	21	9	1.15	117	1/2	20	6	1.66
9	3/16	20	6	1.06	34	...	...	5	1.50	92	3/16	21	7	1.14	119	5/8	19	4	1.78
10	...	...	7	1.06	37	1/2	20	4 1/2	1.50	96	1/4	20	6	1.28	121	...	...	5	1.78
13	3/16	21	6	1.06	38	...	...	5	1.50	97	...	...	7	1.28	123	5/8	20	4	1.78
14	...	...	7	1.06	39	...	...	6	1.50	99	1/4	21	5	1.28	124	...	...	4 1/2	1.78
17	1/4	20	5	1.18	41	5/8	19	4	1.64	100	...	...	6	1.28	128	3/4	19	4	2.50
18	...	...	6	1.18	43	...	...	5	1.64	101	...	...	7	1.28	132	3/4	20	4	2.50
19	...	...	7	1.18	45	5/8	20	4	1.64	103	3/8	20	5	1.40	134	...	...	5	2.50
20	...	...	8	1.18	46	...	...	4 1/2	1.64	104	...	...	6	1.40	140	7/8	20	4	2.80
21	1/4	21	5	1.18	47	...	...	5	1.64	107	3/8	21	5	1.40	147	1	19	3	2.80
22	...	...	6	1.18	49	3/4	19	3 1/2	2.12	108	...	...	6	1.40	148	...	...	3 1/2	2.80
23	...	...	7	1.18	50	...	...	4	2.12	109	...	...	7	1.40	149	...	...	4	2.80
24A	5/16	20	5	1.18	54	3/4	20	4	2.12	111	1/2	19	4 1/2	1.66	152	1 1/4	18	3	3.42
24B	...	...	6	1.18	55	...	...	5	2.12	112	...	...	5	1.66	155	1 3/8	18	3	4.18
24D	5/16	21	5	1.18	56	...	...	5	2.12	115	1/2	20	4 1/2	1.66	160	1 1/2	18	3	5.00
24E	...	...	6	1.18	58	7/8	19	4	2.58	116	...	...	5	1.66					
24F	...	...	7	1.18	62	7/8	20	4	2.58										
25	3/8	20	5	1.30	66	1	18	3 1/4	2.58										
26	...	...	6	1.30	69	1	19	3	2.58										
29	3/8	21	5	1.30	70	...	...	3 1/2	2.58										
30	...	...	6	1.30	71	...	...	4	2.57										
					74	1 1/4	18	3	3.16										

In Coils of 300 Feet

The following sizes can be furnished in any length desired up to 300 feet:

3/16-inch wide, 21 *gauge, 7 points per inch, per 100 feet.....	\$5.35
1/4-inch wide, 21 *gauge, 6 points per inch, per 100 feet.....	5.95
3/8-inch wide, 21 *gauge, 5 points per inch, per 100 feet.....	6.55
1/2-inch wide, 20 *gauge, 5 points per inch, per 100 feet.....	7.75
5/8-inch wide, 19 *gauge, 4 points per inch, per 100 feet.....	8.35

*English Standard or Stubs Gauge

†Joining, Setting and Filing

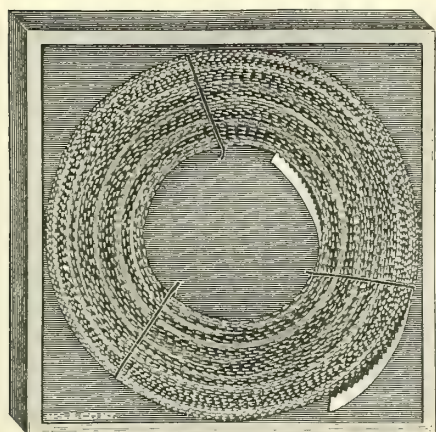
Joining or Brazing				Setting		Filing	
Width, inches.....	1/8 to 1/2	5/8 to 7/8	1 to 1 1/4 1 3/8 to 1 1/2 1 3/4 to 2 1/2				
Each.....	\$.30	.40	.50 .60 1.05	Per foot.....	\$.01 1/2	Per foot.....	\$.01 1/2

For general information, see page 512

Narrow Band Saws

Disston

Made of Disston high-grade crucible steel, hardened and tempered by special processes.
Give full particulars when ordering as to width, gauge, points per inch, class of work to be done, etc.



Furnished Set and Filed, Not Joined

Width Inches	*Gauge	Per Foot	For Joining Each
1/4	21 or 22	\$.13	\$.15
3/8	21 or 22	.14	.15
1/2	21 or 22	.15	.15
5/8	21 or 22	.17	.20
3/4	20 or 21	.19	.20
7/8	20 or 21	.21	.20
1	20 or 21	.23	.25
1 1/8	20	.25	.25
1 1/4	19 or 20	.27	.25
1 3/8	19 or 20	.30	.30
1 1/2	19 or 20	.33	.30
1 3/4	19	.36	.30

Tempered for Sawing Metal, add 50 per cent to above list

Soft Back, Same Value as "Soft Back"

Hardened on tooth-edge only

Width Inch	*Gauge	Points	Per Foot	For Joining Each
1/4	23	16, 19, 22 or 26	\$.08 1/2	\$.15
3/8	23	16, 19, 22 or 26	.10 1/2	.15
1/2	21	14, 16, 18 or 22 }	.11 1/2	.15
1/2	23	16, 19, 22 or 26 }		

Width Inch	*Gauge	Points	Per Foot	For Joining Each
5/8	21	14, 16, 18 or 22 }	\$.13 1/2	\$.20
5/8	23	14, 16, 18 or 22 }		
3/4	21	14, 16 or 18		

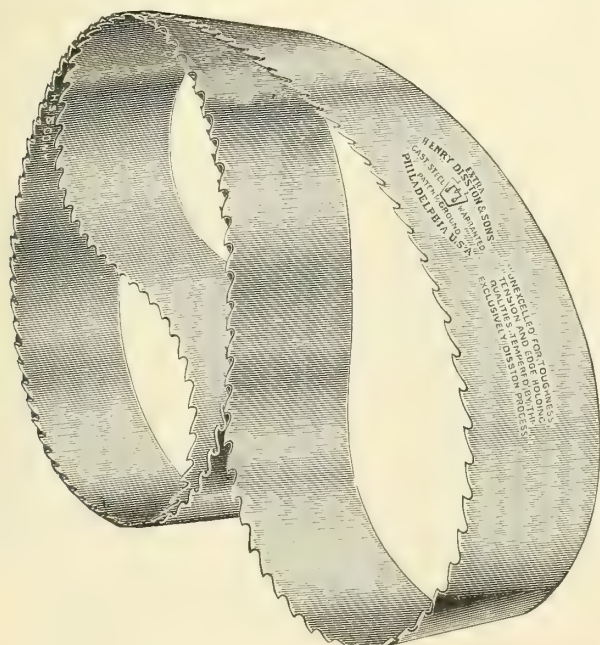
Wide Band Saws

Disston

Made of Disston high-grade crucible steel. Hardened and tempered by special processes
Instructions for ordering

When ordering state whether right or left-hand, gauge or thickness, space, depth and shape of teeth, straight or crowning back. If the saws are to be crowning on back, we supply them 1/16-inch crowning to each five feet in length, unless otherwise instructed.

Furnished Set, Sharpened and Joined Complete



Width Inches	*Gauge	Per Foot
2	18 to 20	\$.80
2 1/2	18 to 20	1.00
3	18 to 20	1.20
3 1/2	18 to 20	1.40
4	17 to 19	1.60
4 1/2	17 to 19	1.80
5	17 to 19	2.00
5 1/2	17 to 19	2.20
6	17 to 19	2.40
7	16 to 18	2.80
8	14 to 16	3.20
9	14 to 16	3.60
10	14 to 16	4.00
11	14 to 16	4.50
12	13 to 15	5.00
13	13 to 15	6.00
14	13 to 15	7.00
15	12 to 14	8.50
16	12 to 14	10.00
17	12 to 14	14.00
18	12 to 14	18.00

*English Standard or Stubs Gauge.

Double-Edge: List price per foot, all widths, advance 10 per cent. over list prices of single-edge saws as above.

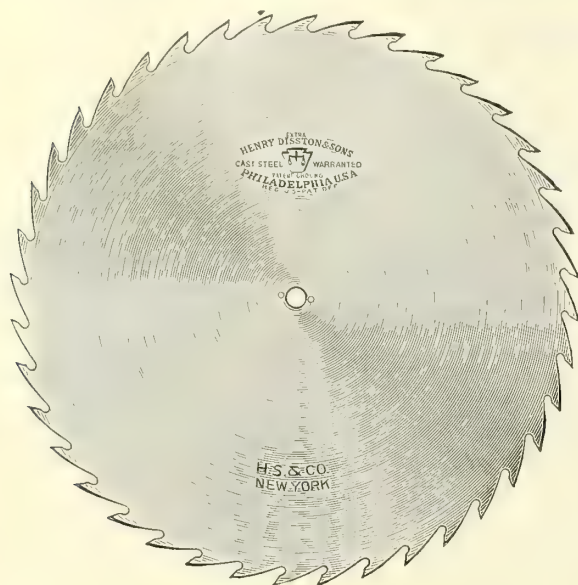
Toothed Blanks, same price as finished saws.

For general information, see page 512

Saws of odd widths, not listed, take price of next wider size listed.
Saws of heavier gauge than listed, add 5 per cent. to list for each gauge heavier.
No extra charge for saws one or two gauges thinner than list; when more than two gauges thinner, add 5 per cent. to list for each gauge.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK



Solid Tooth Circular Saws

Disston

Extra quality, patent ground and tempered. Superior workmanship guaranteed.
(See page 512)

When ordering Circular Saws be particular to state—

Diameter in inches.

Thickness or Gauge at center (Stubs or English Standard Gauge).

Thickness or Gauge at rim.

Number of Points to inch.

Size of Mandrel Hole.

Size of Pin Holes (if any).

Distance between Pin Holes from center to center.

Kind of Lumber to be sawed.

Whether for Crosscut or Rip Sawing.

Circular Saws of uneven diameters not listed, take price of next larger size listed.

Circular Saws for Bone, Horn and Ivory, add 50 per cent. to list.

No extra charge for Saws one gauge thicker than list.

No extra charge for Saws one, two, or three gauges thinner than list; when more than three gauges thinner, add 5 per cent. to list for each gauge.

Circular Saws 48 inches and larger, thinner than 10 gauge, not warranted.

Circular Saws 42 inches or less in diameter beveled one gauge without extra charge; 44 inches or larger, beveled two gauges without extra charge.

Circular Saws hollow-ground or concaved, add for each gauge hollow-ground or concaved double the price listed for beveling.

Diameter Inches	Thickness Gauge*	Size of Hole Inches	Each	Extra for Each Gauge Heavier	Beveling New Saws (Grinding or Bevel- ing Old Saws Extra) Per Gauge	Extra for Rip	Setting and Sharpening Cross-Cut
1	24	$\frac{3}{8}$	\$1.00	\$.01	\$.06	\$.03	\$.04
1½	24	$\frac{3}{8}$	1.00	.01	.07	.03	.05
2	23	$\frac{3}{8}$	1.00	.01½	.08	.04	.05
2½	22	$\frac{3}{8}$	1.00	.02	.09	.04	.06
3	21	$\frac{1}{2}$	1.00	.02½	.10	.05	.06
3½	20	$\frac{1}{2}$	1.00	.03	.12	.05	.07
4	19	$\frac{3}{4}$	1.20	.03	.14	.06	.07
5	19	$\frac{3}{4}$	1.50	.04	.16	.06	.08
6	18	$\frac{3}{4}$	1.80	.05	.18	.07	.10
7	18	$\frac{3}{4}$	2.10	.06	.20	.08	.11
8	18	$\frac{7}{8}$	2.40	.08	.22	.10	.13
9	17	$\frac{7}{8}$	2.80	.10	.25	.11	.14
10	16	1	3.30	.12	.28	.12	.16
11	16	1	3.90	.16	.30	.13	.18
12	15	1	4.40	.20	.35	.15	.20
14	14	$1\frac{1}{8}$	5.30	.25	.40	.18	.23
16	14	$1\frac{1}{8}$	6.50	.30	.50	.20	.25
18	13	$1\frac{1}{4}$	8.00	.40	.60	.23	.28
20	13	$1\frac{5}{16}$	9.50	.50	.70	.25	.32
22	12	$1\frac{5}{16}$	11.50	.60	.80	.28	.35
24	11	$1\frac{3}{8}$	13.50	.70	.90	.31	.40
26	11	$1\frac{3}{8}$	16.00	.85	1.05	.35	.45
28	10	$1\frac{1}{2}$	18.50	1.00	1.20	.38	.50
30	10	$1\frac{1}{2}$	21.00	1.15	1.30	.42	.55
32	10	$1\frac{5}{8}$	24.00	1.30	1.40	.45	.60
34	9	$1\frac{5}{8}$	27.00	1.50	1.55	.50	.65
36	9	$1\frac{5}{8}$	31.00	1.80	1.70	.55	.70
38	9	$1\frac{5}{8}$	35.00	2.00	1.85	.60	.75
40	9	2	41.00	2.30	2.00	.65	.80
42	8	2	47.00	2.60	2.20	...	.85
44	8	2	55.00	3.00	2.40	...	.90
46	8	2	65.00	3.50	2.60	...	1.00
48	8	2	75.00	4.00	2.80	...	1.10
50	7	2	85.00	4.50	3.00	...	1.20
52	7	2	95.00	5.00	3.25	...	1.30
54	7	2	105.00	6.00	3.50	...	1.40
56	7	2	120.00	7.00	3.75	...	1.50
58	7	2	135.00	8.00	4.05	...	1.60
60	6	2	150.00	9.00	4.35	...	1.70
62	6	2	170.00	10.00	4.65	...	1.80
64	6	2	190.00	12.00	5.00	...	1.90
66	6	2	210.00	15.00	5.35	...	2.00
68	5	2	235.00	18.00	5.75	...	2.10
70	5	2	265.00	21.00	6.15	...	2.20
72	5	2	300.00	24.00	6.55	...	2.30
74	5	2	340.00	27.00	7.00	...	2.40
76	5	2	390.00	30.00	7.50	...	2.50
78	5	2	465.00	34.00	8.10	...	2.60
80	5	2	550.00	38.00	8.80	...	2.70
82	5	2	640.00	43.00	9.60	...	2.80
84	5	2	730.00	48.00	10.50	...	3.00

*English Standard or Stubs Gauge.

Inserted Tooth Circular Saws furnished at special prices on receipt of information as to gauge, bevel and style of tooth, or work to be done. Inserting chisel teeth in old circular saws at special prices.

Circular Mitre Saws

Disston

Sharpened, ready for use. Taper ground for clearance to run without set

With Plain Teeth

With Cleaner Teeth



Especially adapted for smooth cutting, such as cabinet and cigar-box work.

Cuts as smooth for ripping as for cross-cutting. A greater number of cleaner teeth are put in for ripping than for cross-cutting.

When ordering, give size of center hole, also diameter of collars on mandrel

Diameter Inches	Gauge at Collar Line	Gauge at Teeth and Hole	Extra for Each Gauge Heavier	Extra for Each Additional Gauge Beveling	Each	Diameter Inches	Gauge at Collar Line	Gauge at Teeth and Hole	Extra for Each Gauge Heavier	Extra for Each Additional Gauge Beveling	Each
4	21	18	\$.03	\$.14	\$3.00	12	17	14	\$.20	\$.35	\$ 8.30
5	20	17	.04	.16	3.60	14	16	13	.25	.40	9.80
6	20	17	.05	.18	4.20	16	16	13	.30	.50	11.60
7	19	16	.06	.20	4.80	18	15	12	.40	.60	13.70
8	19	16	.08	.22	5.40	20	15	12	.50	.70	16.20
9	18	15	.10	.25	6.00	22	14	11	.60	.80	19.00
10	18	15	.12	.28	6.70	24	14	11	.70	.90	22.00
11	17	14	.16	.30	7.50						

Novelty or Combination Saws

Disston

Sharpened, ready for use. Taper ground for clearance, to run without set

For Crosscutting

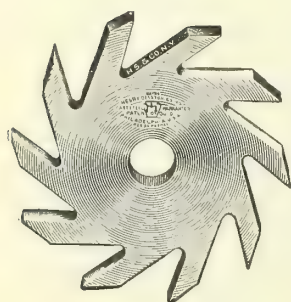
For Ripping



These two saws are especially adapted for cutting hard wood where a clean smooth cut is required. Will cut as smoothly for cross-cutting as for ripping. When made for ripping, three crosscut teeth (instead of five) are combined with one cleaner, thereby permitting the insertion of more cleaner teeth. List prices and instructions for ordering same as above.

Grooving Saws

Disston



Thickness, inch	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Space of teeth, inches	$\frac{1}{2}$	1	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	2	2
Diameter, 3 inches	\$1.60	2.20	4.00	4.60	5.20	5.80	6.40	7.50	8.50
Diameter, 4 inches	1.80	2.50	4.80	5.50	6.20	6.80	7.60	8.80	10.00
Diameter, 5 inches	2.00	2.80	5.60	6.40	7.20	8.00	8.80	10.20	12.00
Diameter, 6 inches	2.30	3.20	6.40	7.30	8.20	9.10	10.00	11.60	14.00
Diameter, 7 inches	2.70	3.70	7.20	8.20	9.20	10.20	11.20	13.20	16.00
Diameter, 8 inches	3.20	4.30	8.00	9.20	10.40	11.60	12.70	15.00	18.00
Diameter, 9 inches	3.80	5.00	9.00	10.30	11.60	12.90	14.30	16.80	20.00
Diameter, 10 inches	4.40	5.80	10.00	11.40	12.90	14.40	15.90	18.80	22.00
Diameter, 11 inches	5.00	6.70	11.00	12.60	14.20	15.90	17.60	20.80	24.00
Diameter, 12 inches	5.70	7.70	12.00	13.80	15.60	17.40	19.20	23.00	26.00
Diameter, 14 inches	7.00	9.80	14.00	16.00	18.00	20.00	22.00	26.00	30.00
Diameter, 16 inches	8.40	12.00	16.00	18.30	20.60	22.90	25.20	30.00	35.00

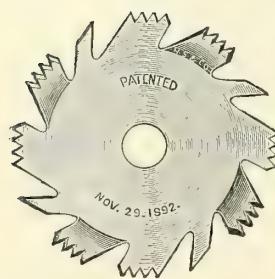
Bevel Grooving Saws, add 10 per cent. to above prices.

Grooving Saws with teeth shaped and backed off, add 50 per cent. to above prices.

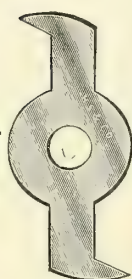
Special Grooving Saws made to order, special prices.

Adjustable Grooving Saws or Dado Heads

Huther



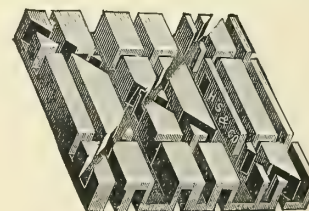
Outside Cutter



Inside Cutter



Outside Cutter



Showing Grooves Cut

Arranged in Sets as follows:

No. 1 Set	cuts $\frac{1}{8}$ to $\frac{3}{8}$ by $\frac{1}{8}$ inch
No. 2 Set	cuts $\frac{1}{8}$ to $\frac{5}{8}$ by $\frac{1}{8}$ inch
No. 3 Set	cuts $\frac{1}{8}$ to $\frac{3}{4}$ by $\frac{1}{16}$ inch
No. 4 Set	cuts $\frac{1}{8}$ to 1 by $\frac{1}{16}$ inch
No. 5 Set	cuts $\frac{1}{8}$ to $1\frac{1}{2}$ by $\frac{1}{16}$ inch
No. 6 Set	cuts $\frac{1}{8}$ to 2 by $\frac{1}{16}$ inch
No. 7 Set	cuts $\frac{1}{8}$ to 3 by $\frac{1}{16}$ inch
No. 8 Set	cuts $\frac{1}{8}$ to 4 by $\frac{1}{16}$ inch

Special sets made to cut from 4 to 8 inches wide.

Prices on application.

As outside cutters are $\frac{1}{8}$ inch thick, $\frac{3}{16}$ inch groove cannot be cut.

Diameter, inches	6	7	8	9	10	11	12	14	16	18	20
No. 1 Set	\$5.80	6.80	7.60	8.35	9.15	9.75	10.85	13.30	15.80	18.30	19.80
No. 2 Set	7.05	8.15	9.05	9.90	10.80	11.60	12.95	15.40	17.90	20.40	22.90
No. 3 Set	8.65	9.85	10.85	11.90	13.00	13.90	15.45	18.00	20.50	23.00	25.50
No. 4 Set	9.90	11.20	12.30	13.45	14.65	15.75	17.55	20.00	22.50	25.00	27.50
No. 5 Set	12.40	13.90	15.20	16.55	17.95	19.45	21.75	24.25	26.75	29.25	31.75
No. 6 Set	14.90	16.60	18.10	19.65	21.25	23.15	25.95	28.50	31.00	33.50	36.00
No. 7 Set	20.50	22.60	24.50	26.45	28.45	30.75	34.35	38.90	43.80	47.90	54.00
No. 8 Set	26.10	28.60	30.90	33.25	35.65	38.35	42.75	49.30	54.60	62.30	72.00

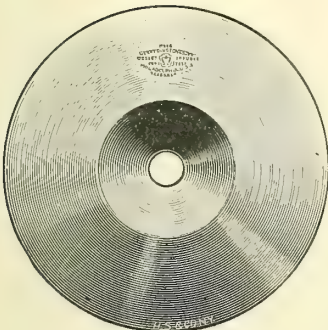
In ordering, state the number of set, or when special, the greatest width of groove to be cut, diameter of groover, and size of hole wanted.
Extra inside cutters can be had at any time. Prices on application.

Circular Knives

For Cork, Leather, Paper or Cloth

Disston

When ordering specify diameter, gauge, size of hole, whether beveled on one or both sides, depth of bevel and material to be cut. Knives two gauges heavier than list are supplied without extra charge. Five per cent. is charged for each additional gauge over two.



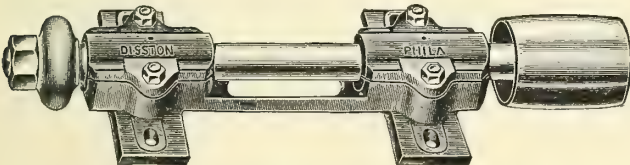
14 gauge	To 10 inches.....	per inch in diameter	\$.35
12 gauge	11 and 12 inches.....	per inch in diameter	.40
11 gauge	13 and 14 inches.....	per inch in diameter	.45
10 gauge	15 and 16 inches.....	per inch in diameter	.50
9 gauge	17 and 18 inches.....	per inch in diameter	.55
9 gauge	19 and 20 inches.....	per inch in diameter	.60
8 gauge	21 and 22 inches.....	per inch in diameter	.65
8 gauge	23 and 24 inches.....	per inch in diameter	.70
7 gauge	25 and 26 inches.....	per inch in diameter	.75
7 gauge	27 and 28 inches.....	per inch in diameter	.80
6 gauge	29 and 30 inches.....	per inch in diameter	.85
6 gauge	31 and 32 inches.....	per inch in diameter	.95

Mandrels for Circular Saws

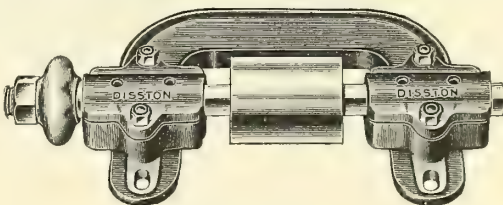
With Self-oiling Boxes

Disston

Shafts are of steel, accurately turned, possessing a safe margin of strength to prevent springing or undue vibration under the heaviest feed or pressure that may be put on the saw they are designed to carry. All Collars or Flanges are of sufficient diameter to give proper support to the saw, accurately machined and recessed, giving a perfect bearing on the blade. The Pulleys are turned up after being placed on shaft. The Boxes, extra long and heavy, are of grey iron, well fitted and babbitted, insuring true balance and smooth running.



Nos. 301 to 310



Nos. 201 to 210

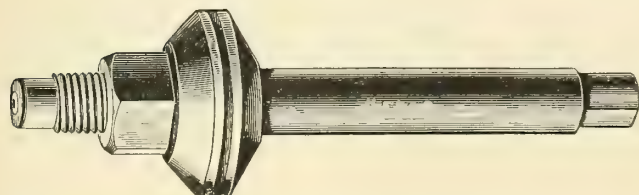
Connected Box with Pulley on End, made with pulley on right-hand side, with left-hand thread, unless otherwise ordered.

Yoke with Pulley in center.

Number	Length over all Inches	From Center to Center of Boxes Inches	Each	Diameter of Shaft Inches	Hole in Saw Inches	Diameter of Pulley Inches	Face of Pulley Inches	Diameter of Collar Inches	Number	Length over all Inches	From Center to Center of Boxes Inches	Each
Nos. 201 to 210				These dimensions for all Disston Mandrels on this page					Nos. 301 to 310			
201	15½	8¾	\$7.00	1 1/16	1	2½	3½	2½	301	19	8¼	\$6.50
202	17¼	9¼	7.75	1 1/16	1 1/8	3	4	3	302	21½	9¾	7.25
203	19½	11¼	9.00	1 5/16	1 1/4	3½	4½	3½	303	23¾	11½	8.75
204	21¾	12¾	10.00	1 7/16	1 5/8	4	5	4	304	26¾	12¾	9.75
205	24¼	14¾	11.25	1 9/16	1 ¾	4½	5½	4½	305	29¾	14¾	11.00
206	26¼	16¾	12.50	1 11/16	1 7/8	5	6	5	306	32¼	16¾	12.25
207	28½	18¾	13.25	1 13/16	1 ¾	5½	6½	5½	307	35	18¾	13.00
208	30½	20½	16.00	1 15/16	1 11/8	6	7	6	308	37½	20½	15.50
209	33	22	22.00	1 17/16	1 5/8	7	8	6	309	41	22	21.50
210	35	23½	23.50	1 19/16	1 5/8	8	8	6	310	42¾	23½	23.00

Lathe Arbors

B-M. Co.



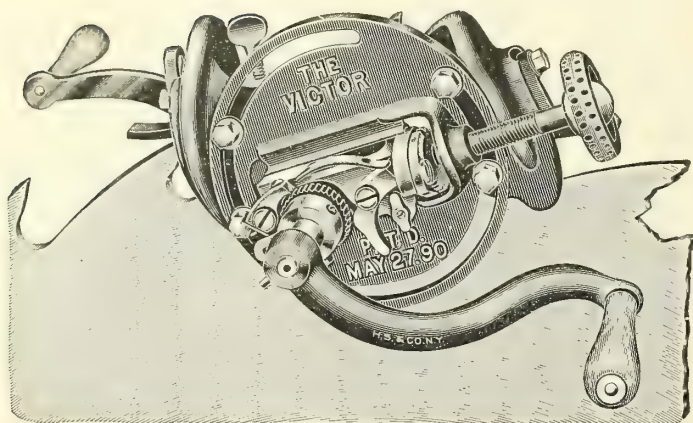
Made of tool steel, nuts and centers hardened.
For small circular saws and grinding wheels.

For diameter hole, inch . . .	¼	5/16	3/8	½	5/8	¾
Each.....	\$.80	1.10	1.40	1.60	2.20	2.40

Saw Gummers

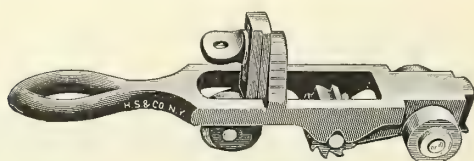
Disston

Victor Self-Feeding



Cutter Grinder

For Holding the Cutter of Saw Gummers in Position
During Process of Sharpening



The stone should have a perfectly straight face and turn from the operator. Lower the adjustable frame of grinder until the cutter touches the stone, then adjust the spring in proper position.

Furnished with No. 1 shaft for cutters, 1 inch to 1 1/4 inches.
Furnished with No. 2 shaft for cutters 3/4 inch and 7/8 inch.
Furnished with No. 3 shaft for cutters, 5/8 inch and 1/2 inch.
Give full particulars when ordering.

Each..... \$1.25

Directions for Use

The lighter parts are malleable iron, with steel shaft, combining strength and lightness. The Victor will gum all circular saws as well as mill and cross-cut. Illustration shows Victor at work on 60-inch circular saw.

Place the gummer on saw with feed-screw towards the front and carriage drawn well back; cutter resting on back of tooth next to gullet to be gummed. Feed-screw should point in direction the cutter is to cut. Clamp the machine to saw by tightening the two clamp-screws at bottom of clamps.

Set the notch of the brass gauge over point of tooth and secure by means of the screw. To adjust for uniform position on each tooth set the screw or "L" gauge on teeth, using whichever best suits the saw being gummed. Throw pawl into ratchet wheel on cutter-shaft, which will prevent cutter turning backwards. The cutter is liable to be broken if reversed while in gullet.

Stand behind the saw, try the crank and if it does not turn freely, back the cutter until it does; then throw the feed-pawl into circular rack on feed-screw and gum until gullet is chambered to required depth.

Then set the stop under cutter-shaft to rocking-lever to prevent feed-pawl from turning feed-screw. This will cause the feed to stop at this point and make all gullets the same depth. The first tooth being gummed, throw out feed-pawl and screw cutter to starting point. Loosen clamp-screws and move gummer to next tooth, placing gauge on point as before; screw up clamp-screws, throw in feed-pawl and gum until stop is reached, which was adjusted on first tooth gummed.

If all gauges and stops are adjusted on first tooth, all gullets will be of the same depth. If gummer at first does not point in proper direction, loosen four screws that hold clamp to circular plate and turn plate until feed-screw reaches proper position. Tighten the four screws and clamp machine to saw. Will gum at any angle from horizontal to perpendicular.

No. 1, or large shaft, suitable for 1, 1 1/4, 1 3/4 and 1 1/2-inch cutters.

The No. 2, or medium shaft, suitable for 1/2, 5/8, 3/4 and 7/8-inch cutters.

The No. 3, or small shaft, for 3/8-inch cutters.

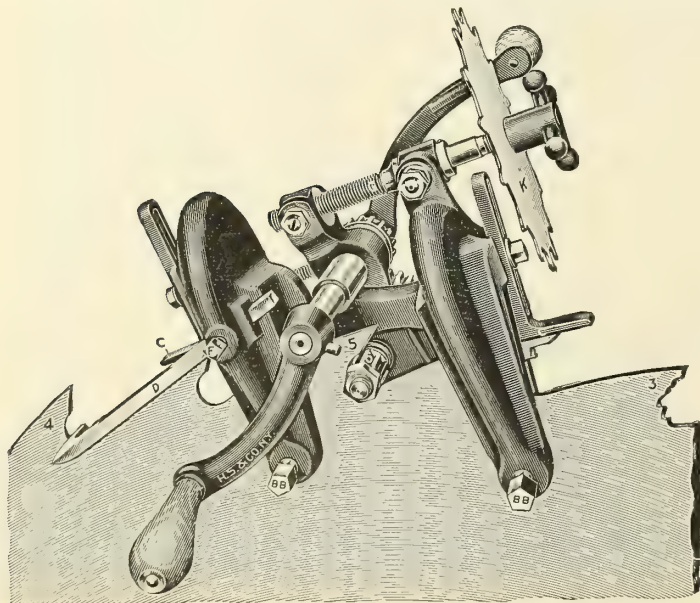
When Ordering Gummers State Size of Cutters Wanted

Extra shafts can be furnished at \$2.00 each so that all above sizes may be used in one machine if so desired.

Complete with one cutter-shaft, cutter-grinder and three cutters, each..... \$18.00

Double-Geared No. 1

Or Chambering Machine for Circular Saws 40 Inches and Larger



Directions for Using

Run cutter back by means of screw G as far as necessary; place machine on saw, with cutter close up in chamber of tooth to be gummed.

If teeth are regular and same distance apart, start cutter in any chamber; but if they are irregular, make them even by commencing in the smallest tooth. After gumming a few times teeth must become regular. E is a set screw to regular depth of gullet. Fasten machine to saw by means of screws BB, and proceed to gum first tooth, one point of star being struck at each revolution by projection on handle until arrested by set-screw E. Remove machine to next tooth, after running cutter back and proceed as before.

Cutter is arranged to slide on its axis; when one portion is dull, remove a washer from back to front, and so continue until whole face of cutter is dull.

The ratchet by which cutter is moved prevents any back motion.

Including cutter-grinder (shown above) and 3 cutters of any of the following sizes: 1, 1 1/4, 1 3/4, 1 1/2 and 1 1/8 inches. When ordering, specify the size wanted.

One-inch cutter is the smallest size that can be used on this gummer.

Each..... \$20.00

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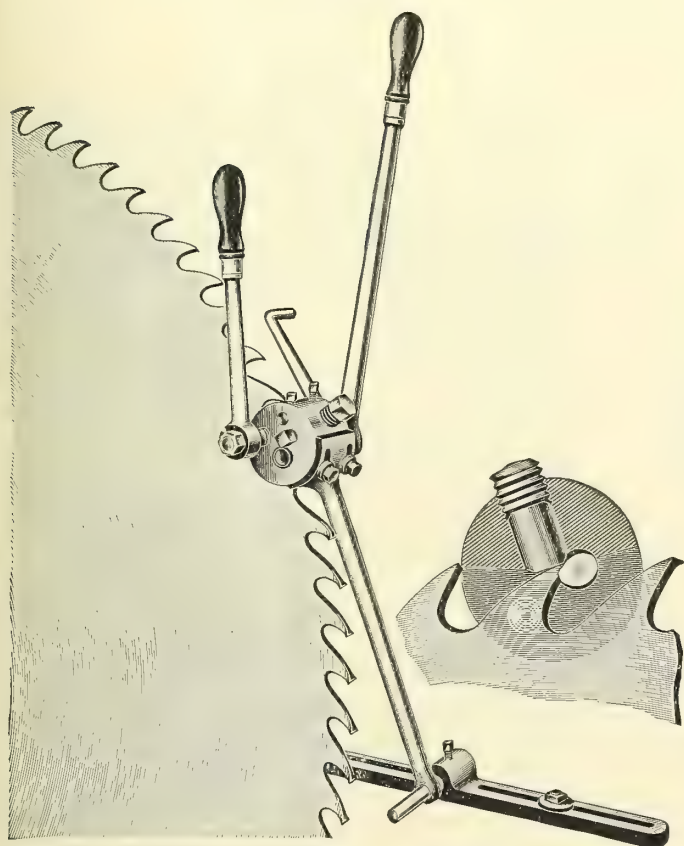
HAMMACHER SCHLEMMER & CO.

NEW
YORK

Swages

Disston

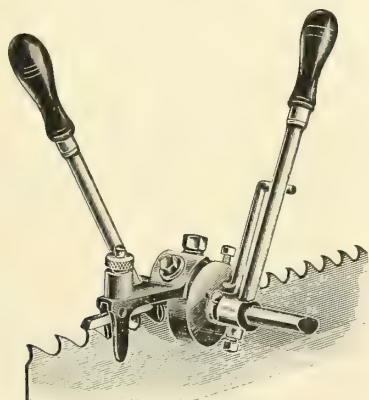
Eccentric



For Circular Saws

When ordering send sketch of teeth.

No. 0 Eccentric Swage, adapted for circular saws from 6 to 12 gauge in thickness, each \$50.00

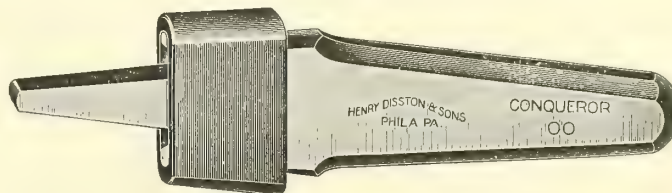


For Band Saws

By use of extra brackets, can be used for cylinder and circular saws. Made in three sizes. No. 1 adapted for saws 12 to 16 gauge; No. 2, 16 to 19 gauge; No. 3, 20 gauge and lighter. When ordering, state thickness of saws on which Swage is to be used and send sketch of teeth.

No. 1	Each
No. 2	\$40.00
No. 3	35.00
	30.00

Conqueror



Jumper or Upset

The projecting tongue, resting on face of tooth, acts as a guide to obtain the proper angle for swaging. Indispensable to any sawyer who uses the spread set.

No. 00 As illustrated with tongue projecting $\frac{1}{8}$ inch, each \$3.50
No. 0 With tongue projecting $\frac{1}{2}$ inch, each 3.00



The upper opening being rounded on the bottom, takes its bearing on center of tooth, spreading and shaping it as shown on section of tooth H. The lower opening (in which tooth is shown in illustration) is used for squaring up and leaves the tooth as shown at G.

The bottom of openings being slotted it is impossible to blunt or injure the fine cutting edge of the tooth.

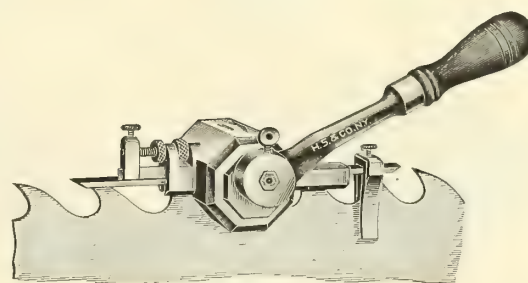
Hardened before the sleeve is driven on, when the hardening composition passes freely through slots at bottom of openings, thus insuring even and correct hardening in that portion of the swage where it is most required.

No. 1 For large Circular Saws	Each
No. 2 For small Circular and Mill Saws, not heavier than 10 gauge	\$2.75
No. 3 For small Circular and narrow Band Saws, not heavier than 15 gauge	2.25
No. 4 For Band Saws	1.75
	2.25

Packed one in wooden box.

Swage Shaper

Disston



For Band and Gang Saws

Plain

Swaged

Swaged and Side-Dressed



This shaper can be taken apart by loosening three thumb-screws. The dies fit snugly in body, and will not twist or come out of line.

All wearing parts are best tool steel, accurately machined and milled to a perfect fit.

Designed to make all teeth of uniform width and give them the necessary "back" and "under-cut" for proper clearance and smooth sawing. Readily adjusted to rapidly shape teeth on saws of any thickness.

Each \$28.00

When ordering, state thickness of saw and space of teeth on which shaper is to be used

SINCE
1848

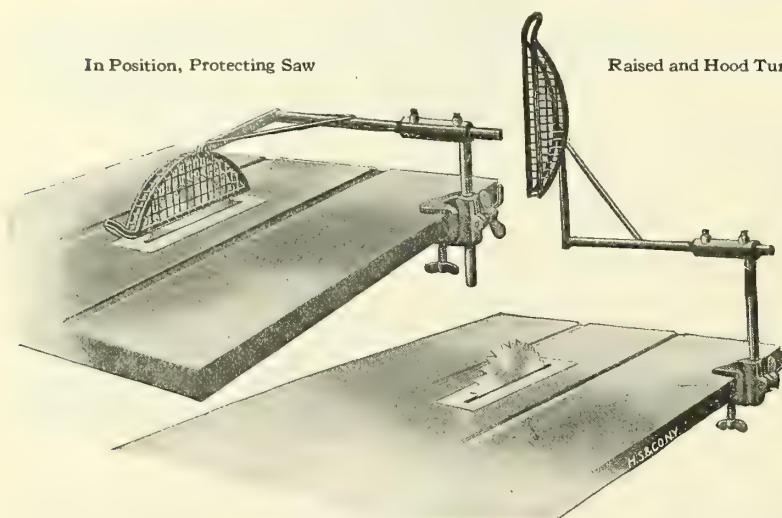
HAMMACHER SCHLEMMER & CO. NEW YORK

Circular Saw Guards

Wire Hood

These guards are substantially made and have no complicated parts to get out of order. All parts of the saw remain in plain view. Maximum protection is afforded, while the operation is not interrupted in any way. Easily and rapidly adjusted and removed without use of wrenches or other tools.

Table Attached Type



No. 1

This guard has been designed for use on the smaller size tables. It may be used for rip or cut-off work of limited width and is attached to right side of table with pivoted steel thumb-screw. The vertical shaft is secured by a clamping handle, one turn of which releases the shaft, permitting hood to be raised or lowered, or entire guard to be turned out of the way. Equipped with a horizontal shaft having reach of 20 inches from side of table and wire hood for saws 16 inches in diameter and under, or when ordered with 10, 12 or 14-inch hood. Each..... \$9.00

No. 2

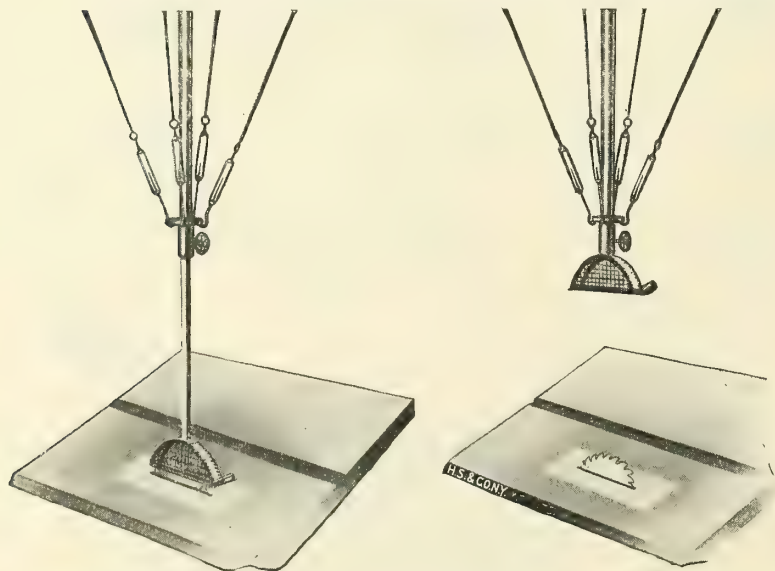
Same general design as No. 1, except heavier in construction, and is equipped with 26-inch horizontal shaft.

With 10, 12, 14 or 16-inch hood, each..... \$10.00
With 18-inch hood, each..... 10.50

When ordering, state diameter of largest saw used, also distance from saw to right side of table.

Ceiling Suspended Type

Leaving table entirely clear for wide work, furnished complete with the exception of the long pipe from ceiling, which is standard 1-inch pipe



No. 3

This guard can be used on stationary, sliding or tilting tables and will take saws up to 18 inches in diameter. Is perfectly rigid and suspended directly over the saw. Hand wheel screw, adjustable by one turn, permits rapid adjustment of hood to any desired position. Guard may be raised 24 inches from table, which is always clear for wide work.

With 10, 12, 14, 16 or 18-inch hood, each..... \$10.00

No. 4

This Guard operates on double pipes and with a counter weight, which makes it automatic for all thicknesses of material. A drop-forged dog, fitted to back of hood, prevents fly-backs.

With 10, 12 or 16-inch hood, each..... \$14.00
With 18 or 20-inch hood, each..... 15.00
With 24-inch hood, each..... 17.00

When ordering, state diameter of largest size saw used.

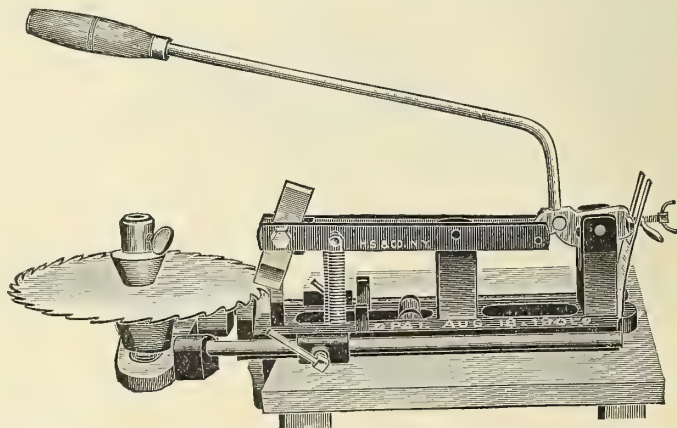
Saw Setting Machine for Circular Saws

H. S. & Co.

The objection heretofore to Circular Saw Setting Machines has been that it was almost impossible to get a uniform stroke and bevel. This machine overcomes this objection. The hammer can be adjusted to come down with a light or heavy blow, according to the gauge or thickness of the saw and the angle can also be regulated to accommodate any bevel. After the machine is once set or adjusted, every blow will be uniform, resulting in a properly set saw

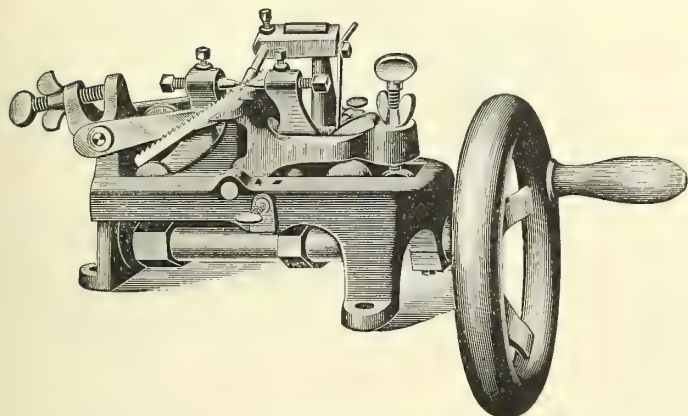
No. 1 For saws 3 inches to 10 inches diameter, each..... \$12.50
No. 2 For saws 5 inches to 24 inches diameter, each..... 15.60

For Circular Saw Filing Machine, see page 542



Saw Setting Machines for Narrow Band Saws

H. S. & Co. Improved



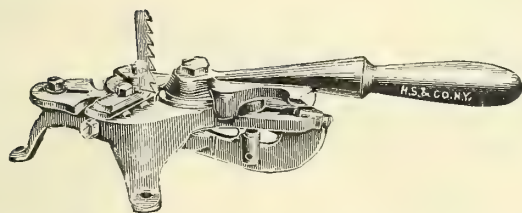
Little Giant

This device will set saws from $\frac{1}{8}$ inch to $1\frac{1}{2}$ inches wide and is very rapid. Being mechanical in action, no skill is required and anyone can set a saw in a very few minutes, just as perfectly as hand-setting, which requires a much longer time.

Vise automatically grips the blade while tooth is being set, which prevents twisting of narrow saws.

Each \$21.00

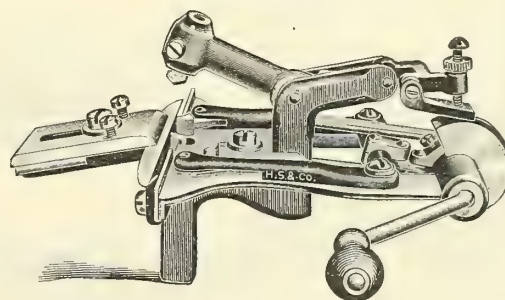
For band saw filing machine and combination setting and filing machines see page 542.



This device is made to set a saw while it is on the machine or hanging over a peg. It sets both sides of the saw at one operation and in a very few minutes.

No. 12, each \$10.00

Cunningham

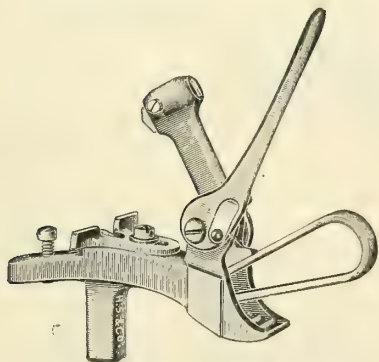


To set this machine, raise hammer perpendicularly; loosen large screw in jaw; place saw with tooth resting on anvil in proper position; put thin slide against back of saw; draw cap about $\frac{1}{8}$ inch over back of saw and tighten large screw in jaw; the amount of set is regulated by turning a screw in lever on cam at back of machine. Will set all saws up to $2\frac{1}{4}$ inches in width.

No. 11, each \$12.50

Saw Sets

Spring Lever

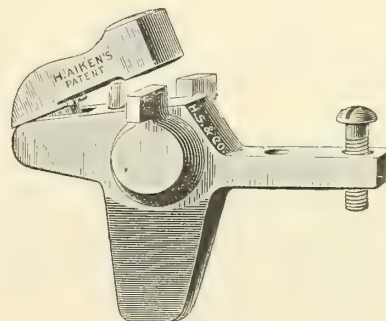


This little set is designed especially for all kinds of hand saws, also circular saws, to sixteen gauge. It will set all sizes of teeth, and do perfect and satisfactory work.

The amount of set is varied by spring at back and screw in front.

Dozen \$12.00

Aiken Genuine

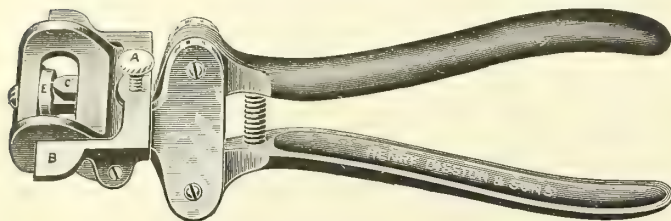


Hammer type. Highest grade of cast steel.

No. 1. For hand saws, each \$1.30

Saw Sets

Disston Triumph

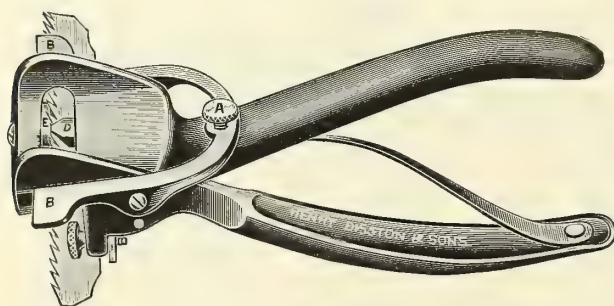


Barff Finish, Polished Head

The principal feature of this set is the use of two plungers operated by two levers or handles; pressure on lower lever forcing plunger "D" against body of saw, holding it rigid while a continuation of pressure on upper lever operates plunger "C" in setting the tooth. Gauge "B" is for regulating the depth of set. The anvil "E" is fitted with four beveled surfaces, suitable for different sizes of teeth.

- | | |
|---|---------|
| No. 8 10½ inches overall. For circular and crosscut saws, 12 gauge and lighter, dozen..... | \$18.00 |
| No. 18 8¾ inches overall. For circular and crosscut saws, 14 gauge and lighter, dozen..... | 15.00 |
| No. 28 7½ inches overall. For hand saws, back saws, web saws, narrow band saws, etc., 10 points to the inch and coarser, dozen..... | 11.00 |
| No. 280 7½ inches overall. For hand saws, back saws, web saws, butcher saw blades, etc., from 10 to 16 points, dozen.. | 11.00 |

Monarch



Barff Finish

For hand, crosscut, circular and all small saws.
For setting saws ¼ inch and wider.

- | | |
|------------------------------|--------|
| No. 2 Small size, dozen..... | \$8.00 |
|------------------------------|--------|

Spring



For Band, Shingle or Veneer Saws

- | | |
|---|--------|
| No. 2 Iron handle, as shown above, 8 inches long, each..... | \$1.50 |
| No. 1 Wood handle, as shown above, 7 inches long, each..... | 1.50 |
| No. 3 Wood handle, as shown above, 15 inches long, each.... | 3.50 |

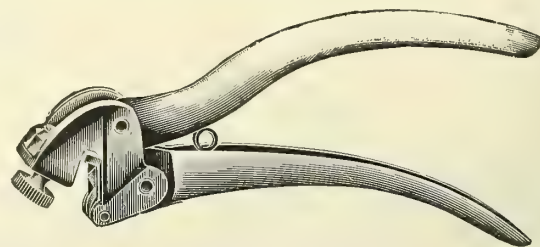
Samson



Made of best refined cast steel, in two sections, fastened with bolt, which serves as axis. Readily adjusted to suit any thickness of saw.

- | | |
|---|--------|
| No. 1 24 inches overall, wooden handle, each..... | \$3.50 |
| No. 2 13 inches overall, iron handle, each..... | 1.75 |

Taintors



No. 7

This Saw Set consists of a frame to which are attached two movable handles, an anvil and punch. A spring opens the handles. It is self-adjusting, excepting turning of anvil to change setting.

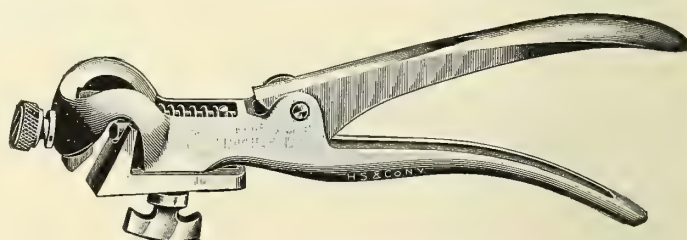
The faces of the steel anvil are numbered so that any setting may be repeated.

- | | |
|-----------------------------|---------|
| Dozen..... | \$12.00 |
| Anvil, each..... | .15 |
| Punch, each..... | .10 |
| Set Screws and Washers..... | .10 |

No. 7½ same as No. 7 with following additions: A double plunger, one side for fine the other for coarse teeth. Hardened ears which glide easily over the teeth. A screw instead of pin for changing the plunger.

- | | |
|------------|---------|
| Dozen..... | \$16.00 |
|------------|---------|

Morrill Pattern

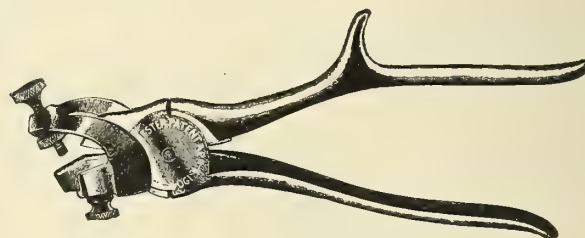


Nos. 100 and 115

For hand, band and jig saws from the widest made down to ½ inch.
Hardened anvil and plunger, tempered steel springs.

- | | |
|--|---------|
| No. 100 Polished, dozen..... | \$12.00 |
| No. 115 Gunmetal finish, with heavy nicked trimmings, dozen..... | 16.00 |

Lester Pattern



Both hammer and anvil are the same length, are carefully machined to correct angles and the latter is properly hardened. The hammer has a hardened, removable steel plate attached to face.

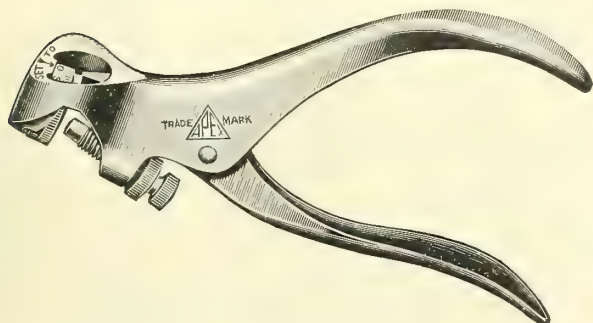
The leverage is designed so that little power is required.

The finest back saw can be set as easily and accurately as a crosscut saw; adjustment is quick and without danger of kinking blade. No vise needed with this set.

- | | |
|--------------------------------|---------|
| No. 80 Full polish, dozen..... | \$20.00 |
|--------------------------------|---------|

Saw Sets

Genuine Morrill



Special

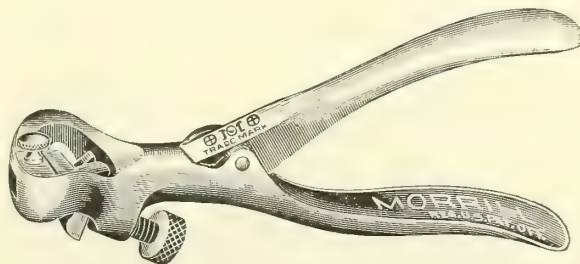
Length 6 1/8 inches.

For Hand Saws from the widest made down to 1/2 inch and not over 16 gauge.

Note—16 gauge is .0625 inches.

Made of polished semi and tool steel. The anvil is set on an angle which enables the plunger to be made stronger and more evenly tempered, thus preventing chipping at end. The gauge screw is provided with lock-nut, which prevents it from working loose while in use.

Dozen \$13.00



No. 10

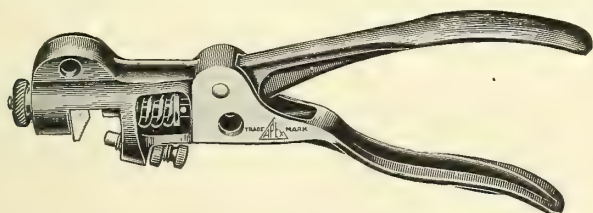
Length 6 1/4 inches.

For Hand, Band, Jig, Butcher, Fret and all fine Saws not over 16 gauge.

Made of polished semi and tool steel.

This saw set has a narrow plunger and projecting gauge block, for very fine work.

Dozen \$12.50



Nos 3 and 4

Nos. 3 and 4

Length 9 3/8 inches. Made of cast finished semi and tool steel.

No. 3. Pointed plunger, for cross-cut and circular saws, single tooth, from 14 to 20 gauge.

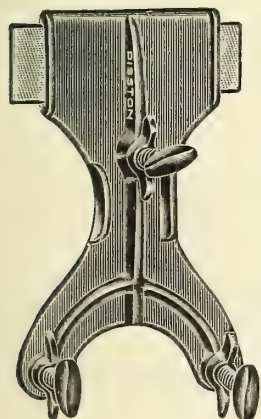
No. 4. Square plunger, for cross-cut M and champion tooth saws, double tooth, from 14 to 20 gauge.

Note—14 gauge, .0781 inch, 20 gauge, .0375 inch.

Dozen \$16.50

Side Files

These side files regulate the saw teeth after setting, as it is impossible to set a saw absolutely even, and an uneven set will make a rough cut. Adjustable to any width. Bodies are of malleable iron, case hardened tooth rest, steel slides and screw adjustment to set file.



Disston

Improved for Circular Saws

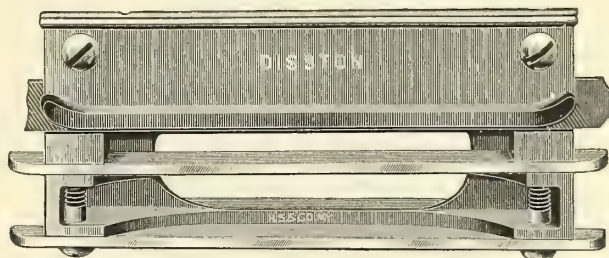
No. 1, or large size, suitable for saws 40 inches diameter and larger.

No. 2, or medium size, suitable for saws 38 to 24 inches diameter.

No. 3, or small size, suitable for saws 24 inches diameter and smaller.

	Each
File for Side File	\$.30
Frame . . . . .	.75
Complete	1.05

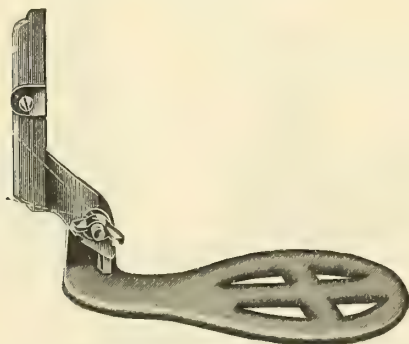
For Band and Gang Saws



Each \$3.00

Combination Saw Jointer

Karle

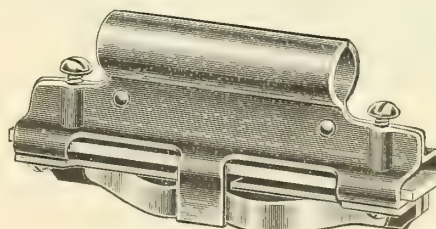


For Band and Circular Saws, to be used while saws are running at full speed. Malleable iron frame holding emery stick. Eliminates cracking and breaking of saws.

Each \$1.50

Saw Jointer and Skate Sharpener

Pike Perfect



Adjustable to any thickness of blade. Furnished with a flat file. Joins the teeth absolutely true. Can be adjusted in a moment to the largest crosscut or the finest hand saw. Always sets square on the teeth. Will joint or square any straight edge. An excellent skate sharpener.

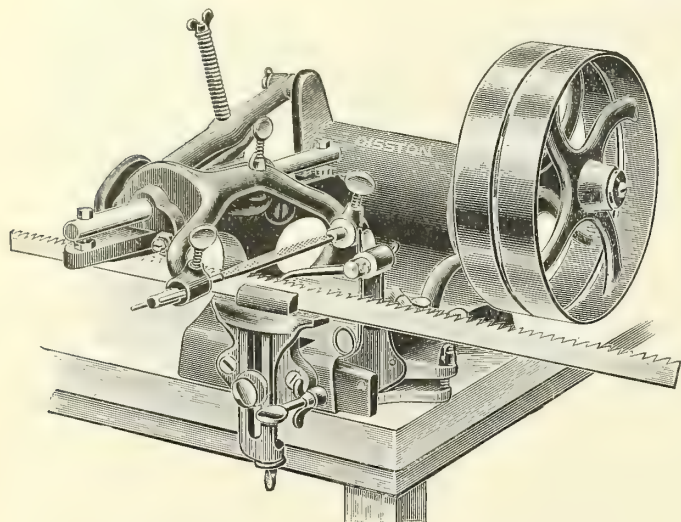
Made of steel, practically indestructible.

Each \$.50

Saw Filing Machines

For Narrow Band Saws

H. S. & Co. Automatic



These machines are strongly made and easily adjusted, requiring no attention after being started. They will take saws from $\frac{1}{8}$ to $1\frac{1}{2}$ inches wide, with teeth $\frac{1}{16}$ to $\frac{5}{8}$ -inch space, and will file old saws with uneven teeth as well as new ones. As all teeth are filed to same height, they will keep sharp longer and each will do its proportionate amount of work, which prevents breakage. Uses 6-inch taper saw files and should run 50 to 60 revolutions per minute.

Each (as illustrated)..... \$36.00

For Circular Saws

Black Diamond Automatic

Files saws from 4 to 16 inches in diameter and from 3 to 15 teeth per inch. Speed 80 revolutions per minute. Uses slim taper or ordinary taper files; tight and loose pulleys, $9 \times 1\frac{1}{4}$ inches. Weight, 60 pounds.

Each \$45.00

Saw Setting and Filing Machines

"The Only" Combination With Belt Drive

Is practically two machines in one, and is changed from a setter to a filer in a few seconds.

Occupies only 16x22 inches bench room.

The saw passes through the machine vertically hanging from a peg overhead, thus dispensing with filing wheels, which occupy valuable space in the shop.

The file carriage has a positive motion and cannot file deeper in the brazes or other soft spots.

It uses the regular slim taper or taper saw files, or machine files if preferred.

All working parts are of tempered tool steel, and are interchangeable.

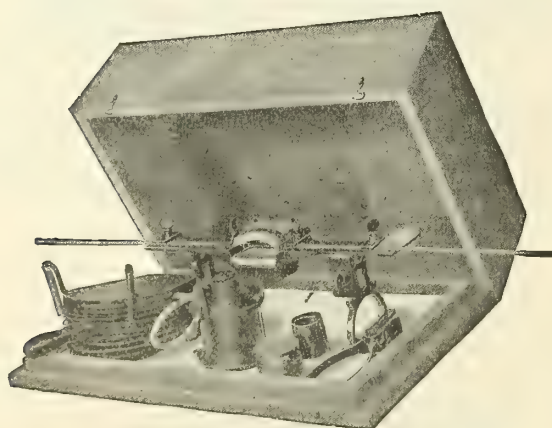
Made in Three Sizes

Number	Width of Saws Inches	Feed	Weight Pounds	Pulleys Tight and Loose Inches	Speed	Each
1	$\frac{1}{16}$ to $1\frac{1}{2}$	3 to 15 pts. to inch	55	$9 \times 1\frac{1}{4}$	80 R.P.M.	\$45.00
2	$\frac{1}{16}$ to $2\frac{1}{2}$	2 to 15 pts. to inch	60	$9 \times 1\frac{1}{4}$	80 R.P.M.	50.00
3	$\frac{1}{4}$ to $4\frac{1}{2}$	8 pts. to $1\frac{1}{2}$ inches space	100	$12 \times 1\frac{3}{4}$	60 R.P.M.	75.00

Can be furnished motor driven if desired.

Brazing Machine

For Narrow Band Saws



It has a hardened plate to guide in filing the laps (a very essential point in procuring a perfect braze).

It has double "leather" bellows, no rubber. It has clamps so arranged that the braze-can be finished on it.

It has a small vertical vise for clamping the saw while filing the brass out of the teeth.

It has an asbestos fire-pot to retain the heat, thus being necessary to use charcoal only on wide saws; also has an asbestos-covered bench, making it perfectly safe.

Kerosine Oil is used in the lamp.

Shipping weight, 22 pounds, each..... \$10.00

Brazing Tongs

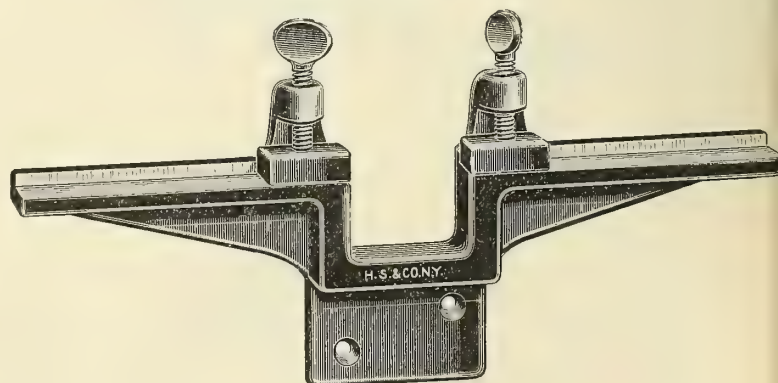
For Narrow Band Saws



With 1 inch jaws, $14\frac{1}{2}$ inches overall. Weight, $2\frac{1}{2}$ pounds, each \$1.00

Brazing Clamp

For Narrow Band Saws

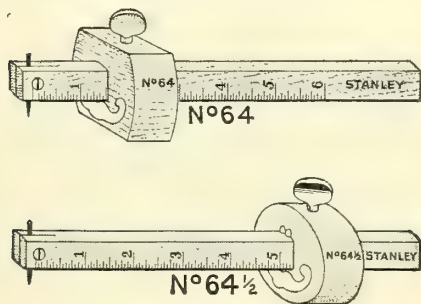


Each..... \$1.50

Marking Gauges

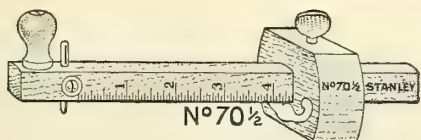
Single Bar

Stanley Wood



Made of selected wood and highly polished. Bars in all numbers are oval in form and graduated in 16ths of an inch for 6 inches from the point. Gauges having a brass thumb-screw have bar protected by a brass shoe. Face plates are brass, inserted in the head to prevent wear. The marking points (one each) are of tempered steel, and adjustable. They are securely locked by screws, but can be readily removed for sharpening.

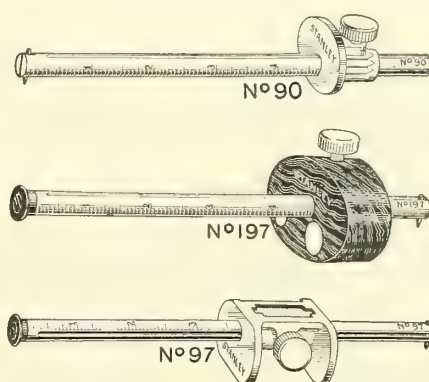
	Dozen
No. 64 Beech, boxwood screw, square head, face plates.....	\$2.40
No. 64 1/4 Beech, brass screw, square head, face plates.....	3.00
No. 65 Boxwood, brass screw, square head, face plates.....	4.20
No. 64 1/2 Beech, brass screw, oval head, face plates.....	3.60
No. 65 1/2 Boxwood, brass screw, oval head, face plates.....	4.80



Made of selected wood, highly polished. Bar is oval in form and graduated in 16ths of an inch for 6 inches from the point. Face plates are brass inserted in the head to prevent wear. Blade is specially tempered and sharpened. Is adjustable and securely locked by a screw, but can be readily removed for sharpening.

No. 70 1/2 Beech with knob, boxwood screw, cutting point, face plates 1/2x1 1/8 inches, dozen.....	\$4.00
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Stanley Steel



All these Gauges have steel bars, and the heads are either machined castings or selected rosewood, with brass face plates inserted. Two types of cutters are used—one a pin point, the other a roller cutter which can be used close into rabbets or corners and is recommended for working across the grain, over knots, etc. Some numbers combine both styles of markers by having one at each end of the bar. Where there is a marker at each end of the bar, the heads are double faced. The bars in those Gauges having a metal head can be set so that either a narrow or wide gauging surface is obtained. Where two cutters are fitted on one bar, there are graduations for each cutter.

All parts are finely finished, and the metal bars and heads are nickel-plated.

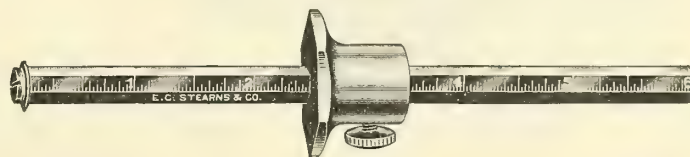
Bars are 6 1/2 inches long. Graduated in 16ths of an inch for five inches.

	Dozen
No. 90 Metal head, pin point.....	\$3.48
No. 97 Metal head, pin point and roller cutter.....	5.64
No. 197 Rosewood head, pin point and roller cutter.....	6.60

Pattern Makers Type

Has bar 9 inches long, not graduated, and has roller cutters only.
No. 297 Rosewood head, dozen..... \$7.44

Stearns Steel



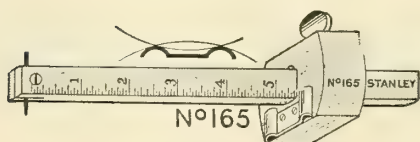
Single hexagonal beam, 6 inches long, gauges to 5 1/4 inches. Roller cutter.

No. 9 Dozen.....	\$12.00
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With Circular Face Plates

(For Marking Curves as Well as Ordinary Work)

Stanley Wood



This device consists of a brass face with two ribs, and when attached to one side of a gauge head will enable the operator to run a gauge line with perfect steadiness and accuracy around curves of any degree, either concave or convex.

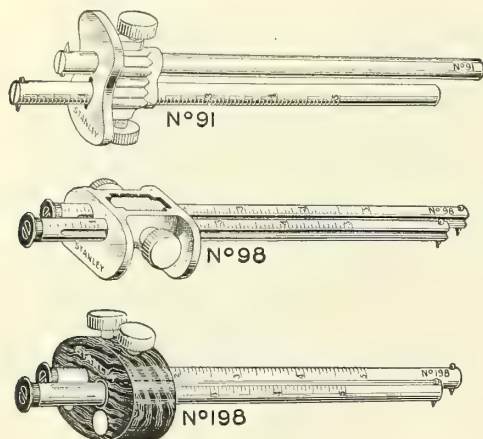
No. 164 1/2 Beech, brass screw, oval head, brass-face plate and shoe, dozen.....	\$4.60
No. 165 Boxwood, brass screw, square head, brass-face plate and shoe, dozen.....	5.20

Mortise Gauges

Double Bar

Mortise Gauges differ from Marking Gauges in that they require two independent marking points, but any of these Gauges may be used as a Marking Gauge.

Stanley Steel Bar



All these gauges have steel bars and the heads are either machined castings or selected rosewood with brass face plates inserted. Two types of cutters are used—one a pin point, the other a roller cutter which can be used close into rabbets or corners and is recommended for working across the grain, over knots, etc. Numbers 98 and 198 combine both styles of markers by having one at each end of bar. Where there is a marker at each end of bar, the heads are double faced and graduations are provided for each.

The bars of the metal head type can be set so that either a narrow or wide gauging surface is obtained.

Bars are $6\frac{1}{2}$ inches long, graduated in sixteenths of an inch for five inches.

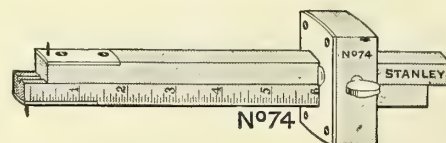
	Dozen
No. 91 Metal Head, Pin Points	\$6.72
No. 98 Metal Head, Pin Points and Roller Cutter	8.76
No. 198 Rosewood Head, Pin Points and Roller Cutter	9.60

Pattern Makers Type

Bars are 9 inches long, not graduated and have roller cutters only.

No. 298 Rosewood Head	\$10.56
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Stanley Wood

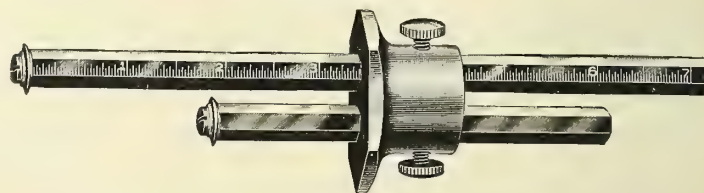


Have two independent bars working in the same head. One pin is affixed to each bar. One side of the mortise is marked and the Gauge turned over for the other mark.

Bars and heads are made of selected wood and highly polished. Bars are oval in form and graduated in 16ths of an inch for 6 inches from point. Bars of Nos. 71 and 74 are protected by brass shoe.

	Dozen
No. 72 Beech Boxwood Screw	\$3.00
No. 71 Beech Brass Screw, Head Plated	4.80
No. 74 Boxwood Brass Screw, Head Full Plated	7.20

Stearns Metal



No. 19

Highly finished in full nickel-plate. The heads are turned from the solid bar in automatic screw machines. The sharp, tempered steel marking roller is held by a set screw with very thin head, which admits marking up close in a rabbet or corner.

No. 19 With Roller Cutters and Double Hexagonal Beams—Long Beam, 8 inches, gauges to 7 inches. Short Beam, $4\frac{1}{8}$ inches, gauges to $3\frac{1}{4}$ inches.

Dozen	\$22.00
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Slide Single Bar

Stanley Wood



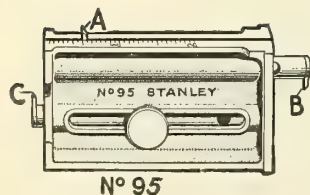
Have a brass slide working in the wood bar. One of the marking points or pins is affixed to one end of this slide, the other to the end of the bar itself. These points mark both sides of the mortise at the same time. The pins extend through the bar to allow a single point when the Gauge is used as a Marking Gauge.

Both bar and head made of selected wood and highly polished. The bar is oval in form and graduated in 16ths of an inch for 3 inches from point. Has face plate inserted in the head to prevent wear. Bar is protected by a brass shoe.

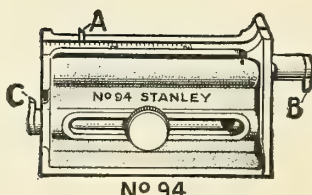
No. 77 Rosewood, Brass Slide, Screw Adjustment, Face Plates,	
dozen	\$7.20

Butt Gauges

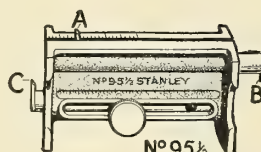
Stanley



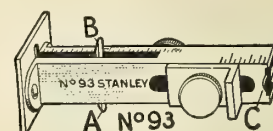
No. 95



No. 94



No. 95 1/2



No. 93

In hanging doors, there are three measurements to be marked—the location of butt on the casing, the location of butt on the door, and the thickness of butt on both casing and door. The term "Butt Gauge" covers a Gauge having three cutters, purposely arranged so that no change of setting is necessary when hanging several doors. In reality these tools comprise Rabbet Gauges, Marking Gauges and Mortise Gauges of a scope sufficient for all door trim, including lock plates, strike plates, etc.

In the illustrations the various cutters are marked by a letter which, in the several cuts, designates the cutter doing the same work. Cutter "A," which marks from the rabbet in the jamb, and cutter "B" which marks from the edge of the door engaged in closing, are mounted on the same bar and set by one adjustment with proper allowance for clearance; cutter "C" marks the thickness of the butt.

When casings have a nailed-on strike instead of being rabbeted, a Marking Gauge which will work on a ledge as narrow as $\frac{1}{8}$ inch is required. In this case the same distance is marked from the edge of the casing and from the edge of the door not engaged

when closing. Gauges 94 and 93 can be used on such work, cutter B marking for the butt and cutter "C" for its thickness. Gauges 94 and 95 are made so that they can be used as inside or outside squares for squaring the edge of the butt on either the door or jamb.

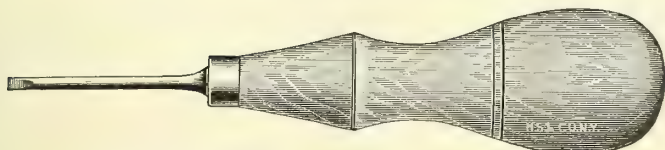
All Bars are locked by set screws and are graduated in sixteenths of an inch. Nos. 93, 94 and 95 are graduated for 2 inches, and No. 95 $\frac{1}{2}$ for $1\frac{1}{2}$ inches.

	Dozen
No. 95 Iron Body, Steel Bars, Nickel-Plated	\$9.00
No. 94 Iron Body, Steel Bars, Nickel-Plated	12.00
No. 95 1/2 Iron Body, Steel Bars, Nickel-Plated	7.20
No. 93 Steel Head, Brass Slide, Nickel-Plated	9.00

Handled Awls

Brad

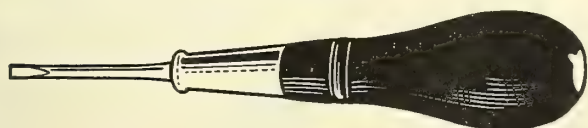
H. S. & Co.



English. Collier pattern. Forged blades, maple handles.

Inches.....	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	2	2 1/4	2 1/2
Dozen.....	\$.84	.84	.84	.84	.90	.96	1.00	1.06	1.18	1.28	1.40

Hurwood

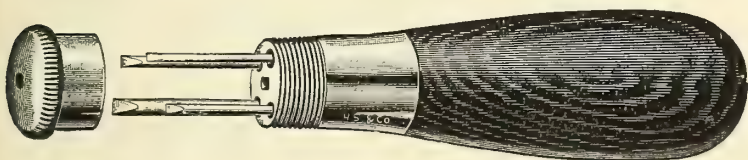
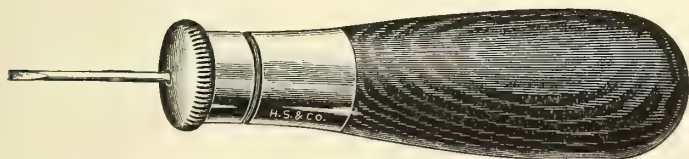


Blade, shank and head formed of one piece of steel. Two patented projecting wings under the head, together with a rivet which passes through the steel ferrule, handle and shank securely fastens the blade in the handle. The handles are stained black. Points are carefully tempered.

No. 17 1 1/4 and 1 1/2 inches, flat point, dozen..... \$3.00

Magazine Brad

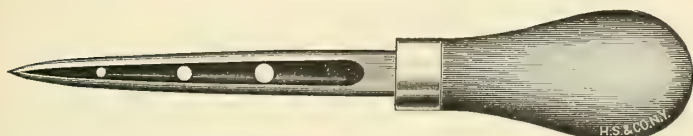
B M. Co.



No. 1 Hardwood handle, with 4 blades, dozen..... \$6.00

Belt

Lothrop



With holes or eyes in blades to pull lace through holes in belt, dozen..... \$6.00

Scratch

H. S. & Co.



English. Collier pattern. Forged blades, maple handles.

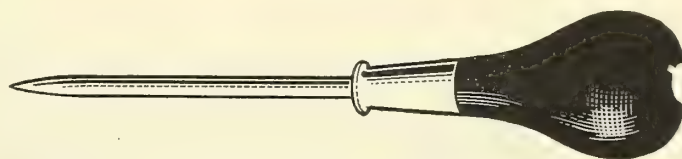
Inches.....	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2
Dozen.....	\$.85	1.00	1.30	1.50	1.60	1.80	2.00	2.20	2.40

Buck Bros.

Heavy forged blades, applewood handles.

No. 86 3, 3 1/2, 4 or 4 1/2 inches, dozen..... \$1.40

Hurwood

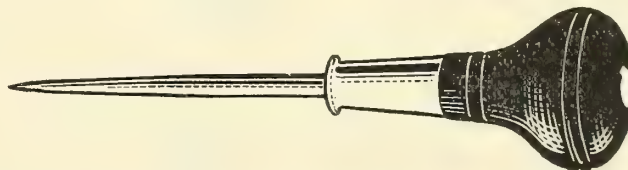


Blade, shank and head formed from one piece of steel. Handle securely attached to blades by rivet and two projecting wings under head. The handles are stained black and the points are carefully tempered.

No. 6 2 3/4-inch blade, 1/4-inch diameter, needle point, dozen... \$3.00
No. 7 3 1/2-inch blade, 1/4-inch diameter, needle point, dozen... 3.24

Tinners

Hurwood



Same construction as Nos. 6 and 7 above.

No. 8 3 3/4-inch blade, 1/4-inch diameter, needle point, dozen... \$3.48

Upholsterers or Cane Seating

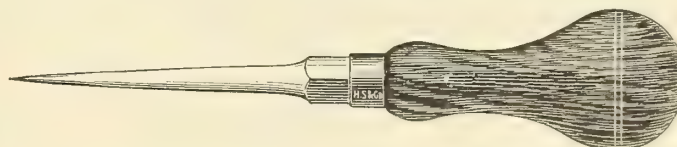
Buck Bros.



The tang is driven entirely through the handle and riveted.
Blade 3 1/2 inches long, applewood handle, dozen..... \$4.60

Carpet

H. S. & Co.



No. 300 4-inch blade. Rosewood handle, riveted, dozen..... \$6.70

SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Awl Blades

Peg



Stabbing

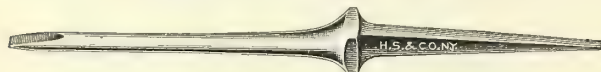


Assorted, gross \$1.60 Assorted, gross \$3.20
For Awl Hafts, see next page

Brad

H. S. & Co.

English, Collier Pattern, Forged



Scratch

H. S. & Co.

English, Collier Pattern, Forged

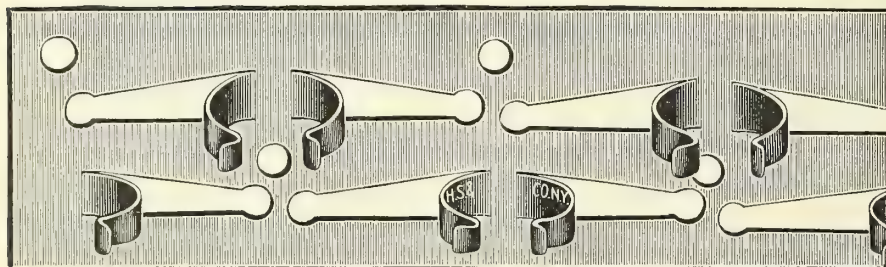


Inches..	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	Inches.....	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$
Gross ..	\$2.00	2.00	2.00	2.00	2.40	2.75	3.10	3.50	4.00	4.50	5.00	Dozen.....	\$.60	.60	.70	.80	1.00	1.20	1.40	1.60	1.80

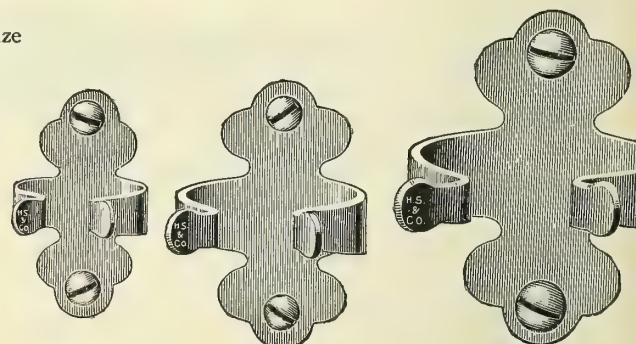
Tool Racks

Brass

Below illustrations are full size



No. 230



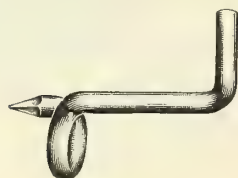
No. 235

No. 236

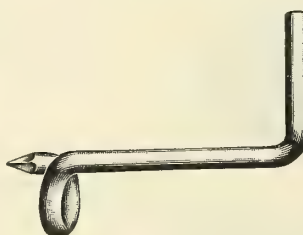
No. 237

Numbers	230	231	232	Numbers.....	235	236	237
Width of clasp inside, inches	$\frac{5}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	Width of clasp inside, inches	$\frac{5}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$
In two-foot lengths, dozen	\$2.35	2.75	3.95	Dozen	\$.25	.33	.45

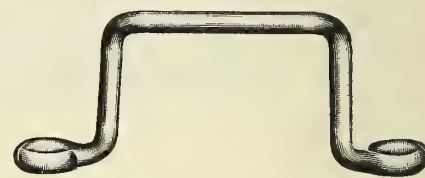
Steel Wire—Tinned



No. 101

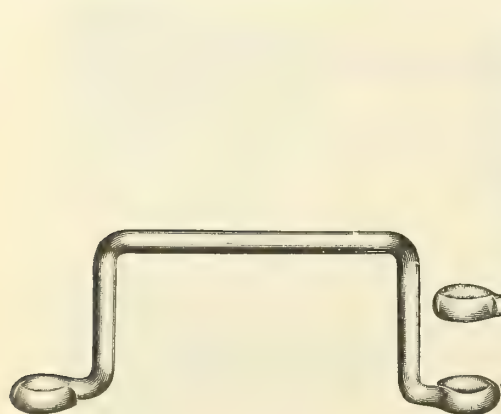


No. 102

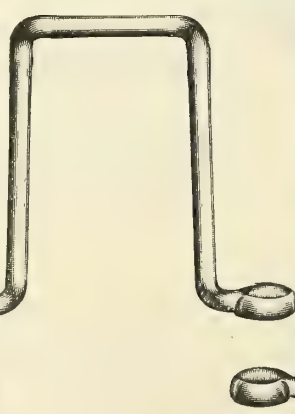


No. 103

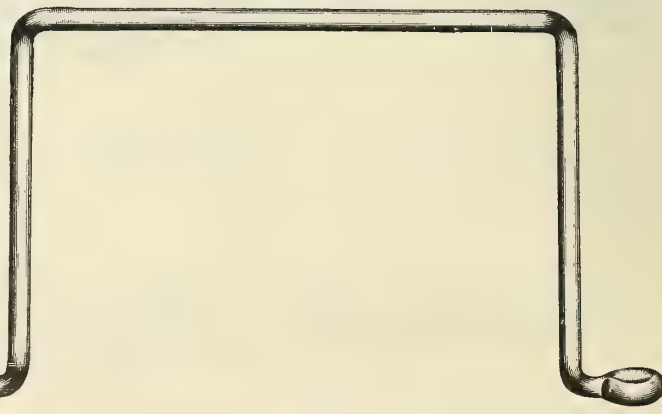
For miscellaneous small tools, dozen.. \$.24 For miscellaneous tools, dozen..... \$.24 For miscellaneous small pliers, etc., dozen..... \$.32



No. 104



No. 105



No. 106

For miscellaneous pliers, etc. dozen..... \$.36 For Marking Gauges, etc., dozen..... \$.36 For Oil Stones, etc., dozen..... \$.40

Automatic Sewing Awl

Stewart

A sewing device which feeds the thread from a spool or bobbin in the handle, or bobbin can be removed and thread passed through end of handle from large ball as the tension is entirely independent from the bobbin.

Contains two needles (one No. 8 straight and one No. 8 curved) contained in receptacles underneath the ferrule which tightens the needle in chuck. They have a special diamond point which will penetrate any thickness of leather with ease, but any sewing-machine needle may be used. It is suitable for mending harness, shoes, tents, awnings, pulley belts and carpets, saddles, sails, suit cases, rugs, buggy tops, dashboards, or any heavy material. Full directions with each awl.

Each..... \$1.00

Awl Hafts

Stanley

Fitted with four-jaw chuck, machined and tempered.

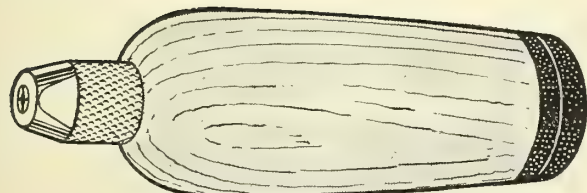
The locking nut is knurled so that the chuck may be quickly closed or opened.

A wrench is furnished with each tool for securing the Awl rigidly in the chuck, the sides of the locking nut are flattened to permit use of wrench.

The handle is made of selected hickory specially finished and the end is neatly leathered.

No. X-6 4 inches long, gross..... \$28.80

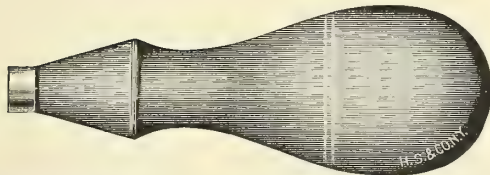
No. 6 3¾ inches long, same construction but nut not knurled and not so well finished as X-6, gross..... 12.00



No. X-6 Improved, half-size

Handles

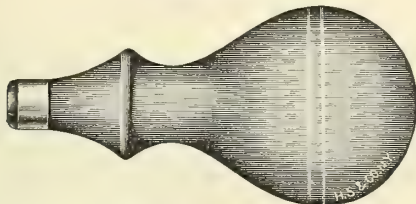
Brad Awl



Stamped Brass Ferrule.

Number.....	1	2	3	4
Diameter of ferrule, inch.....	3/8	3/8	7/16	1/2
Length, inches.....	3 1/4	3 1/2	3 3/4	4
Maple, gross.....	\$2.85	3.00	3.25	3.40

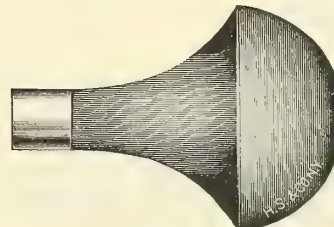
Scratch Awl



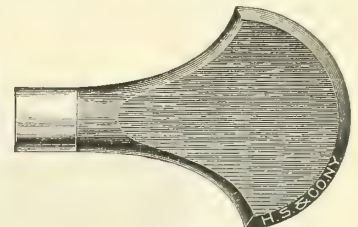
Stamped Brass Ferrule

Number.....	1	2	3	4
Diameter of ferrule, inch.....	3/8	3/8	7/16	1/2
Length, inches.....	2 1/4	3	3 1/4	3 1/2
Maple, gross.....	\$4.00	4.00	4.00	4.00

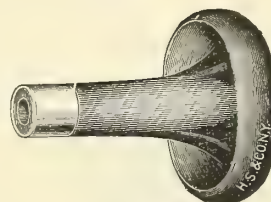
Gravers



No. X-22

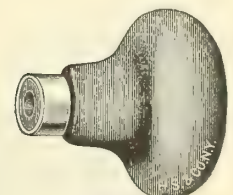


No. X-23



No. X-26

In two sizes.



No. X-27

Diameter of head, 1 1/8 and 1 1/4 inches.

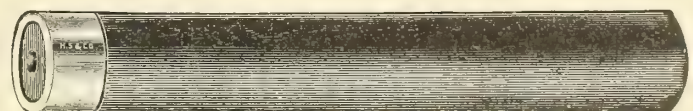
Whole length, 1 5/8 and 2 inches.

Nos. X-22, X-23, X-26, X-27, rosewood, polished, gross..... \$8.00

Small Tool



No. 79A Cocobola. Heavy brass ferrule. 2 5/8 inches overall,
5/16-inch diameter of ferrule, gross..... \$12.00



No. 47C. Straight

Stamped Brass Ferrule.

No.....	1	2	3	4
Diameter of ferrule, inch.....	3/8	1/2	5/8	3/4
Length, inches.....	4	4	4	4
Rosewood, gross.....	\$12.00	12.00	12.00	12.00
Maple, gross.....	6.00	6.00	6.00	6.00

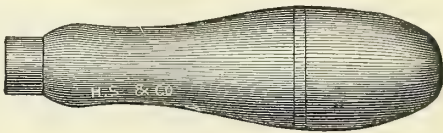
File Handles

H. S. & Co.

Brass Stamped Ferrules



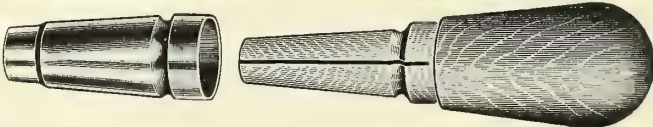
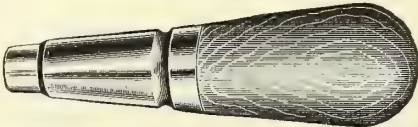
Maple



Bass

Number.....	1	2	3	4	5
Diameter of ferrule, inch.....	1/2	5/8	3/4	7/8	1
Length overall, inches.....	4 1/4	4 1/2	4 3/4	5	5 1/4
Bass, gross.....	\$3.10	3.40	3.70	4.00	4.20
Maple, gross.....	5.70	6.20	6.60	6.80	7.00

Troy, Best



Handle with Ferrule Removed

The steel ferrule is locked to the wood by heavy grooves, making separation impossible. The ferrule is continued over end of handle, thereby protecting the wood from wear and preventing any "wobble" of the file.

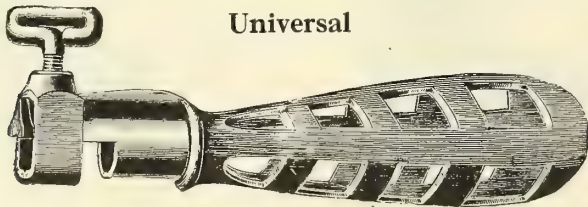
No. 1, for 4 to 5-inch files.....	Gross \$9.00
No. 2, for 6 to 8-inch files.....	11.00
No. 3, for 10 to 12-inch files.....	12.00
No. 4, for 14 to 16-inch files.....	13.50
No. 5, for 18 to 20-inch files.....	15.00

Lock Jaw



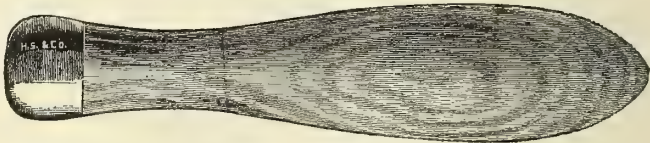
No. 1, for files 13 inches and larger.....	Gross \$6.00
No. 2, for files 9 to 12 inches.....	5.50
No. 3, for files 7 to 10 inches.....	5.25
No. 4, for files 5 to 8 inches.....	5.00
No. 4 1/2, for files 4 to 7 inches.....	4.75
No. 5, for files 2 to 5 inches.....	4.50

These handles are hardwood, with coppered malleable iron ferrules and will rigidly hold any make of file or any other tanged tool, whether the tang is flat, round or square. Specially adapted for files, screwdrivers, chisels, etc.



Universal

Spun Ferrule



Birch

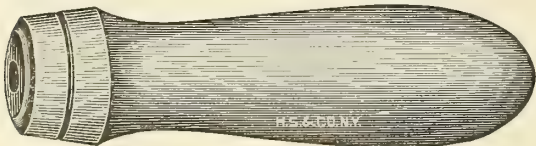
Malleable iron, japanned.
Holds files with tangs of all sizes and shapes from a 14-inch mill file to the smallest in use, also a variety of shanks of different shapes and sizes not exceeding 3/4-inch square or flat.
Serves many of the purposes of a hand vise.
Length 5 1/4 inches.
Dozen..... \$1.50

Heavy Spun Brass Ferrule.						
Number.....	00	0	1	2	3	4
Diameter of ferrules, inches.....	1 3/8	1 1/4	1 1/16	1 5/16	1 3/8	5/8
Length, inches.....	5 3/4	5 3/8	5 1/4	4 3/4	4 1/2	4
Dozen.....	\$.85	.80	.75	.70	.65	.60

Soldering Copper Handles

H. S. & Co.

Lock Jaw



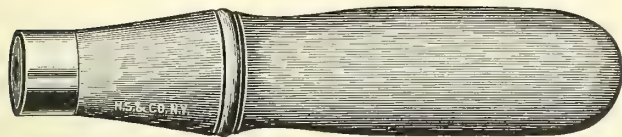
Oak



5 1/2 inches long, wire ferrule, 1 1/2 inches diameter, gross.....	\$3.00
No. 6 Gross.....	\$8.00

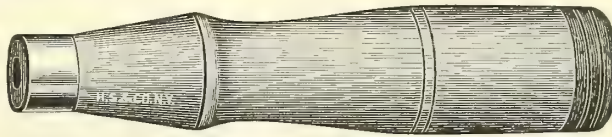
Chisel Handles

For Tanged Firmer Chisels
H. S. & Co. and Buck Bros.



Heavy Brass Ferrules

Number	1	2	3	4	5	6
Diameter of ferrule, inch.	1/2	9/16	5/8	3/4	7/8	1
Length, inches	5	5 1/4	5 1/2	6	6 1/2	7
H. S. & Co., Hickory, gross	\$6.75	7.30	7.85	8.45	9.00	9.60
Buck Bros., Extra Quality						
Applewood, gross	\$6.60	7.80	8.64	10.20	12.00	14.40

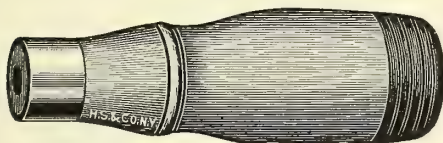


Leather Head. Heavy Brass Ferrule

Number	1	2	3	4	5	6
Diameter of ferrule, inch.	1/2	9/16	5/8	3/4	7/8	1
Length, inches	5	5 1/4	5 1/2	6	6 1/2	7
H. S. & Co., Hickory, gross	\$9.00	9.50	10.00	10.50	11.10	11.70
Buck Bros. Extra Quality,						
Hickory, gross	\$10.80	12.00	13.20	15.00	18.00	19.80

For Butt Chisels
Buck Bros.

Tanged



Leather Head. Heavy Brass Ferrule

Number	5	6
Diameter of ferrule, inch.	7/8	1
Length, inches	4 1/4	4 1/2
Hickory, gross	\$10.50	11.10

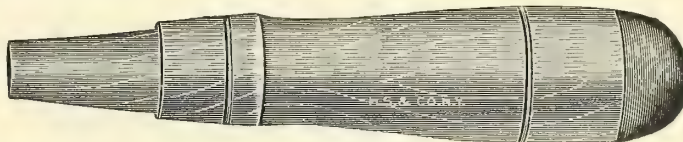
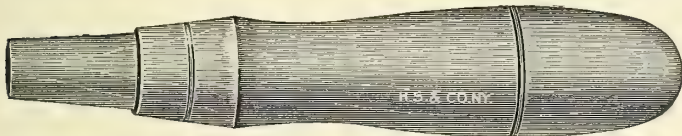
Socket



Leather Head

Number	1	2	3
Diameter under shoulder, inch.	1/2	9/16	11/16
Length to shoulder, inches	2 3/4	3	3 1/4
Length overall, inches	3 3/4	4 1/4	4 1/2
Hickory, gross	\$7.20	7.20	7.20

For Socket Firmer Chisels
H. S. & Co.

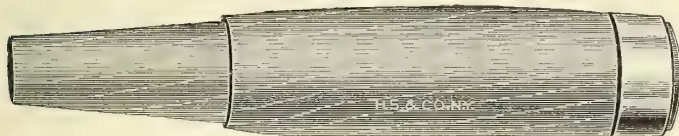


Number	3	4	5	6
Diameter under shoulder, inch.	5/8	3/4	7/8	1
Length to shoulder, inches	4 1/4	4 1/2	4 3/4	5
Length, inches	5 1/2	6	6 1/2	7
Hickory, gross	\$5.00	5.65	6.25	6.90

Leather Head

Number	3	4	5	6
Diameter under shoulder, inch.	5/8	3/4	7/8	1
Length to shoulder, inches	4 1/4	4 1/2	4 3/4	5
Length, inches	5 1/2	6	6 1/2	7
Hickory, gross	\$7.50	8.15	8.75	9.35

For Socket Framing Chisels
H. S. & Co.



Plain Iron Ring

Number	4	5	6	7
Diameter under shoulder, inches.	3/4	7/8	1	1 1/8
Length to shoulder, inches	4	4 1/4	4 1/2	4 3/4
Length inches	6	6 1/4	6 1/2	7
Hickory, gross	\$8.15	8.75	9.40	10.00

Leather Head

Number	4	5	6	7
Diameter under shoulder, inches.	3/4	7/8	1	1 1/8
Length to shoulder, inches	4	4 1/4	4 1/2	4 3/4
Length, overall, inches	6	6 1/4	6 1/2	7
Hickory, gross	\$8.15	8.75	9.40	10.00

For Deck Chisels
H. S. & Co.



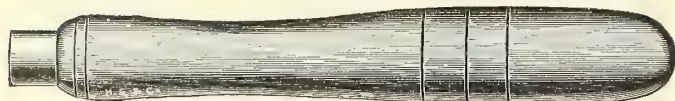
Hickory, with galvanized iron ring. 1 3/8 inches
diameter, 7 inches long, gross..... \$10.00

Handles

For Turning Tools

H. S. & Co.

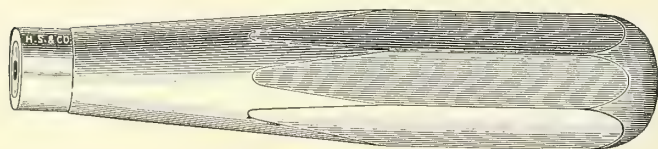
With Heavy Brass Ferrule



Number.....	1	2	3	4	5	6
Diameter of Ferrule, inch...	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, inches.....	$8\frac{3}{4}$	9	$9\frac{1}{4}$	$9\frac{1}{2}$	$9\frac{3}{4}$	10
Maple, gross.....	\$14.40	16.80	18.00	20.40	21.60	24.00

For Carving Tools

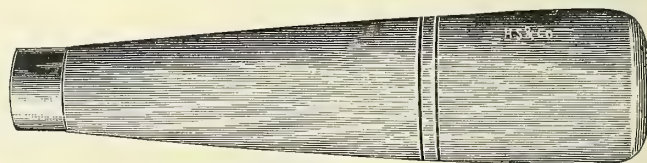
H. S. & Co.



Octagon—Stamped Brass Ferrule

Our Octagon Carving Tool Handle has all the important features of a round handle, and in addition has an octagonal body which prevents the tool from rolling, and which also affords the best possible grip. The round top, which fits into the palm of the hand, adapts it to continued use to the best advantage.

Number.....	1	2	3	4	5
Length, inch.....	$4\frac{1}{4}$	$4\frac{3}{8}$	$4\frac{1}{2}$	$4\frac{3}{4}$	5
Diameter of Ferrule, inch.....	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Octagon Maple, gross.....	\$8.50	9.00	9.50	10.00	10.50



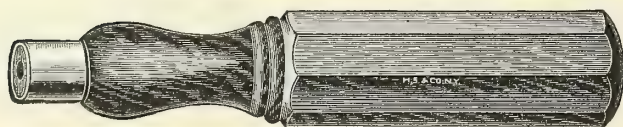
Round—Stamped Brass Ferrule

Number.....	1	2	3	4	5
Length, inches.....	$4\frac{1}{4}$	$4\frac{3}{8}$	$4\frac{1}{2}$	$4\frac{3}{4}$	5
Diameter of Ferrule, inch.....	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Round Maple, gross.....	\$4.50	4.50	5.60	5.60	5.60

For Screwdrivers

H. S. & Co.

No. 79 Octagon Rosewood. Heavy Brass Ferrule

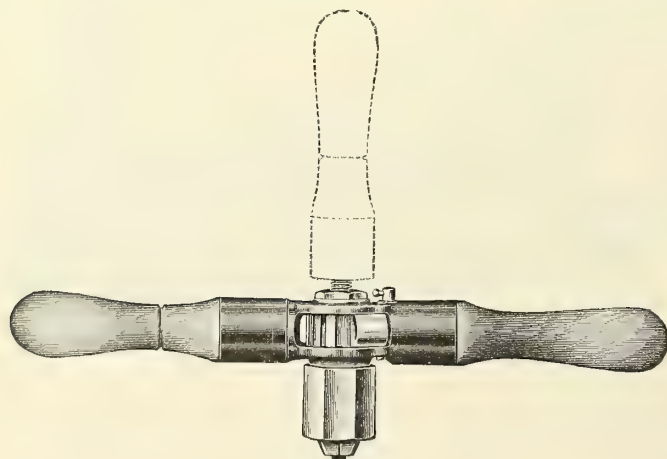


Number.....	1	2	3	4	5	6	7	8
Ferrule, inch.....	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Thickness, inches.....	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$
Length, inches.....	4	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$	5	$5\frac{1}{2}$	$5\frac{3}{4}$	6
Dozen.....	\$1.80	2.20	2.40	2.60	2.80	3.20	3.40	3.90

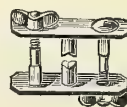
Pratt

For Augers

Peck



Ratchet No. 4



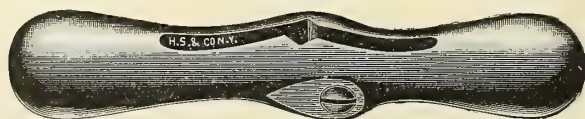
No. 6

Maple, iron bound, exceptionally strong and durable. Adjustable to all sizes of augers. The small cut shows the iron clamp, which is firmly inserted in the wooden handle and binds the auger. Length 18 inches.

Dozen.....	\$4.00
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For Bits

H. S. & Co.



Malleable Iron

No. 1 Adjustable, dozen.....	\$1.25
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Ash, with metal parts nicked. Chuck jaws will admit almost all sizes of bit stock and auger shanks. May be used as a ratchet drill. Detachable handle, which may be placed at right angles to fixed one. Ratchet works either to right or left or may be locked so that tool may be used without ratchet.

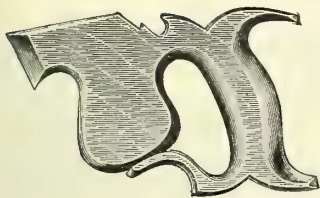
Length, 15 inches, dozen.....	\$32.00
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Saw Handles

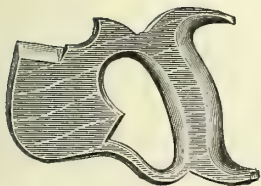
For Hand Saws

Each handle on Hand Saws is separately slit, bored and fitted to its blade, insuring the correct "hang" to the saw when entering the work.

The stock handle, bored and slit, will not fit holes in the blade from which old handle has been taken, for the reason given above.



For Disston Saws		16 Inches	18-20 Inches	22-24 Inches	26 Inches	28 Inches
No. 7	Beech (slit only), dozen	\$2.25	2.25	2.25	2.50	2.75
No. D8	Apple, carved (bored and slit), dozen		3.00	3.25	4.00	
No. 120	Apple, carved (bored and slit), dozen			4.25	5.00	
No. 12 & 112	Apple, carved (bored and slit), dozen		5.25	5.50	6.50	6.75
No. 16	Apple, carved (bored and slit), dozen		4.00	4.25	5.00	5.25
No. D20, D23	Apple, carved (bored and slit), dozen			4.25	5.00	
			16-18 Inches	20-22 Inches	24-26 Inches	
No. D115	Rosewood, carved (bored and slit), dozen		9.85	10.25	10.65	
For H. S. & Co. Saws	Apple, carved (bored and slit), dozen		3.60	3.60	4.45	



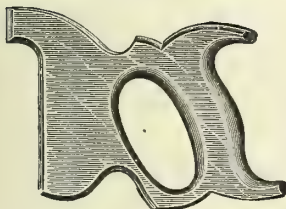
For Back Saws

Applewood, back cut out and slit, not bored. For H. S. & Co., or Disston No. 4.

Size, inches	8	10	12	14	16
Dozen	\$2.75	2.75	2.75	3.00	3.00

For Disston No. 4, 18, 20, 22, 24 or 26 inches long. 4 inches under back. When ordering specify which size is wanted. Dozen. \$3.50

For Disston No. 4, 18, 20, 22, 24 or 26 inches long. 5 inches under back. When ordering specify which size is wanted. Dozen. \$4.00

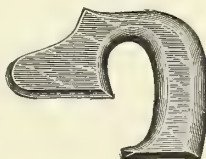


For Butcher Saws

Disston

Beech, No. 19, slit only.

Size, inches	18-20	24-26
Dozen	\$2.00	2.00



For Compass Saws

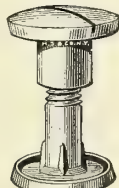
Disston

Beech, No. 2, slit only.

Size, inches	10-12	14-16
Dozen	\$1.10	1.10



No. 1



No. 2



Nos. 3 and 4

Saw Screws

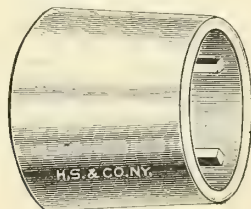
Brass—Disston

No. 1 Centennial, gross	\$2.40
No. 2 Centennial, gross	2.70
No. 3 Centennial, small, warranted superior, gross	3.45
No. 4 Centennial, large, warranted superior, gross	4.60

Number and Kinds of Screws in Hand Saws

No. 7	28-inch... Three	No. 2, One	No. 4.	Nos. 12, 112	28 and 26-inch... Three	No. 2, One	No. 4.
	26-inch... One	No. 1, Two	No. 2, One	No. 4.	24-inch... Three	No. 1, One	No. 3.
	24-inch... Three	No. 1, One	No. 3.		22-inch and under... Two	No. 1, One	No. 3.
	22-inch and under... Two	No. 1, One	No. 3.		28-inch... Three	No. 2, One	No. 4.
D8	26-inch... Three	No. 2, One	No. 1, One	No. 4.	26, 24 and 22-inch... Three	No. 1, One	No. 3.
	24-inch and under... Three	No. 1, One	No. 3.		20-inch and under... Two	No. 1, One	No. 3.
Nos. 120, D115, D20	26-inch... Four	No. 2, One	No. 4.	H. S. & Co.	16, 18 and 20-inch... Two	No. 1, One	No. 3.
D23	24-inch and under... Three	No. 1, One	No. 3.		22-inch... Three	No. 1, One	No. 3.
					24 and 26-inch... Three	No. 2, One	No. 4.

Malleable Iron

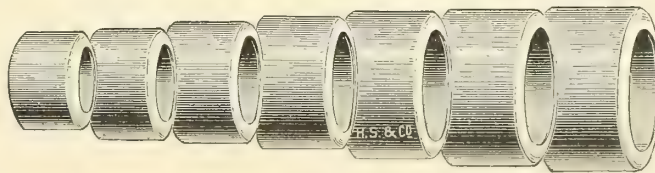


With Inside Lugs

Diameter, inches	3/4	7/8	1	1 1/8	1 1/4	1 3/8
Length, inches	3/4	7/8	1	1 1/8	1 1/4	1 3/4
Gross	\$1.40	2.00	2.80	4.10	4.60	7.50

Ferrules

Stamped Brass



Number	00	0	1	2	3	4	5	6	7	8	9	10	11
Diam., inch.	1	1 1/16	7/8	1 3/16	3/4	1 1/16	5/8	9/16	1/2	7/16	3/8	5/16	1/4
Gross	\$1.56	1.30	1.10	.88	.75	.70	.65	.55	.45	.45	.45	.45	.45

Hammer Wedges

Cast Iron

Slightly tapered. Small, approximate size 1/2-inch long, 1/4-inch wide. Medium, approximate size, 5/8-inch long, 5/16-inch wide. Large, approximate size 7/8-inch long, 1/2-inch wide, per pound. \$.30

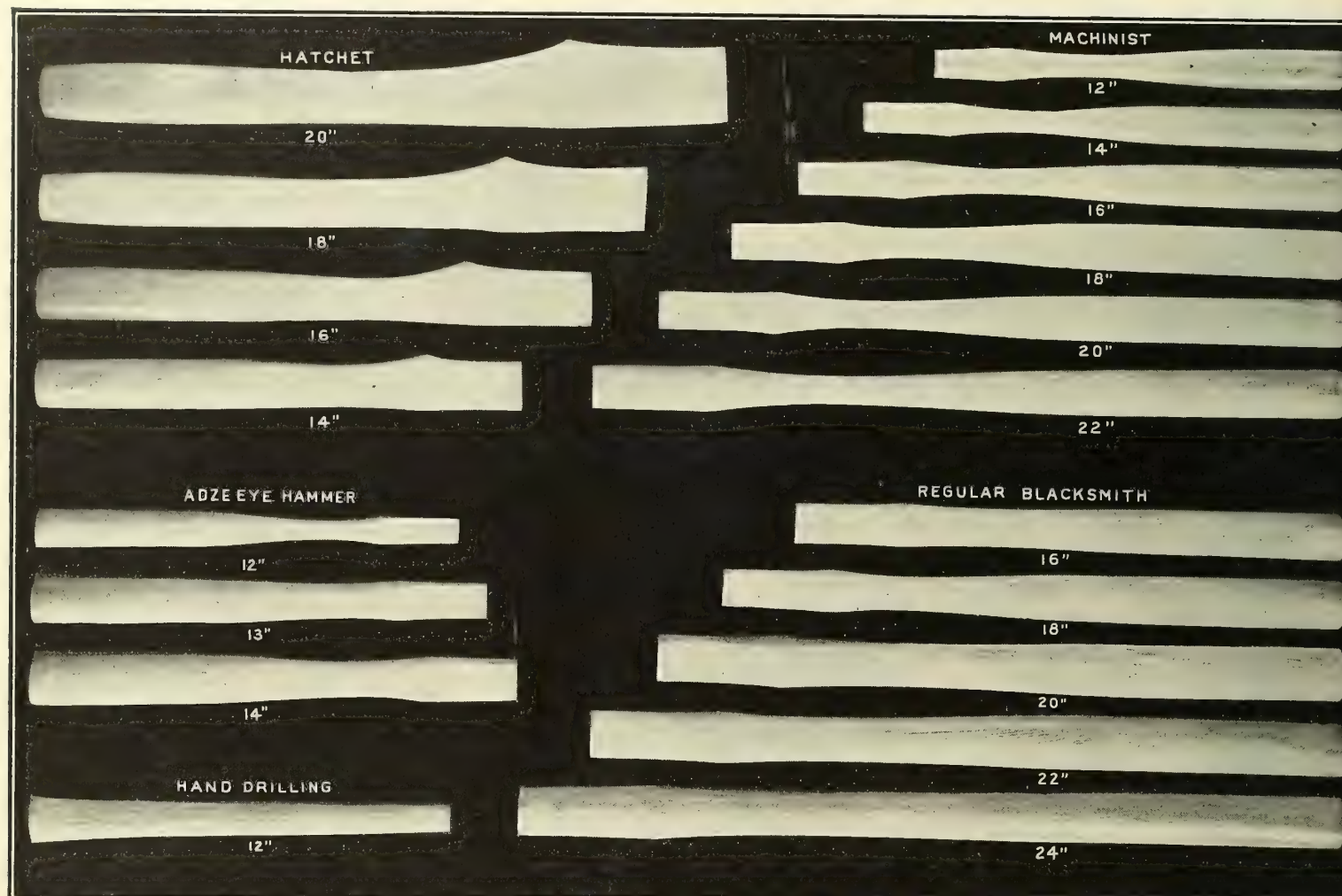
SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

White Hickory Handles

H. S. & Co.

Specially selected second growth, straight grained, well shaped and finished



Illustrations show sizes and styles carried in stock

Hatchet, size, inches.....	12	13	14	15	16	17	18	19	20
Dozen	\$1.10	1.10	1.10	1.10	1.30	1.50	1.75	1.95	2.15
Sizes carried in stock, 14, 16, 18 and 20 inch.									
Machinist, size, inches.....	12	13	14	15	16	17	18	19	20
Dozen	\$1.10	1.10	1.10	1.10	1.20	1.30	1.30	1.60	1.60
Sizes carried in stock, 12, 14, 16, 18, 20 and 22 inch.									
Regular Blacksmith, size, inches.....	12	13	14	15	16	17	18	19	20
See next page for taper blacksmith:.									
Dozen	\$1.10	1.10	1.10	1.10	1.20	1.30	1.30	1.60	1.60
Sizes carried in stock, 16, 18, 20, 22 and 24 inch.									
Adze Eye Hammer, size, inches.....	12	13	14	15					
Dozen	\$1.10	1.10	1.10	1.10					
Sizes carried in stock, 12, 13 and 14 inch.									
Hand drilling, New York Pattern, 12 inch size only, dozen									\$2.00
Carried in stock.									

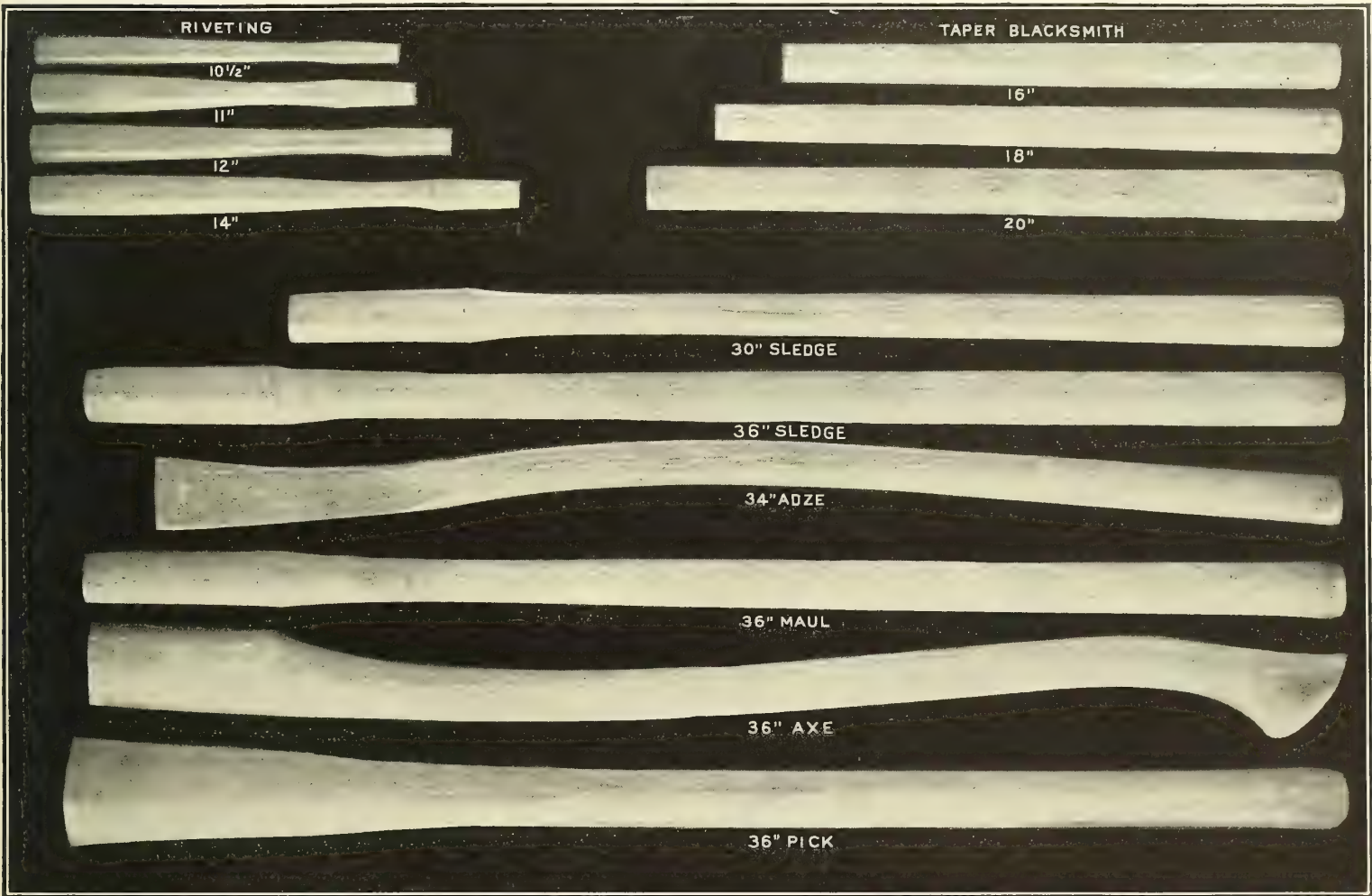
The sizes which we carry in stock are the ones most generally in use. All other sizes listed will be supplied in quantity, direct from our mill, without unnecessary delay.

See next page for balance of white hickory handle listing

White Hickory Handles

H. S. & Co.

Specially selected second growth, straight grained, well shaped and finished



Illustrations show sizes and styles carried in stock

Riveting, size, inches.....	10½	11	12	13	14	15	16	17	18	19	20
Dozen.....	\$1.10	1.10	1.10	1.10	1.10	1.10	1.20	1.30	1.30	1.60	1.60
Sizes carried in stock, 10½, 11, 12 and 14 inch.											
Taper Blacksmith, size, inches (see preceding page for regular blacksmith).....									16	18	20
Dozen.....									\$1.20	1.30	1.60
All sizes carried in stock.											
Sledge, size, inches.....		24	26	28	30	32	34	36	38	40	42
Dozen.....		\$2.00	2.40	2.40	2.70	2.70	3.20	3.20	3.30	4.00	4.60
Sizes carried in stock, 30 and 36 inch.											
Maul, size, inches.....		24	26	28	30	32	34	36	38	40	42
Dozen.....		\$2.00	2.40	2.40	2.70	2.70	3.20	3.20	3.30	4.00	4.60
36-inch size only carried in stock.											
Adze, size, inches.....									32	34	36
Dozen.....									\$4.00	4.00	4.00
34-inch size only carried in stock.											
Axe, size, inches.....								30	32	34	36
Dozen.....								\$4.65	4.65	4.65	4.65
36-inch size only carried in stock.											
Pick, 36-inch size only carried in stock, dozen.....											\$5.40
The sizes which we carry in stock are the ones most generally in use. All other sizes listed will be supplied, in quantity, direct from our mill, without unnecessary delay.											

See preceding page for balance of white hickory handle listing

Firmer Chisels

Buck Bros.

Tanged

Buck Brothers, in their manufacture of chisels and other carpenter tools, use Genuine Jessop Tool Steel, imported direct from Sheffield, England.

Jessop Tool Steel is undoubtedly the best made and is exceptionally uniform in quality. All Buck Tools are carefully made and finished by experienced workmen and each one is subjected to a rigid inspection and test before leaving the factory.

They are fully warranted by the makers against all defects in material and workmanship and have been favorite tools with wood-working mechanics since 1853.



No. 1 Plain Edge

Sharpened ready for use, the 1-inch chisel is $5\frac{1}{2}$ inches long from bolster to point.

Size, inch.....	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Dozen.....	\$2.00	2.00	2.00	2.00	2.05	2.20	2.40	2.50
Size, inches.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Dozen.....	\$2.65	2.85	3.20	3.40	4.50	5.50	6.60	7.90



No. 29 Beveled Edge

Sharpened ready for use. The 1-inch chisel is $5\frac{1}{2}$ inches long from bolster to point.

Size, inch.....	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Dozen.....	\$4.15	4.15	4.15	4.20	4.25	4.35	4.55	4.75
Size, inches.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Dozen.....	\$4.95	5.10	5.35	5.75	7.50	8.60	10.75	12.35



No. 2 Plain Edge

Best quality polished applewood handles, with cast brass ferrules. Sharpened ready for use, the 1-inch chisel is $5\frac{1}{2}$ inches long from bolster to point.

Size, inch.....	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Dozen.....	\$2.50	2.50	2.55	2.60	2.70	2.85	3.15	3.15
Size, inches.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Dozen.....	\$3.40	3.70	4.10	4.30	5.60	6.70	8.00	9.40

In Sets of 12

Set A (containing $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inches).....	\$4.80
Set B (containing $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches).....	3.80



No. 30 Beveled Edge

Leather tipped, polished-hickory handles, of extra quality with cast brass ferrules. Sharpened ready for use. The 1-inch chisel is $5\frac{1}{2}$ inches from bolster to point.

Size, inch.....	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Dozen.....	\$4.70	4.70	4.80	4.85	5.00	5.10	5.30	5.45
Size, inches.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Dozen.....	\$5.80	6.05	6.25	6.70	8.75	9.90	12.35	13.90

In Sets of 12

Set A (containing $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inches).....	\$7.75
Set B (containing $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches).....	6.30

Socket



No. 35 Plain Edge

With polished applewood handles, sharpened ready for use. The 1-inch chisel has $5\frac{1}{2}$ -inch blade.

Size, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
Dozen.....	\$4.20	4.25	4.35	4.45	4.60	4.75	4.85	5.30
Size, inches.....	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	
Dozen.....	\$5.70	6.05	6.55	7.20	7.80	8.70	9.65	

In Sets of 12

Set A (containing $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inches).....	\$5.85
Set B (containing $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches).....	5.25



No. 36 Beveled Edge

Extra quality, polished hickory handles with leather tips. Sharpened ready for use. The 1-inch chisel has $5\frac{1}{2}$ -inch blade.

Size, inch.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	
Dozen.....	\$6.00	6.15	6.40	6.80	7.20	7.75	
Size, inches.....	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	
Dozen.....	\$8.10	8.60	9.90	10.65	12.50	13.80	

In Sets of 12

Set A (containing $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inches).....	\$ 8.65
Set B (containing $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches).....	7.50

Paring Chisels

Buck Bros.

Tanged



No. 11 Plain Edge

Not sharpened. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch.....	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen.....	\$2.80	2.80	2.80	2.90	2.90	3.20	3.20	3.55
Size, inches.....	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen.....	\$4.00	4.30	5.25	7.15	8.60	10.15	12.50	



No. 12 Plain Edge

Handled with best quality polished applewood. Cast brass ferrules. Sharpened ready for use. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch.....	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Dozen.....	\$3.85	3.90	4.00	4.15	4.25	4.45	5.00	5.50
Size, inches.....	7/8	1	1 1/4	1 1/2	1 3/4	2		
Dozen.....	\$5.90	6.85	8.90	10.60	12.25	14.70		

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches).....	\$ 7.45
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, and 1 1/2 inches).....	5.85



No. 31 Beveled Edge

Not sharpened. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch.....	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen.....	\$5.75	5.80	5.90	6.00	6.00	6.15	6.15	6.50
Size, inches.....	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen.....	\$6.90	7.30	8.20	10.90	12.40	14.80	17.40	



No. 32 Beveled Edge

Leather-tipped, polished hickory handles of extra quality. Cast brass ferrules. Sharpened ready for use. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch.....	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Dozen.....	\$7.20	7.20	7.20	7.30	7.35	7.50	8.10	8.50
Size, inches.....	7/8	1	1 1/4	1 1/2	1 3/4	2		
Dozen.....	\$8.90	9.85	12.70	14.50	17.10	19.65		

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches).....	\$11.25
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4 and 1 1/2 inches).....	9.40

Socket



No. 43 Plain Edge

Polished applewood handle, sharpened ready for use. All sizes have 8-inch blades.

Size, inch.....	1/8	1/4	3/8	1/2	5/8	3/4	
Dozen.....	\$5.60	5.85	6.25	6.75	7.40	8.25	
Size, inches.....	7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen.....	\$8.70	9.20	10.35	11.25	12.40	14.00	



No. 44 Beveled Edge

Leather tipped, best quality hickory handles, sharpened ready for use. All sizes have 8-inch blades.

Size, inch.....	1/8	1/4	3/8	1/2	5/8	3/4	
Dozen.....	\$8.10	8.35	8.75	9.25	10.00	10.80	
Size, inches.....	7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen.....	\$11.45	12.10	13.90	15.20	17.10	19.00	

Bent Shank, Tanged



No. 15 Plain Edge

Best quality applewood handles, with cast brass ferrules, sharpened ready for use. The 1-inch chisel is 8½ inches from bolster to point.

Size, inch.....	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Dozen.....	\$5.25	5.50	5.65	5.85	6.00	6.30	7.20	7.90
Size, inches.....	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	
Dozen.....	\$8.50	10.00	11.25	12.90	15.55	18.00	21.60	



No. 15 1/4 Beveled Edge

Leather tipped, best quality hickory handles, with cast brass ferrules, sharpened ready for use. The 1-inch chisel is 8½ inches from bolster to point.

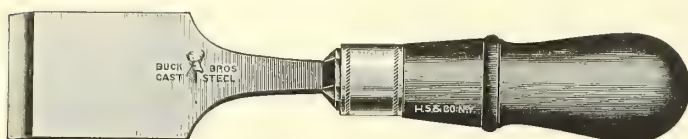
Size, inch.....	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Dozen.....	\$8.60	8.80	8.85	9.00	9.10	9.35	10.30	10.90
Size, inches.....	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	
Dozen.....	\$11.50	13.00	15.00	16.70	19.45	22.85	26.55	

Butt or Pocket Chisels

Used for fitting Butts when hanging doors. Owing to size they are sometimes called Pocket Chisels

Buck Bros.

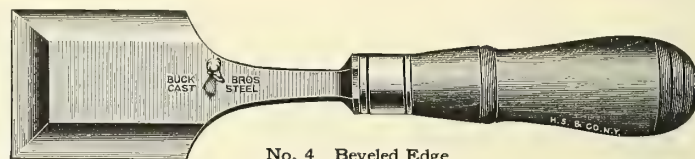
Tanged



No. 3 Plain Edge

Handled and sharpened ready for use. 9 inches long overall.

Size, inch.	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	\$2.50	2.60	2.85	3.15	3.40	3.70
Size, inches.	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	\$4.10	4.30	5.60	6.70	8.00	9.40



No. 4 Beveled Edge

Leather tipped, polished hickory handles. Sharpened ready for use, 9 inches long overall.

Size, inch.	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	\$4.70	4.85	5.10	5.45	5.80	6.05
Size, inches.	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	\$6.25	6.70	8.75	9.90	12.35	13.90

B. M. Co.



No. 27 Beveled Edge

No. 27 With leather tipped, polished hickory handles. Sharpened ready for use, 1 1/2-inch chisels are 8 1/4 inches long overall.

Size, inches.	1	1 1/4	1 1/2	1 3/4	2
Dozen	\$6.70	8.75	9.90	12.35	13.90

Set in Canvas Roll

No. 10 Containing 4 No. 27 beveled edge tanged butt chisels. Sizes, 3/8, 3/4, 1 and 1 1/2 inches and 1 No. 7 notching chisel, size 1 1/2 inches.

Set..... \$4.50

Buck Bros.

Socket



No. 38 Plain Edge

Length of blade, 3 3/4 inches. Sharpened ready for use.

Size, inch.	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	\$3.00	3.15	3.35	3.55	3.90	4.20
Size, inches.	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	\$4.50	4.90	5.40	5.90	6.60	7.40

Assorted in Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches)..... \$4.35

In Sets of 6

Set I (containing 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches)..... 2.65



No. 39 Beveled Edge

Length of blade, 3 3/4 inches. Sharpened, ready for use. Leather tipped, polished hickory handles.

Size, inch.	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	\$4.80	4.95	5.15	5.45	5.80	6.20
Size, inches.	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	\$6.50	6.90	7.95	8.55	10.00	11.05

Assorted in Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches)..... \$6.95

In Sets of 6

Set I (containing 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches)..... 3.85

Sets in Canvas Rolls

Plain Edge

No. 38A (containing 12 chisels, sizes, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches)..... \$5.50

No. 38-I (containing 6 chisels, sizes, 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches)..... 3.60

Beveled Edge

No. 39A (containing 12 chisels, sizes, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches)..... \$8.15

No. 39-I (containing 6 chisels, sizes, 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches)..... 4.80

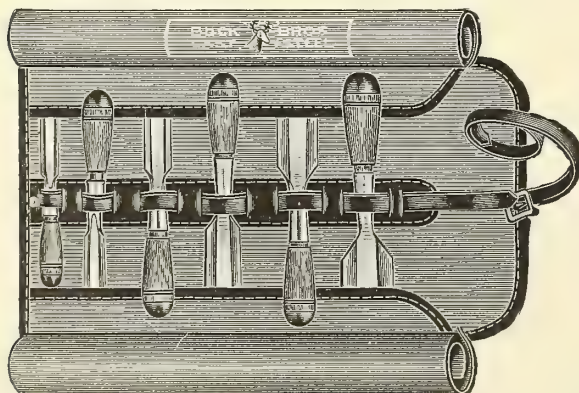


Illustration shows set No. 39-I

Notching Chisels

B. M. Co.

Sharpened ready for use. Best Quality Leather Top, Hickory Handles. 1 1/2-inch chisels are 8 1/4 inches long overall. Thin but very strong and stiff. All woodworkers, especially stair builders, will appreciate this feature.

Size, inches.	1	1 1/4	1 1/2	1 3/4	2
Dozen	\$4.30	5.60	6.70	8.00	9.40



No. 7 Plain Edge

Chisels

Socket Mortise Buck Bros.



No. 48

The $\frac{3}{8}$ -inch size has $6\frac{3}{4}$ -inch blade. With polished hickory handle. Sharpened, ready for use.

Size, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
Dozen.....	\$7.50	8.00	8.50	8.80	9.25	9.75	10.30	12.00

Deck Buck Bros.



No. 52

Handled, not sharpened. Length of blade 5 to 6 inches.

Size, inches.....	$1\frac{1}{4}$	$1\frac{1}{2}$
Dozen.....	\$11.25	12.00

Floor H. S. & Co.

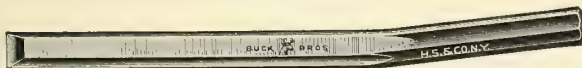


No. 60

Made thin to cut flooring, etc. Must not be used for prying or ripping, as the No. 85 is intended for that purpose.

$2\frac{1}{2}$ inches wide, 18 inches long. Made of $\frac{3}{4}$ -inch octagon steel, dozen..... \$12.00

Floor, with Offset For Plumbers, Electricians, etc. Buck Bros.



No. 57 1/2

Length, overall, 10 inches.

No. 57 Plain edge.

Size, inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Dozen.....	\$3.50	3.75	4.00	4.25	4.50

No. 57 1/2 Beveled edge.

Size, inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Dozen.....	\$5.50	5.75	6.00	6.25	6.50

Socket Framing Buck Bros.



No. 56

No. 56 With polished hickory handle, not sharpened, 7 to 8 inch blades.

Size, inch.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Dozen.....	\$6.00	6.40	6.60	6.75	7.25	7.50
Size, inches.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	
Dozen.....	\$8.00	9.00	10.00	11.00	12.00	

Carpenters Slicks Witherby



No. 45 Socket Handle

Size, inches.....	3	$3\frac{1}{2}$
Each.....	\$1.95	2.10

Ripping H. S. & Co.



No. 85

Are intended for ripping down partitions and similar rough work and can be subjected to very hard usage.

$1\frac{1}{2}$ inches wide, 18 inches long. Made of $\frac{3}{4}$ -inch octagon steel, dozen..... \$9.60

Plumbers H. S. & Co.



No. 50

1 inch wide, 11 inches long. Made of best quality $\frac{5}{8}$ -inch octagon steel, dozen..... \$5.20

Plumbers Gouge H. S. & Co.

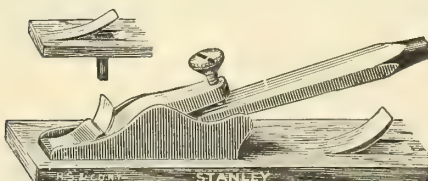


No. 52

1 inch wide, 11 inches long, $\frac{5}{8}$ -inch best quality octagon steel, dozen..... \$8.00

Adjustable Chisel Gauge

(Blind Nail Tool)
Stanley



A principal use of this simple device will be found in finishing work where blind-nailing is required.

By attaching the gauge to a $\frac{1}{4}$ -inch chisel (with beveled edge up), a shaving of any thickness can be raised with precision, and when glued down this shaving will fit its recess perfectly.

No. 96 $2\frac{1}{4}$ inches long, nickel-plated, dozen..... \$2.40

Firmer Gouges

Buck Bros.
Tanged



No. 7

Outside bevel, regular sweep, sharpened ready for use. The 1 inch gouge is 5½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	\$2.00	2.00	2.00	2.05	2.15	2.35	2.45	2.65
Size, inches	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen	\$2.90	3.30	3.50	4.90	6.00	7.30	9.00	

Socket



No. 42

Outside bevel, regular sweep, sharpened ready for use. The 1-inch gouge has 5½-inch blade.

Handled with first quality applewood.

Size, inches	1/8	1/4	3/8	1/2	5/8	3/4	
Dozen	\$4.60	5.00	5.35	5.60	5.80	6.40	
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen	\$7.00	7.50	8.40	9.20	10.25	11.40	

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches)	\$7.25
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4 and 1 1/2 inches)	6.30



No. 8

No. 8. Outside bevel, regular sweep.

No. 10. Inside bevel, regular sweep.

Best quality polished applewood handles with cast brass ferrules sharpened ready for use. The 1 inch gouge is 5½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
No. 8. Dozen	\$3.15	3.20	3.30	3.45	3.60	3.85	3.85	4.10
No. 10. Dozen	3.70	3.75	3.85	4.00	4.15	4.40	4.40	4.60
Size, inches	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	
No. 8. Dozen	\$4.45	4.90	5.10	6.70	8.00	9.45	11.20	
No. 10. Dozen	5.00	5.40	5.65	7.30	8.55	10.10	11.85	

No. 8 Outside Bevel, in Sets of 12

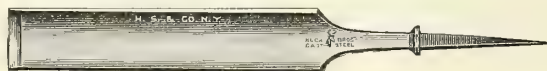
Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches)	\$5.80
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4 and 1 1/2 inches)	4.60

Paring Gouges

Buck Bros.

Tanged

All paring gouges are beveled inside and have three sweeps, regular, middle and flat, as illustrated on opposite side. Customers are particularly requested when ordering to name the sweep wanted.



No. 13

Not sharpened. The 1-inch gouge is 8½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	\$4.65	4.65	4.70	4.80	4.80	5.10	5.10	5.40
Size, inches	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
Dozen	\$5.90	6.15	7.15	9.35	9.95	10.90	13.15	15.60



No. 14

Handled with first quality applewood and sharpened ready for use. The 1-inch Gouge is 8½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Dozen	\$6.20	6.25	6.35	6.50	6.65	6.85	7.40	7.90
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2		
Dozen	\$8.25	9.25	11.65	13.40	16.00	18.40		

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches)	\$10.15
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4 and 1 1/2 inches)	8.25

Bent Shank, Tanged

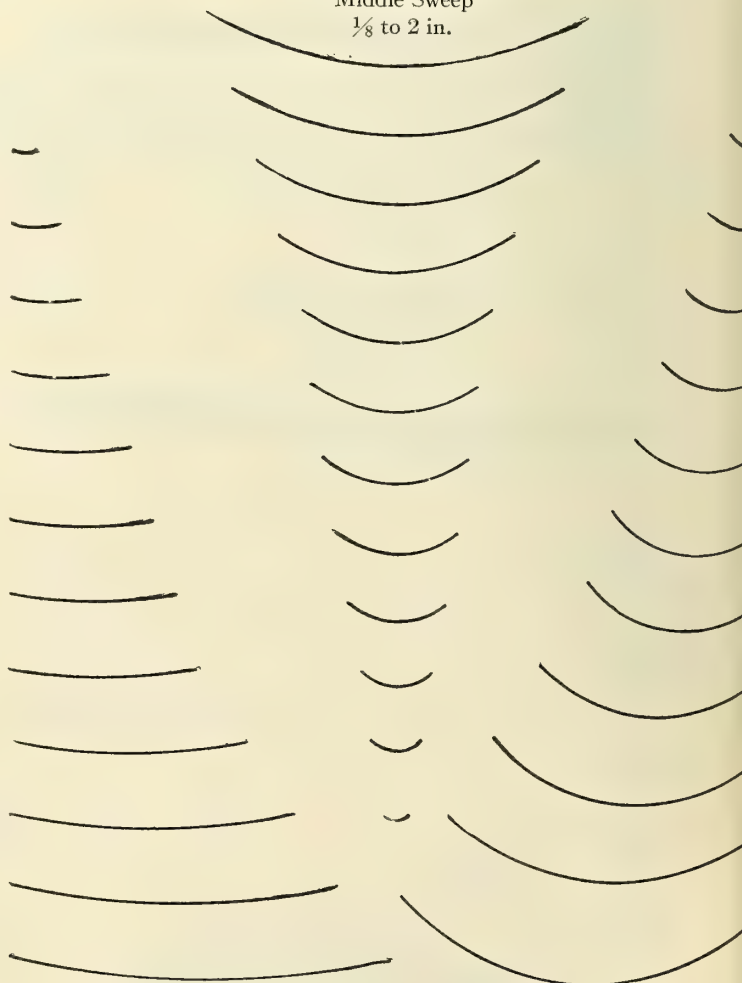


No. 15 1/2

The 1-inch Gouge is 8½ inches long from bolster to point. Handled and sharpened ready for use.

Size, inch	1/8	1/4	3/8	1/2	5/8	3/4	
Dozen	\$7.90	8.40	8.75	9.60	10.40	11.00	
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen	\$11.40	12.60	15.90	17.50	20.00	23.00	

Sweeps—Full Size Cuts
Middle Sweep
1/8 to 2 in.



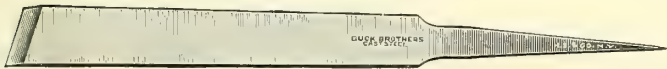
Flat Sweep 1/8 to 2 in.

Regular Sweep 1/8 to 2 in.

Turning Tools for Wood

Buck Bros.

Chisels



Not sharpened

No. 21 The 1-inch chisel is 11 inches long overall.

No. 23 Long and strong. The 1-inch chisel is 13 inches long overall.

Size, inch.....	1⁄8	3⁄16	1⁄4	5⁄16	3⁄8	7⁄16	1⁄2	5⁄8
No. 21 Dozen..	\$3.00	3.00	3.00	3.20	3.20	3.45	3.45	3.75
No. 23 Dozen.....	\$4.15	4.15	4.30	4.30	4.50	4.50	4.85	
Size, inches.....	3⁄4	7⁄8	1	1 1⁄4	1 1⁄2	1 3⁄4	2	
No. 21 Dozen.....	\$4.10	4.50	5.10	6.20	7.70	9.20	10.70	
No. 23 Dozen.....	5.40	5.80	6.75	8.25	10.50	13.50	16.75	



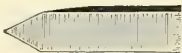
No. 19 Skew Point



No. 19 1⁄4 Round Point



No. 19 1⁄2 Square Point



No. 19 3⁄4 Spear Point

Best quality applewood handles, with cast brass ferrules. Sharpened ready for use. The 1-inch chisel has about 6 1⁄4-inch blade.

Size, inch.....	1⁄4	3⁄8	1⁄2	5⁄8	3⁄4	7⁄8	1	
No. 19 Skew, dozen..	\$4.25	4.50	5.00	5.40	6.00	6.70	7.60	
No. 19 1⁄4 Round, dozen.	5.00	5.25	5.75	6.15	6.70	7.50	8.35	
No. 19 1⁄2 Square, dozen.	5.00	5.25	5.75	6.15	6.70	7.50	8.35	
No. 19 3⁄4 Spear, dozen..	5.00	5.25	5.75	6.15	6.70	7.50	8.35	

H. S. & Co.
Beading



Not sharpened

Size inch.....	1⁄8	3⁄16	1⁄4	5⁄16	3⁄8	1⁄2	5⁄8	3⁄4
Each.....	\$.70	.70	.70	.80	.90	1.10	1.30	1.50

Hustler



Top View



Bottom View

Not Sharpened

Size, inch.	1⁄8	3⁄16	1⁄4	3⁄8	1⁄2	5⁄8	3⁄4	7⁄8	1
Each.....	\$.50	.55	.60	.65	.80	.95	1.10	1.25	1.50

Gouges



Not sharpened

No. 22 The 1-inch gouge is 11 inches long overall.

No. 24 Long and strong. The 1-inch gouge is 13 inches long overall.

Size, inch.....	1⁄8	3⁄16	1⁄4	5⁄16	3⁄8	7⁄16	1⁄2	5⁄8
No. 22 Dozen..	\$3.65	3.70	3.70	4.00	4.00	4.40	4.40	4.70
No. 24 Dozen.....			5.80	6.00	6.00		7.00	7.70
Size, inches.....	3⁄4	7⁄8	1	1 1⁄4	1 1⁄2	1 3⁄4	2	
No. 22 Dozen.....	\$5.35	6.00	6.70	8.45	10.80	12.55	15.20	
No. 24 Dozen.....	8.75	10.10	11.10	13.50	16.90	18.75	21.50	



No. 20 Best quality applewood handles, with cast brass ferrules. The 1-inch gouge has 6 1⁄4-inch blade. Sharpened, ready for use.

Size, inch.....	1⁄4	3⁄8	1⁄2	5⁄8	3⁄4	7⁄8	1	
Dozen.....	\$5.50	5.90	6.25	6.65	7.50	8.55	9.45	

Parting

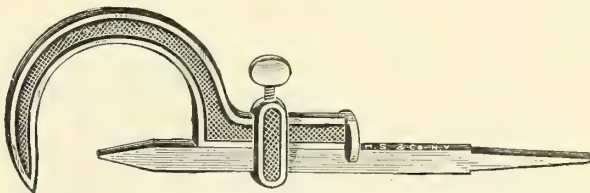


No. 18

Length 8 1⁄2 to 9 1⁄2 inches over all. Not sharpened. Without handles.

Size, inch.....	1⁄2	5⁄8	3⁄4	
Dozen.....	\$4.50	5.00	5.50	
No. 18 1⁄2 Handled. Sharpened ready for use.				
Size, inch.....	1⁄2	5⁄8	3⁄4	
Dozen.....	\$6.30	6.80	7.30	

Sizing



No. 25

Opens to 4 inches. The blades are made of best English cast steel, properly tempered.

Without handles, not sharpened.....	Dozen \$15.00
Handled and sharpened.....	16.80

H. S. & Co.
Gauges



Steel. Gauges from 2⁄16 to 1⁄16 inch by 16ths, each \$1.00

Wood-Carving Tools

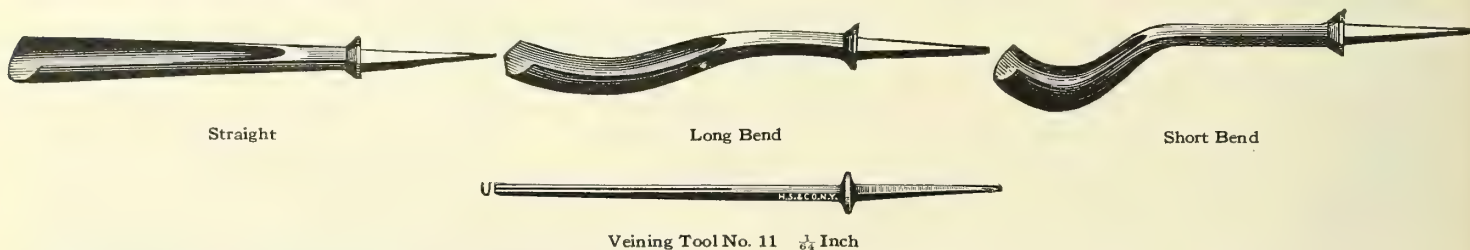
London

Genuine S. J. Addis

These tools are the standard of the wood carver and are the very best on the market, made of the best tool steel, carefully tempered. Each tool is thoroughly inspected to insure its being perfect.

We are exclusive agents in the United States, importing direct and carrying a large and assorted stock of the various styles, sizes and sweeps.

All tangs are shouldered to prevent creeping and splitting the handles.



All sweeps up to 1 inch are illustrated full size on the next two pages, but it must be born in mind that in a few cases the tools will vary slightly from the diagrams, as it is almost impossible to exactly reproduce the sweeps of some of the gouges, etc. The illustrations, however, will be of value in making up orders, matching tools to be replaced, etc. We carry in stock—Tools Nos. 1 to 8, up to 1½ inch. Tools Nos. 9 to 20, up to 1¼ inch. Tools Nos. 21 to 46, up to 1 inch.

Nos. 1 to 11 and 20, 21, 31, 32, 39, 40 begin with ⅓ inch. All other sizes begin with ⅛ inch. ⅝ and ⅞ Tools are made in No. 11 only. No. 22 is right corner, No. 23 left.

We also carry in stock a very fine, short veining tool, No. 11, ¼ inch, for engraving varnished work, illustrated above.

How Carving Tools Are Measured

Nos. 1 to 32, width of cutting edge, measured in a straight line from point to point.

Nos. 41 to 46, length of one side of cutting edge.

(*Not handled or sharpened.)

(Any size tool smaller than smallest size listed takes that list)

Up to, Inches	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
No. 1 and 2, straight, dozen			\$2.40	2.80	3.20	3.40	4.20	4.60	5.00	5.60	6.80	8.20
Each			.20	.24	.27	.29	.35	.39	.42	.47	.57	.69
No. 3 to 9, straight, dozen			2.80	3.30	3.70	3.90	4.80	5.40	5.80	6.60	8.00	9.80
Each			.24	.28	.31	.33	.40	.45	.49	.55	.67	.82
No. 10, straight, dozen			3.20	3.60	4.80	5.60	6.40	8.00	9.60	12.00	14.40	16.80
Each			.27	.30	.40	.47	.54	.67	.80	1.00	1.20	1.40
No. 11, straight, dozen	\$3.20	3.60	3.60	4.80	5.60	6.40	8.00	9.60	12.00	14.40	16.80	20.00
Each	.27	.30	.30	.40	.47	.54	.67	.80	1.00	1.20	1.40	1.67
No. 12 to 18, long bend, dozen			3.40	3.80	5.20	6.00	7.20	8.00	9.60	11.20		
Each			.29	.32	.44	.50	.60	.67	.80	.94		
No. 19 and 20, long bend, dozen	3.40	4.20	4.20	5.20	6.00	7.20	8.00	9.60	11.20	13.60		
Each	.29	.35	.35	.44	.50	.60	.67	.80	.94	1.14		
No. 21 to 23, short bend, dozen				3.00	4.20	5.20	6.00	7.20	8.00	9.60	12.00	14.40
Each				.25	.35	.44	.50	.60	.67	.80	1.00	1.20
No. 24 to 30, short bend, dozen			3.40	3.80	5.20	6.00	7.20	8.00	9.60	11.20		
Each			.29	.32	.44	.50	.60	.67	.80	.94		
No. 31 and 32, short bend, dozen	3.40	4.20	4.20	5.20	6.00	7.20	8.00	9.60	11.20	13.60		
Each	.29	.35	.35	.44	.50	.60	.67	.80	.94	1.14		
No. 39, straight, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						
No. 40, long bend, dozen	4.60	5.10	5.60	6.90	8.60	10.60	12.70	14.40				
Each	.39	.43	.47	.58	.72	.89	1.06	1.20				
No. 41, straight, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						
No. 42, long bend, dozen	4.60	5.10	5.60	6.90	8.60	10.60	12.70	14.40				
Each	.39	.43	.47	.58	.72	.89	1.06	1.20				
No. 43 and 44, short bend, dozen	4.60	5.15	5.60	6.90	8.60	10.60						
Each	.39	.43	.47	.58	.72	.89						
No. 45, straight, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						
No. 46, long bend, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						

(*For Handling and Sharpening Tools see page 561.) See pages 562 and 563 for full size illustrations of shapes

Wood-Carving Tools

London

Genuine S. J. Addis

Ladies or Fish Tail

The name "Fish Tail" is derived from the spread of the point, which somewhat resembles a fish tail, they are slightly lighter than the regular and are used principally for chip carving. All tangs are shouldered to prevent creeping and splitting the handle. The sweeps are the same as corresponding numbers of regular tools and are illustrated full size on two succeeding pages. The same prices apply as shown on page 560.



No. 1



No. 11



No. 39

- No. 1 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch
- No. 3 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
- No. 4 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
- No. 5 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
- No. 6 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
- No. 7 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, and $\frac{3}{8}$ inch.
- No. 8 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, and $\frac{3}{8}$ inch.

- No. 9 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$ and $\frac{3}{8}$ inch.
- No. 10 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ and $\frac{1}{8}$ inch.
- No. 11 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ and $\frac{1}{8}$ inch.
- No. 39 $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{3}{16}$ inch.
- No. 41 $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{3}{16}$ inch.
- No. 45 $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{3}{16}$ inch.

Handling and Sharpening Carving Tools

Handling

(Prices include Handles)

With round maple handle, dozen.....	\$.50	With octagon maple handle, dozen.....	\$.85
Each.....	.05	Each.....	.09

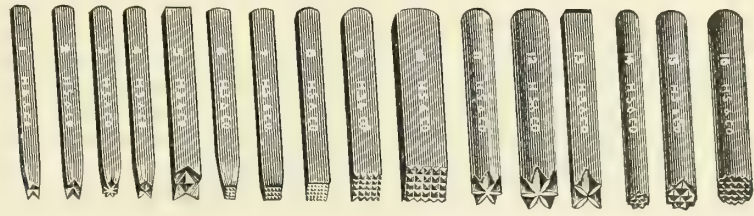
Sharpening

By sharpening, we mean that the tools are ground sharp, but not honed, our experience has been that wood carvers prefer to do their own honing (which consists of putting on the inside bevel,) as they differ in opinion as to the exact "edge" and bevel required.

All flat tools and gouges or parting tools up to and including $\frac{3}{4}$ inch in width.		Gouges or parting tools over $\frac{3}{4}$ inch in width.	
Dozen.....	\$.60	Dozen.....	\$1.20
Each.....	.06	Each.....	.12

Carvers Markers

H. S. & Co.



These markers are made of a special high-grade tool steel, gun finished, carefully hardened and tempered. The designs are those most suitable for background work in wood carving.

Any number, dozen.....	\$3.40
------------------------	--------

Book

"Wood Carving, with Suggestions in Chip Carving"

By Thos. C. Simmonds

Contains many illustrations and full descriptions of the woods, tools, etc., used in wood and chip carving, with an entire chapter on the sharpening and management of tools.

91 pages, 5½x7½ inches, postpaid, each.....	\$.50
---	--------

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Wood-Carving Tools

London

Genuine S. J. Addis

Illustrating full size shapes of sizes $\frac{1}{32}$ to $\frac{1}{2}$ inch, inclusive

NO.	LENGTH	STRAIGHT	$\frac{1}{32}$	$\frac{1}{16}$	$\frac{5}{64}$	$\frac{3}{32}$	$\frac{7}{64}$	$\frac{1}{2}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
21		1													
22		2													
23		3													
24	12	4													
25	13	5													
26	14	6													
27	15	7													
28	16	8													
29	17	9													
30	18	10													
31	19	11													
32	20	12													
44	42	41													
43	40	39													
46	45														

HAMMACHER SCHLEMMER & CO. NEW YORK



Straight



Long Bend



Short Bend

See page 560 for listing

SINCE
1848

HAMMACHER SCHLEMMER & CO.

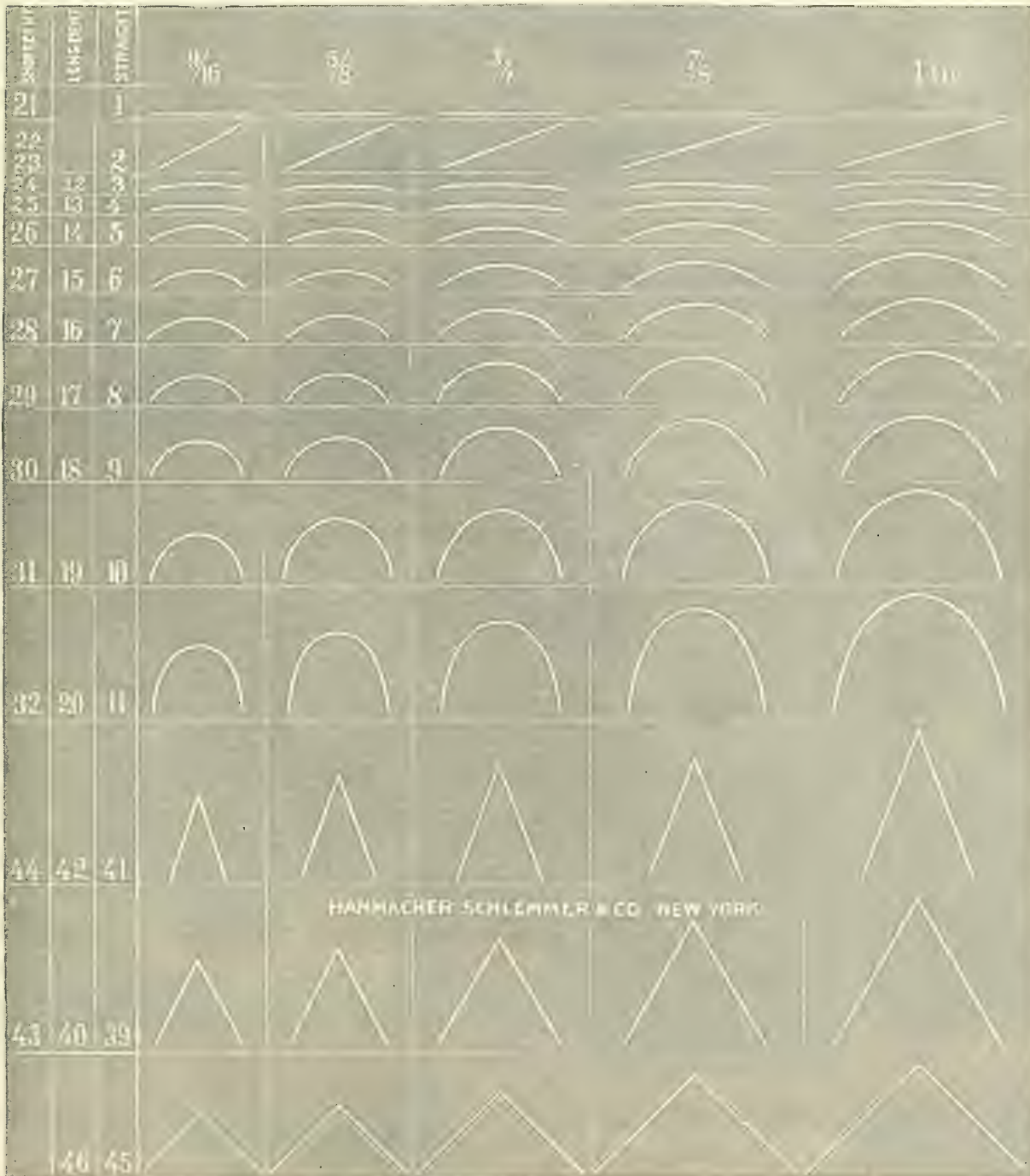
NEW
YORK

Wood-Carving Tools

London

Genuine S. J. Addis

Illustrating full size shapes of sizes $\frac{9}{16}$ to 1 inch, inclusive



Straight

Long Bend

Short Bend

See page 560 for listing

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

Gravers

Genuine Stubs



Sizes, No. 3, 2, 1

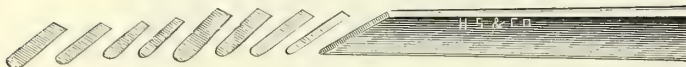
No. 130. Knife



Sizes, No. 6, 5, 4
Onlette

3, 2, 1,
oval

No. 130A



Sizes, No. 9, 8, 7, 6
Narrow Back

5, 4, 3, 2, 1, No. 130B. Round Edge
Wide Back



Sizes, No. 9, 8, 7, 6
Narrow Back

5, 4, 3, 2, 1,
Wide Back

No. 130C. Flat Back



Sizes, No. 3, 2, 1

No. 130D. Round Edge, Pointed Back



Sizes, No. 3, 2, 1

No. 130E Round



No. 130F. Chisel



Sizes, No. 3, 2, 1.

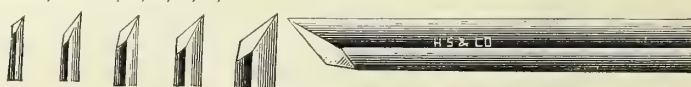
No. 130G. Half-Round, Flat Back

Sizes, No. 1, 2, 3, 4, 5, 6



No. 196. Square.

Sizes, No. 1, 2, 3, 4, 5, 6



No. 198. Lozenge

Sizes, No. 1, 2, 3, 4, 5, 6



Tint Tools for Wood

Size Number	1	2	3	4	5	6	7	8	9
No. 130, dozen	\$1.50	1.60	1.75						
No. 130A dozen	1.50	1.60	1.75	1.50	1.60	1.75			
No. 130B, dozen	1.50	1.50	1.60	1.75	1.90	1.50	1.60	1.75	1.90
No. 130C, dozen	1.50	1.50	1.60	1.75	1.90	1.50	1.60	1.75	1.90
No. 130D, dozen	1.50	1.75	1.90						
No. 130E, dozen	1.50	1.75	1.90						
No. 130G, dozen	1.50	1.75	1.90						

Size Number	1	2	3	4	5	6
No. 196, dozen	\$1.25	1.25	1.35	1.50	1.75	1.90
No. 198, dozen	1.25	1.35	1.50	1.75	1.90	2.00
Tint tools for wood, dozen	1.60	1.60	1.75	1.90	2.00	2.15
Size, inch	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{4}$
No. 130F, dozen	\$1.50	1.50	1.50	1.60	1.60	1.75
						1.75
						1.90

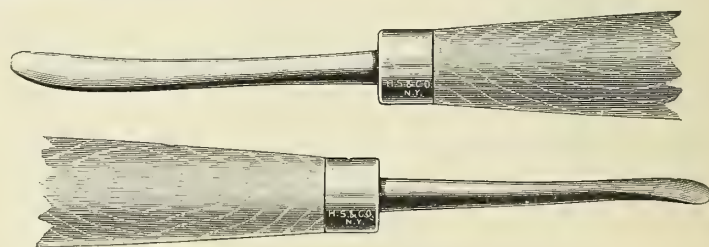
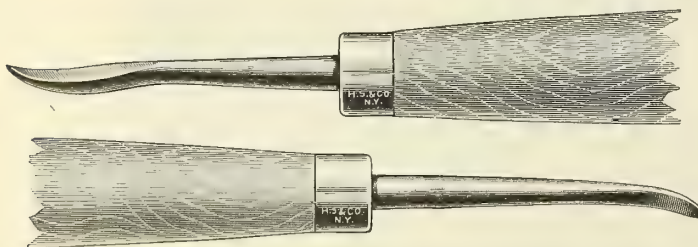
For Graver Handles, see page 547

Leather Working Tools

H. S. & Co.

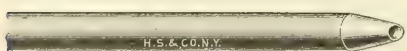
Made from the highest grade tool steel after the most approved designs. We recommend them to the critical artisan who is seeking the best tools. A very simple outfit is required for a start in leather working, and we suggest the following: A small drawing board or thick piece of unpolished glass, a knife for cutting and paring the leather-tracing, undercutting and modeling tools, hammer and back ground stamps.

Tracing, Undercutting and Modeling



These cuts show each tool cut in two pieces. Both tools are double end and measure 9 inches in length, from point to point.
No. 101 Each..... \$.60 No. 102 Each..... \$.60

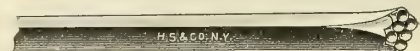
Back Ground Stamps



No. 51



No. 52



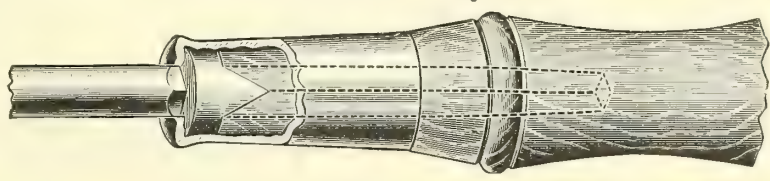
No. 53

These tools are $4\frac{1}{4}$ inches overall. The full size represent only the staple tools. Operators usually make special tools, shaped to their particular needs, from pieces of steel, such as an old round file.
Nos. 51, 52 or 53 Each..... \$.40


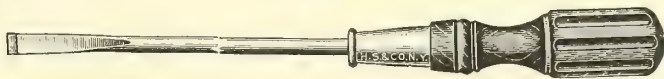
Screwdrivers

H. S. & Co.
New Century

The H. S. & Co., "New Century"
Screwdriver is fully warranted. The
blade is high-grade tool steel, carefully
tempered, and the handle is polished
hardwood especially shaped to give a
firm, easy grip. Each tool is thoroughly
tested before it leaves the factory.



This cut shows how the toothed
bolster joins and locks the blade to the
handle.
This construction prevents the
handle from loosening, turning or
splitting and gives maximum strength
combined with lightness.

Regular												Slim Blade											
																							
No. 100 Rosewood Finish Handles												No. 120 Rosewood Finish Handles											
Length of blade, inches.....												Length of blades, inches.....											
Dozen.....												Dozen.....											
2												2½											
2½												3½											
3												4½											
4												5½											
5												6½											
6												8½											
7												10½											
8												12½											
10																							
12																							
\$3.00												\$3.00											
3.00												3.50											
3.50												4.50											
4.25												5.50											
5.00												6.50											
6.00												8.00											
7.00												9.50											
8.00												11.00											
10.00																							
12.00																							

Double Grip



No. 112 Rosewood Finish Handles with Deep Grooves				
Length of blades, inches.....				
Dozen.....				
15				
\$16.00				
18				
18.00				
24				
24.00				
30				
30.00				

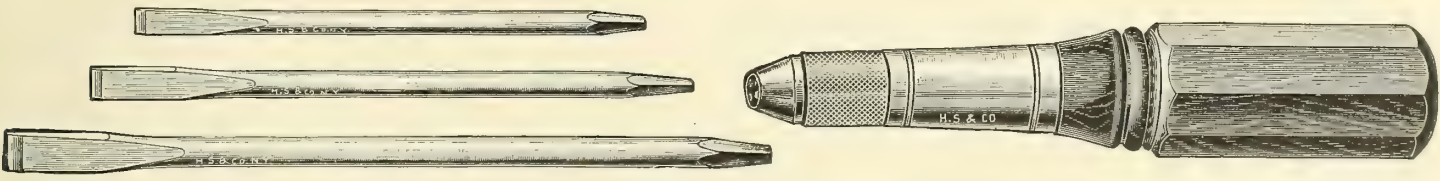
Piano



With Octagon Rosewood Handles, for Light Work

Regular No. 77						Slim Blade No. 77A					
Length of Blade Inches						Length of Blade Inches					
Width of Blade Inch						Width of Blade Inch					
Dozen						Dozen					
2						2					
3						3					
4						4					
5						5					
6						6					
7						7					
8						8					
9						9					
10						10					
11						11					
12						12					
\$4.10						\$4.10					
4.30						4.30					
5.40						5.40					
6.30						6.30					
7.40						7.40					
7.80						7.80					
\$8.40						\$8.40					
9.00						9.00					
9.90						9.90					
11.30						11.30					
12.30						12.30					

Set



The handle is rosewood and has an adjustable chuck of improved design, holding rigidly and firmly the 3 blades furnished, which are 4, 6 and 8 inches long. Also holds drills and other round shank tools from 1/8 to 9/32 inch. No. 1, each..... \$1.60

Clock

Round Rosewood Handle



No. 1	2-inch blade, dozen.....	\$4.00	No. 2	2½-inch blade, narrow point, dozen.....	\$5.40
No. 1	3-inch blade, dozen.....	4.80			

Pocket

Octagon Rosewood Handles



Length of blades, inches.....		1	2	3
No. 10 Dozen.....		\$3.00	3.00	3.00

Screwdrivers

Yankee

These are strong, durable, well-balanced tools, of high quality material and workmanship, each one being thoroughly tested and guaranteed in every particular as to quality.

The fastening of blade and handle is such that they cannot be loosened in proper use, or even with usual abuse.

The blades and ferrules are finely polished and the handle of hard wood is finished in dull dead black, making a handsome appearance as well as being durable



No. 90 Regular

Length of blades, inches.	1½	2	3	4	5	6	7	8	9	10	12	15	18	24	30
Diam. of blades, inches.	$\frac{7}{32}$	$\frac{7}{32}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Dozen.....	\$2.65	2.65	3.10	3.60	4.25	5.10	6.00	6.95	7.75	8.65	10.15	14.00	15.35	20.65	26.00

18, 24 and 30 inch have double grip handle.



No. 95 Slim Blade

Length of blades, inches.....	2½	3½	4½	5½	6½	7½	8½	9½	10½	12½	15½
Diameter of blades, inches.....	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$
Dozen.....	\$2.65	3.10	3.50	4.00	4.55	5.35	5.90	6.40	6.95	8.00	9.60

Hurwood

The blade, shank and head of Hurwood Screwdrivers are one-piece of special steel. Two projecting wings under the head together with rivet which passes through ferrule, handle and shank, securely fastens blade in handle, preventing its turning. These Drivers are made in two forms: One, in which the metal blade runs clear through the handle, and the other, designed for electricians, possessing equal strength but having the metal head countersunk in the handle and insulated with non-conducting plug. All blades are finely tempered, the handles are fluted and stained black and drivers are well-finished throughout.



Construction of Nos. 20 and 50



Construction of No. 55



No. 20, from 2½ to 15 inches

Nos. 50 and 55 all sizes, latter with insulated end



No. 20. 18, 24 and 30 inch



Nos. 51½, 52½ and 53½



No. 54

No. 20 Regular (Blade runs through handle)

Length of Blade Inches	Diameter of Blade Inch	Tip of Blade Inch	Dozen
2½	$\frac{7}{32}$	$\frac{5}{32}$	\$2.40
3	$\frac{7}{32}$	$\frac{3}{16}$	3.00
4	$\frac{1}{4}$	$\frac{3}{16}$	3.60
5	$\frac{5}{16}$	$\frac{3}{16}$	4.20
6	$\frac{5}{16}$	$\frac{1}{4}$	4.80
7	$\frac{11}{32}$	$\frac{9}{32}$	5.40
8	$\frac{3}{8}$	$\frac{5}{16}$	6.00
9	$\frac{3}{8}$	$\frac{11}{32}$	6.60
10	$\frac{3}{8}$	$\frac{3}{8}$	7.20
12	$\frac{3}{8}$	$\frac{2}{8}$	8.40
15	$\frac{7}{16}$	$\frac{7}{16}$	10.20
18	$\frac{1}{2}$	$\frac{15}{32}$	12.00
24	$\frac{1}{2}$	$\frac{1}{2}$	15.60
30	$\frac{1}{2}$	$\frac{9}{16}$	19.20

Machinists

(Blade runs through handle)
Made with Hexagon shank for use with a wrench

Number	Length of Blade Inches	Diameter of Blade Inch	Tip of Blade Inch	Dozen
51½	1½	$\frac{3}{8}$	$\frac{9}{32}$	\$7.20
52½	2½	$\frac{7}{16}$	$\frac{15}{32}$	8.40
53½	3¼	$\frac{1}{2}$	$\frac{1}{2}$	10.20
54	10	$\frac{1}{2}$	$\frac{1}{2}$	18.00

Nos. 50 and 55 Slim Blade

(Blade runs through handle.) No. 55 has insulated handle for electrical work

Designed for light and delicate work. The blades are $\frac{5}{16}$ inch in diameter with $\frac{1}{8}$ inch tip. The handles are short and of small diameter, to fit the palm of the hand permitting the workman to use his thumb and forefinger near the blade when turning screws requiring delicate adjustment. They are, however, very strong and durable, being made with the two projecting wings and rivet as described above.




Length of blade, inches.....	1½	2½	3	4	5	6	7	8	9	10	12
Dozen.....	\$2.40	2.40	3.00	3.60	4.20	4.80	5.40	6.00	6.60	7.20	8.40

Screwdrivers

Genuine Champion



The Blade is forged from the toughest steel, tempered with great care and shrunk into a solid malleable bolster which rests in heavy ferrule, while tang (which forms a part of the bolster) enters and passes nearly through the handle. Every Blade is tested to split a screw-head.

Sizes refer to length of blades

															
Regular (2½ to 12 inches)						Double Grip (15 to 30 inches)					Slim (3½ to 6½ inches)				
Inches.....	2½	3	4	5	6	Inches.....	15	18	24	30	Inches..	3½	4½	5½	6½
Dozen.....	\$3.00	3.50	4.25	5.00	6.00	Dozen.....	\$16.00	18.00	24.00	30.00	Dozen.....	\$3.50	4.50	5.50	6.50
Inches.....	7	8	9	10	12										
Dozen.....	7.00	8.00	9.00	10.00	12.00										

Valley

The Blade is forged from best tool steel and is prevented from turning in handle by a rivet passing through ferrule, handle and blade.

										
							Valley "Pet"			
Length of blade, inches.....	3	4	5	6	7	8	Blade is $\frac{1}{8}$ inch in diameter. For very light, fine work.			
Dozen.....	\$1.55	1.80	2.10	2.40	2.90	3.20	Length of blade, $1\frac{1}{4}$ inches, dozen.....	\$2.50		
							Length of blade, 3 inches, dozen.....	2.50		

Perfect Handle

The entire metal part is solid steel drop-forging. The head is shaped into a hammer, which may be used to start screws into wood, or the driver may be used with a hammer to loosen rusty screws. Each point is tested in a special machine built for that purpose. Each wooden handle is riveted on, locked in under pressure, and carefully waterproofed. Every Perfect Handle Tool is guaranteed in every way by the maker.

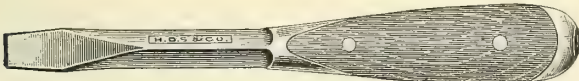
No. 609											
Length of blade, inches.....	2	3	4	5	6	7	8	10	12		
Diameter of blade, inches.....	¼	¼	¼	¼	⅙	⅙	⅙	⅜	⅜		
Dozen.....	\$4.25	4.25	4.25	5.00	6.00	7.00	8.00	10.00	12.00		



No. 609 Before wooden handles are attached showing one-piece steel drop-forging



No. 609 Complete



No. 610 Machinists

Fit a wrench to the square shank to tighten or loosen cap screws, set screws, etc. Use all the power that seems necessary, as the makers unqualified guarantee is back of the tool.

Length over all, inches.....	9½	10½
Length of blade, inches.....	4½	5
Size of square, inch.....	⅞	⅞
Width of point, inch.....	½	¾
Thickness of point, inch.....	⅝	⅝
Dozen.....	\$12.00	13.00



No. 611 Triple Lever

This triple lever Perfect Handle Screwdriver may be used in any of the positions shown above, as well as in the regular screwdriver position. Turning the wing nut releases or rigidly sets the handle in any desired position; affords a powerful leverage. Blade 3¼ inches long, 9¼ inches over all, point ½ inch wide, ⅝ inch wide, dozen..... \$18.00

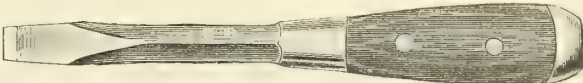
Peerless



No. 200

These Drivers are not one solid forging. The Blade is hand forged (the best method to secure tensile strength in steel) from high-grade tool steel and the steel handle is rigidly attached to the Blade. The wood sides are cocobolo.

Length of blade, inches.....	2	3	4	5	6	7	8	10	12
Dozen.....	\$4.25	4.25	4.25	5.00	6.00	7.00	8.00	10.00	12.00



No. 400 Machinists

With square shank to enable user to apply a wrench. This Driver is drop-forged in one solid piece.

Length, 9 inches overall, length of Blade, 4¼ inches, dozen.. \$13.50

Screwdrivers

Disston



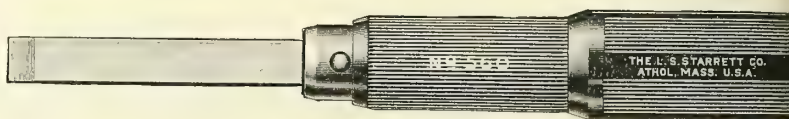
No. 50 Insulated

A crucible steel blade, carefully hardened and tempered, embedded in a hard-rubber handle and so fastened that it will not work loose. The hard-rubber handle acts as an insulator and is a texture which eliminates brittleness. It is strong, tough and durable, pressed to form. The grip is milled and the extended rings prevent the hand from slipping or touching the blade.

6 inches long over all, dozen \$16.00

Electricians

Starrett Pocket Magazine

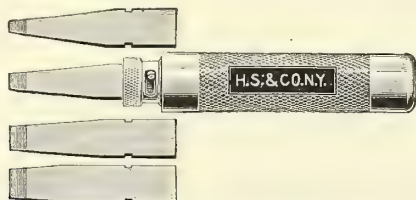


No. 560

Has 4 blades, $\frac{3}{32}$, $\frac{5}{32}$, $\frac{1}{4}$ and $\frac{3}{8}$ inch in width. When not in use the blades are held in the hollow handle by spring pressure, which prevents loss. The smaller blades may be used to make holes in wood for screws, as well as to drive them home. The entire handle is covered with hard rubber for insulation from electrical currents and is ribbed to insure a firm grip when using.

Complete, each \$1.50
Extra blades, each10

Yankee Magazine

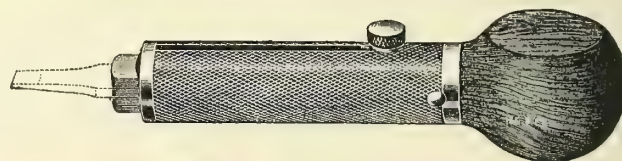


No. 60 Is 3 inches long and weighs 2 ounces. Shape is convenient to carry in the pocket. Provided with 4 blades of different widths and thicknesses. Made of steel, nickel-plated and highly polished.

Dozen \$10.00

Pocket

Billings Magazine

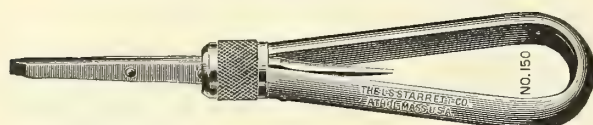


No. 1

With rosewood handle. Highly finished and full nickeled. Four sizes of drivers, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{5}{16}$ inch are contained within the handle, and are pivoted to the slide, and so cannot be removed or lost. By raising the locking bolt and pressing the slide forward to end of slot the blades will swing out. Select size wanted, draw slide back into handle and driver is ready for use. Total length, when closed, is $3\frac{1}{2}$ inches, weight, $3\frac{1}{2}$ ounces.

Dozen \$12.00
Extra Blades, set,50

Starrett With Brad Awl and Wrench



Open



No. 150 Closed

A compact combination of three tools, consisting of neat finely finished steel handle with knurled nut, which firmly holds a screwdriver and brad awl, made in one piece. The shape of the handle enables it to be used as an emergency wrench.

Weight, 2 ounces, each \$.40

Starrett



Open



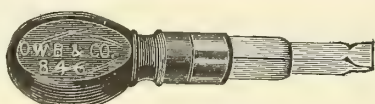
No. 553 Closed

This tool is made from steel tubing, knurled and nickel-plated. The butt of the blade fits a solid lock in the tube, preventing it from turning, and is held from coming out by a slight turn of the chuck.

To carry in pocket, reverse the blade, inserting it in the handle, giving a slight turn of the chuck to keep it there. It takes no more room in the pocket than a penknife.

The screwdriver blades are properly tempered.
No. 553A Handle $\frac{1}{4}$ inch diameter, blade $1\frac{1}{8}$ inches long, weight $\frac{1}{2}$ ounce, each \$.25
No. 553B Handle $\frac{3}{8}$ inch diameter, blade 3 inches long, weight $1\frac{1}{2}$ ounces, each35
Extra blades, each10

Bullock Locksmiths and Gunsmiths



No. 846 Half Size

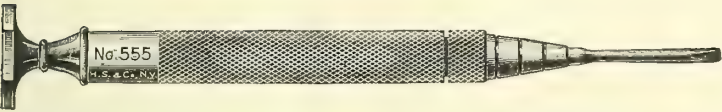
Square steel blade, short, stout point. Blades pinned in handles. Very handy for lock and gunsmiths.

Rosewood handle, plain, dozen \$6.00

Screwdrivers

Pocket

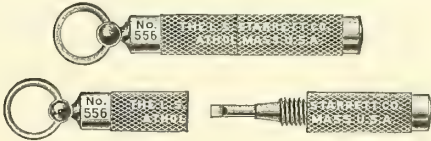
Starrett
Jewelers



Nicely and substantially made from steel tubing, knurled and nickel-plated. Five constitute a set, with blades varying from .040-inch to 100 in size. The blades are held from turning in the handle by a solid lock, and from coming out by a slight turn of chuck. The top is finished with a swivel knob, concaved to fit the finger and hexagonal in shape to prevent rolling off the bench. To quickly indicate the size the chuck end is marked with various grooves, four grooves indicating the finest size A, three grooves the next larger B, two grooves C, one groove D, the largest size, E, being plain.

No. 555A	Handle 1/4-inch, diameter of blade, .040-inch.....	Each \$.35
No. 555B	Handle 1/4-inch, diameter of blade, .055 inch.....	.35
No. 555C	Handle 1/4-inch, diameter of blade, .070 inch.....	.35
No. 555D	Handle 1/4-inch, diameter of blade, .080 inch.....	.35
No. 555E	Handle 1/4-inch, diameter of blade, .100 inch.....	.35
Set of 5.....		\$1.60
Extra Blades, each.....		.10

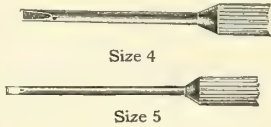
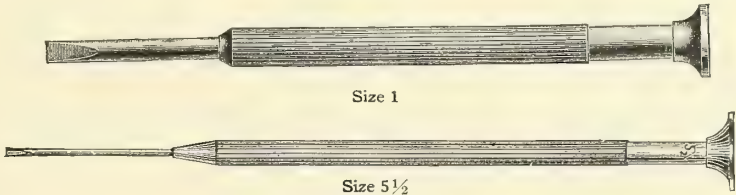
Starrett
Eye Glass



Made in two pieces and screwed together, telescoping the driver blade when not in use. It is nickel-plated, neat and safe to carry in the pocket on key-ring or to attach to a watch chain.
The engraving shows the actual size of the screwdriver.

No. 556	Each.....	\$.15
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Watch



No. 610	First quality, full size cuts. Nickel-plated, with tempered steel blades. Made in 6 sizes as illustrated, dozen	\$1.50
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Double End
B. M. Co.



Two different angles

No. 14	5 inches overall, dozen.....	\$2.80	No. 15	5 inches overall, dozen.....	\$2.80
No. 14	6 inches overall, dozen.....	3.60	No. 15	6 inches overall, dozen.....	3.60
No. 14	8 inches overall, dozen.....	4.40	No. 15	8 inches overall, dozen.....	4.40

H. S. & Cc.



Ratchet

Lane



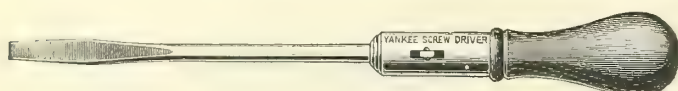
Immense leverage. Rapid. Right or left-hand. Can be used in close quarters.		Nickel-plated. Right or left-hand. Method of setting ratchet is very simple. Two blades, 1/2 and 3/8 inch.	
No. 72B	9 inches overall, dozen.....	\$19.20	No. 1 7 inches overall, dozen..... \$36.00

Screwdrivers

Yankee

Ratchet

The friction in this ratchet mechanism is so slight as hardly to be felt, the backward movement is as easy as in a good "stem winder" and just as noiseless. The screw stays where it is put when driving in and is not screwed out with backward turn of handle. The construction of ratchet and pawls is such that neither can bend, break, wear or get out of order, and permits a very compact arrangement, making the driver convenient in size and shape, light in weight and making possible the manufacture of smaller sizes. The blades are best imported cast steel, properly tempered, ground and polished, and every one is thoroughly tested before leaving factory. Other metal parts are nickel-plated and buffed. Handles are hardwood, smoothly and handsomely polished.



No. 10

The adjustment is made by a shifter moved in the direction of the length of blade and held in position by spring and notches in case.

Length of blade, inches	2	3	4	5
Dozen	\$5.60	7.00	7.75	8.40
Length of blade, inches	6	8	10	12
Dozen	9.85	11.35	13.35	14.65



No. 15

Similar to No. 10, but all sizes have $\frac{1}{8}$ inch diameter blade and differ only in length. On the blade is a knurled washer, so blade can be turned with finger and thumb while hand presses on handle to hold screw in place. Largely used by electrical workers.

Length of blade, inches	2	3	4	5
Dozen	\$6.30	6.80	7.35	7.90



No. 110

Same as No. 10, with screw-holder attachment, for holding screw in position while driving in difficult places. This attachment consists of two jaws, fastened to a head at one end, a ring at other end to limit spread of jaws and a spring to operate them.

Length of blade, inches	3	4	5	6	8
Dozen	\$10.25	10.95	11.60	13.00	14.50



No. 115

Same as No. 15, with screw-holder attachment, as in No. 110.

Length of blade, inches	3	4	5
Dozen	\$9.60	10.15	10.70

Spiral Ratchet

Rods are of steel, the spiral grooves milled and made smooth by specially designed machinery. The nuts are specially hard brass and made to accurately fit spiral grooves in spindle. Neither the pawls nor ratchets can bend, break or get out of order, the friction in the ratchet mechanism is so slight as hardly to be felt, and has an easy, noiseless movement. All drivers are furnished with three bits of varying widths and thickness, made from best imported cast steel, properly tempered, ground and polished. Every bit is thoroughly tested before leaving factory. Other metal parts are nickel-plated and buffed. Handles are made of hardwood, smoothly and handsomely finished.



No. 20 Right-hand only and rigid

Made for work where driving of screws is the main requirement. Occasional withdrawal of screws may be made by making the blade rigid. Three bits of different widths are furnished with each tool.

Number	20-1	20-2	20-3
Length, closed, inches	10	12	13
Length, open, inches	14	17	19
Each	\$1.80	2.00	2.30



No. 35

Similar to No. 30, but lighter for small screws and to carry in pocket. Measures 7 inches long without bit, weighs less than 7 ounces.

Each	\$2.00
------	--------



No. 30 Right or left-hand or rigid

The spindle has two spirals, one right and one left with corresponding nuts. To drive screws the shifter is moved to end of slot toward bit; to draw screws, it is moved to end of slot toward handle. Screws can be ratcheted in or out by turning the handle as in a ratchet screwdriver. It can also be made rigid with spindle fully extended and shifter midway between ends of slot. In this position it becomes especially effective as a long screwdriver to reach out-of-the-way places.

Is $13\frac{1}{2}$ inches long, when closed. Has $5\frac{1}{2}$ -inch stroke.

Each	\$2.30
------	--------



No. 31

Same as No. 30, but heavier and stronger throughout, for large screws. $17\frac{1}{2}$ inches long, including bit, when closed, has $8\frac{1}{4}$ -inch stroke.

Each	\$3.50
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No. 130 Quick return

Same as No. 30, with spring in handle, causing it to automatically come back for the next push. Can be worked with one hand and in inaccessible places.

Each	\$3.00
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No. 131

Same as No. 31. With spring in handle, causing it to automatically resume proper position for the next turn. Can be worked with one hand and in inaccessible places.

Each	\$3.90
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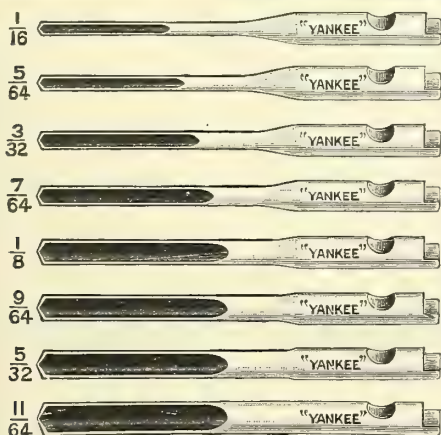
For extra heavy screw driving, use Yankee Push Brace, No. 75, with Brace Screwdriver Bits, see index

Attachments for Spiral Ratchet Screwdrivers

Yankee

In ordering attachments, care should be taken to specify size and style of ratchet driver they are to fit. Those for No. 30 and 130 have shanks $\frac{3}{8}$ inch diameter and fit No. 20, size 2. Those for No. 31 and 131 have shanks $\frac{1}{8}$ inch diameter and fit No. 20, size 3. Those for No. 35 have shanks $\frac{1}{2}$ inch diameter and fit No. 20, size 1. The shanks are same diameter as regular bit where it fits in chuck and spiral driver.

Chuck With Drill Point

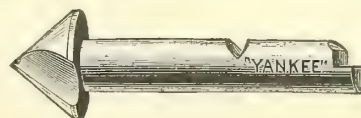


The outside of Chuck corresponds to bit of driver in size, the inside to shank of drill points used in "Yankee" automatic drills. The drill point is first put in Chuck as in illustration, and the two together put in chuck of spiral driver the same as ordinary bit. The spiral driver is set for right-hand and drill revolved by pushing down on handle or by ratchet movement, same as driving in screws. The sets are packed in round wooden boxes.

For Nos. 30, 130, 31, 131 and 20, sizes 2 and 3, eight drill points, $\frac{1}{16}$ to $\frac{11}{64}$ -inch, inclusive, as shown in illustration, are furnished with Chuck, set \$.90

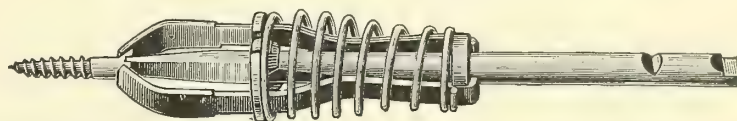
For Nos. 35 and 20, size 1, only three drill points, $\frac{1}{8}$ to $\frac{3}{32}$ -inch are furnished with Chuck.
Set \$.50

Countersink



Made of superior steel and can be used in either hard or soft woods. Furnished for Nos. 30-130, 31-131, 35 and 20, sizes 1, 2 and 3.
Each \$.20

Bit with Screw Holder



A longer Bit than regular, with holder to hold screw while driving in places difficult to reach, or where only one hand can be used. When screw is driven in place, the jaws open as the head of screw sinks into wood.

Made for Nos. 30-130, 31-131, 35 and 20, sizes 1, 2 and 3.
No. 20x1 and 35, each \$.45
No. 20x2, 20x3, 30, 130, 31 and 131, each50

Bit with Screw Eye Holder

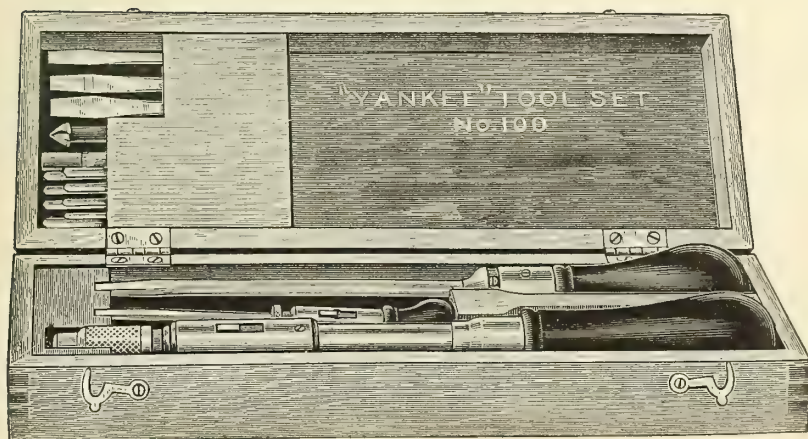


A Bit with fork and spring holders to hold screw eyes or screw hooks to put in place and drive them in, particularly in out-of-the-way places or where only one hand is available. Can also be used for taking out screw eyes, the holder keeping them from falling down.

Made for No. 30, 130 and 20, size 2, to hold No. 8 and smaller screw eyes, and for No. 35 and 20, size 1, to hold No. 12 and smaller screw eyes. Not made for No. 31, 131 or 20, size 3.
Nos. 20x1 and-35, each \$.45
Nos. 20x2, 30 and 130, each50

Ratchet Screwdriver Tool Set

Yankee No. 100



Put up in substantial and well-finished boxes for use by mechanics who desire to keep tools in fine order, and by gentlemen or amateur mechanics who especially appreciate tools put up in handsome sets, we offer the set as illustrated. The box, which is very substantially made of oak, handsomely finished, contains one each of the following "Yankee" tools:

No. 30 Spiral Ratchet Screwdriver.

Chuck, with drill points, eight sizes, $\frac{1}{16}$, $\frac{5}{64}$, $\frac{3}{32}$, $\frac{7}{64}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$ inch, to use for drilling holes with the No. 30 Spiral Ratchet Screwdriver.

Countersink to use in same tool.

No. 11 Ratchet Screwdriver, with blade 6 inches long.

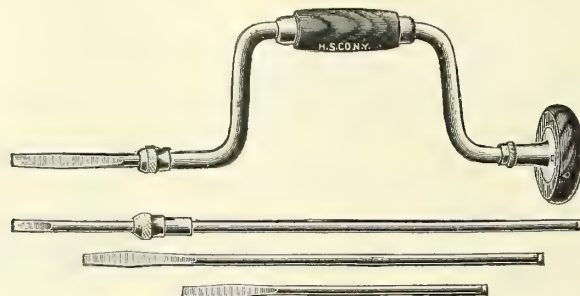
No. 15 Ratchet Screwdriver, with finger turn on blade, with blade 3 inches long.

These are the styles and sizes of "Yankee" tools most in demand, and the combination in a set covers all the usual requirements in tools for driving and drawing out screws. The tools are easily removed from box, and when it is closed are held firmly in place.

The box measures $12\frac{1}{2} \times 4\frac{3}{4} \times 2\frac{3}{4}$ inches.

Set \$6.00

Brace Screwdriver Set



No. 230

6-inch sweep. Cocobolo Head. Cocobolo Handle. Combinations 4, 8, 12, 16, 20 or 24 inches

Complete, as shown..... \$1.75

For quick extra heavy screw driving use Yankee Push Brace, No. 75, with Brace Screwdriver Bits, see Index

Screwdriver Bits



Round Blade

Forged from crucible steel, oil tempered and polished

Order by face

H. S. & Co. No. 10

Width of face, inches.....	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Length of blade (under shoulder), 4 inches, dozen .	\$2.00	2.00	2.00	2.20	2.40	3.60	4.00
Length of blade (under shoulder), 9 inches, dozen .	3.00	3.00	3.00	3.30	3.60	4.80	6.00

Stanley No. 26

Width of tip, inch.....	1/4	5/16	3/8	1/2	5/8	3/4
Length of Bits overall, inches.....	4 1/2	4 3/4	5	5	5	5
Dozen.....	\$1.40	1.40	1.40	1.40	1.40	1.40

Double



Smith No. 618

Drop-forged. Nicely Finished. Accurately tempered. Fully guaranteed

No. 1 Small end, 1/4 inch wide, for Nos. 6 to 8 screws.

Large end, 5/16 inch wide, for Nos. 8 to 12 screws.

No. 2 Small end, 5/16 inch wide, for Nos. 8 to 12 screws.

Large end, 3/8 inch wide, for Nos. 12 to 16 screws.

Dozen..... \$2.00 Dozen..... \$2.00

Combination Set



Yankee No. 66

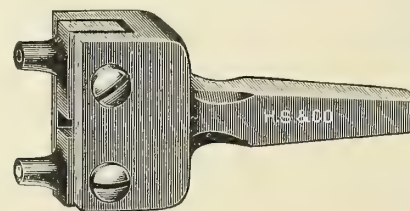
Consists of holder with four heavy blades for use in Bit Brace. Length, 4 7/8 inches

Dozen..... \$12.00

Billiard



2/3 Size Cut



No. 25 2/3 Size Cut

Plain. Fitting standard sizes of billiard screws, dozen..... \$5.20 Adjustable to any screw, dozen..... \$24.00

Cold Chisels

H. S. & Co.

Made from Best Tool Steel for This Purpose. Each Tool Carefully Shaped, Perfectly Straight and Well Finished. Order by Diameter of Stock.

Regular



No. 1

Diameter, inch...	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, inches...	4	4	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6 $\frac{1}{2}$	7 $\frac{1}{2}$	8	8
Cutting edge, inches	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1 $\frac{1}{8}$
Dozen	\$1.20	1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Long

Diameter, inch	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
12 inches long, dozen	\$2.80	4.40	6.00	8.20	10.50
15 inches long, dozen	3.30	5.30	7.10	9.80	12.50
18 inches long, dozen	3.80	6.00	8.20	11.30	14.50
24 inches long, dozen	4.80	7.80	10.50	14.40	18.50

Half-Round Nose



No. 2

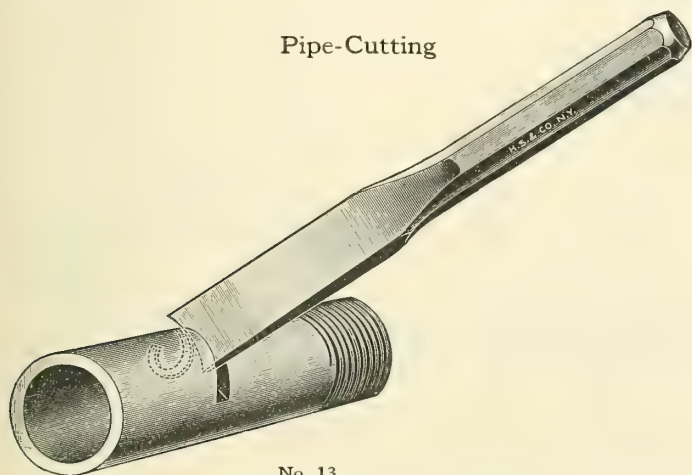
Diameter, inch...	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, inches...	4	4	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6 $\frac{1}{4}$	7	8	8
Cutting edge, inches	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1 $\frac{1}{8}$
Dozen	\$1.20	1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Oil Groove



Diameter of stock, inch	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
Length, inches	4 $\frac{1}{4}$	4 $\frac{3}{4}$	5 $\frac{1}{4}$
Diameter of point, inch	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$
Dozen	\$2.00	2.10	2.30

Pipe-Cutting



No. 13

Makes a clean cut in all kinds of pipe and tubing. Leaves no burrs to ream off. Cuts cast-iron pipe quite successfully as there are no thin edges to turn over.

7 $\frac{3}{4}$ inches long, $\frac{5}{8}$ inch diameter, $\frac{7}{8}$ -inch face, dozen \$5.50



Atha

Railroad Track. No. 1170

Weight, pounds	4	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	6
Length, inches	7 $\frac{3}{4}$	8	8 $\frac{5}{8}$	8 $\frac{3}{4}$	8 $\frac{1}{2}$
Width of bit, inches	1 $\frac{3}{16}$	1 $\frac{3}{16}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$
Each	\$1.20	1.35	1.50	1.65	1.80

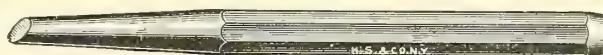
Cape



No. 6

Diameter, inch...	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, inches...	4	4 $\frac{1}{2}$	5	5 $\frac{3}{4}$	6	7	7 $\frac{1}{2}$	8	8
Cutting edge, inch	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
Dozen	\$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Round Nose



No. 15

Diameter, inch...	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, inches...	4	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6 $\frac{1}{4}$	7	8	8
Dozen	\$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Half-Round Nose Cape



No. 17

Diameter, inch...	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, inches...	4	4 $\frac{1}{2}$	5	5 $\frac{3}{4}$	6	7	7 $\frac{1}{2}$	8	8
Cutting edge, inch	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
Dozen	\$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Diamond Nose



Diameter, inch...	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, inches...	4	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6 $\frac{1}{4}$	7	8	8
Dozen	\$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

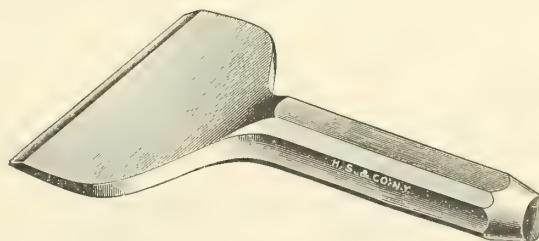
Plugging



No. 36

Length, inches	10	10	10
Diameter, inch	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Cutting edge, inch	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$
Dozen	\$4.40	5.20	7.00

Brick



No. 40

Cutting edge, inches	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$
Dozen	\$8.00	8.50	9.00	9.50

The shape and pitch of these chisels have made them the standard.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

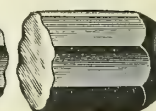
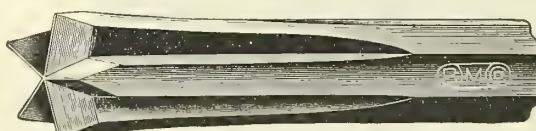
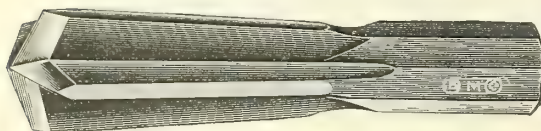
Star Drills

H. S. & Co. No. 30

High-grade Crucible Tool Steel, octagon bar. Will not batter much at the hammer end. Sharp milled edge keeps cuttings loose. Groove for cuttings is smooth, because it is milled instead of forged. Is 100% longer than usual. Will not clog, and prevents drill from sticking in drill hole. Extremely heavy rib, finished smooth. Long, gradual flare, going back to end of groove, and at no point less in diameter than the bar itself. Long bevel, milled smooth and sharp. Every stroke goes deeper. Widest part at extreme points, giving large clearance over bar. Furnished with four or five points, pointed or flat faces, four points with pointed face will be supplied unless otherwise specified.

With Four-Points

With Five-Points



Pointed Face

Flat Face

Diameter, inch	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8
Length, 8-inch, dozen	\$8.25	8.25	8.25	8.70	9.65	11.65	13.70	15.30
Length, 12-inch, dozen	8.50	8.50	8.50	9.00	10.00	12.00	14.00	16.00
Length, 18-inch, dozen	11.00	11.00	11.00	11.50	12.50	15.00	17.50	20.00
Length, 24-inch, dozen	13.50	13.50	13.50	14.00	15.00	17.50	20.00	22.50
Diameter, inches	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2	2 1/4
Length, 8-inch, dozen	\$17.00							
Length, 12-inch, dozen	18.00	24.00	30.00	40.00	50.00	75.00	105.00	165.00
Length, 18-inch, dozen	22.50	28.00	35.00	45.00	56.00	81.00	112.00	175.00
Length, 24-inch, dozen	25.00	32.00	40.00	50.00	62.00	87.00	120.00	195.00

Star Drill Points and Holder

H. S. & Co.



With Four Points, Pointed Face. Will Drill 2 1/2 to 3 1/2 Inches in Depth

Diameter drill, inch	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2	2 1/4	2 1/2
Dozen	\$8.50	8.50	8.50	8.50	8.50	9.00	9.00	9.00	10.00	12.00	14.00				

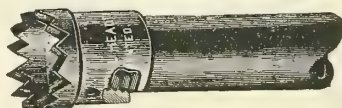
Holder
Fitting all Drills
\$24.00

Set just fits the hip pocket; consists of one drill point, each 1/4, 5/16, 3/8, 1/2 and 1/2 inch and holder \$5.75

Drill Heads

H. S. & Co.

(Use common iron pipe for handle)

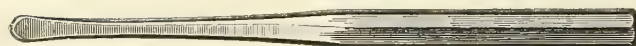


These Drills never break nor crumble the brick; they drill a hole clean and smooth and do not bind. Note in the column under "Diameter of Hole" several sizes are bracketed; any size within a given bracket will fit one size of gas pipe.

Drill Head Number	Size Pipe for Handle Inches	Diameter of Hole Inches	Dozen	Drill Head Number	Size Pipe for Handle Inch	Diameter of Hole Inches	Drills for Expansion Shield for following Bolts, Inch	Dozen
7a	1	1 3/4	\$10.50	2	1/8	3/16	3/8	\$3.00
8	1	2	12.00	3	1/4	1/2	1/2	3.00
9	1	2 1/4	18.00	4	3/8	7/8	5/8	3.00
9a	1	2 1/2	22.00	5	1/2	1	3/4	3.00
10	1	2 3/4	27.00	5a	1/2	1 1/8	1	3.60
10a	1	3	31.00	6	3/4	1 1/4	....	4.20
11	1 1/4	3 1/4	36.00	6a	3/4	1 3/8	....	7.50
11a	1 1/4	3 1/2	40.00	7	3/4	1 1/2	....	9.00
11b	1 1/4	3 3/4	44.00					
12	1 1/4	4	48.00					

Brick Drills

H. S. & Co.



No. 20. 10 inches long

Face, inch	1/4	5/16	3/8	7/16	1/2
Dozen	\$3.80	3.80	4.00	4.00	4.50

Stone Drills

H. S. & Co.



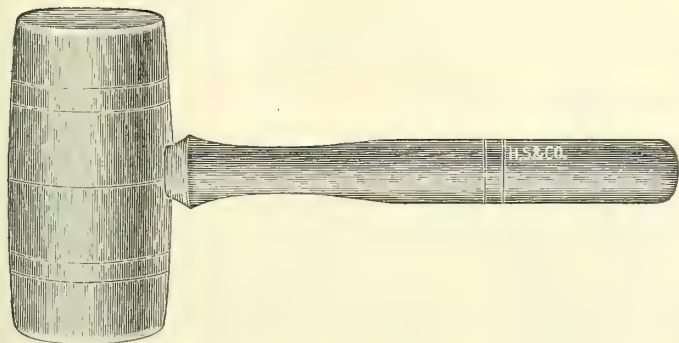
No. 40

Face, inches	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4
12 inches long, dozen	\$4.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
18 inches long, dozen	6.00	6.00	7.00	8.00	9.50	10.50	11.50	13.00
24 inches long, dozen	8.00	8.00	9.00	10.00	12.00	13.00	14.00	16.00

Mallets

H. S. & Co.

Round



The handle goes entirely through the head of the mallet and is securely wedged.

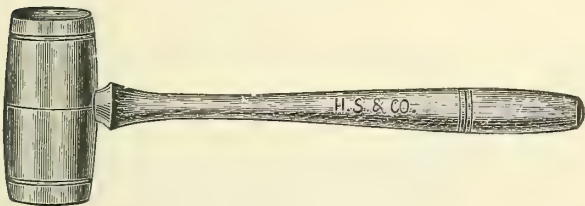
Second-Growth Hickory

Number	2-0	0	1	2	3	4	5
Diameter of face, inches	4½	4	3½	3	2½	2¼	2
Dozen	\$5.25	4.50	3.75	3.40	3.00	2.65	2.25

Lignum-Vitæ

Number	2-0	0	1	2	3	4	5
Diameter of face, inches	4½	4	3½	3	2½	2¼	2
Dozen	\$7.50	6.75	6.00	5.25	3.75	3.40	3.00

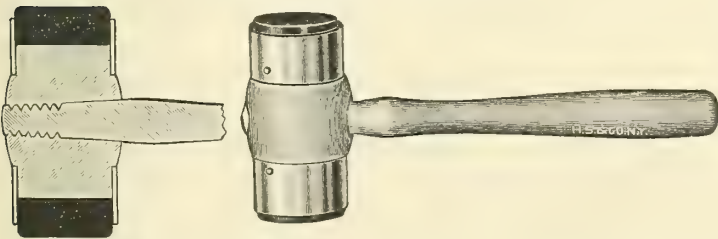
Jewelers



Lignum-Vitæ

Number	6	7	8
Diameter of face, inches	1¾	1½	1¼
Dozen	\$2.80	2.45	2.75

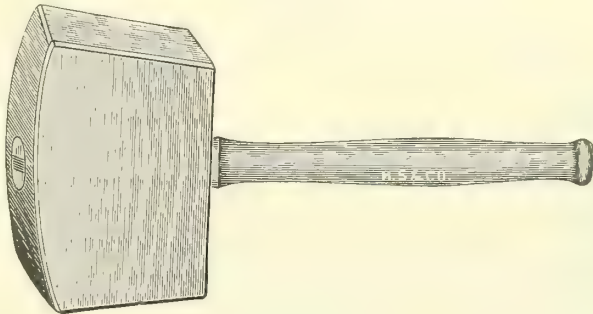
Round with Fibre-Head



The heads of these mallets are vulcanized fibre, very hard and dense, extremely tough, and elastic enough to form a cushion, relieving the arm from the jar occasioned by the force of the blow. The body and handle are thoroughly kiln-dried. Handle screws in. The bands are of malleable iron, riveted to the body and tapering on the inside to hold the fibre heads securely in place.

Number	2	2½
Diameter of face, inches	2	2½
Dozen	\$6.50	7.50

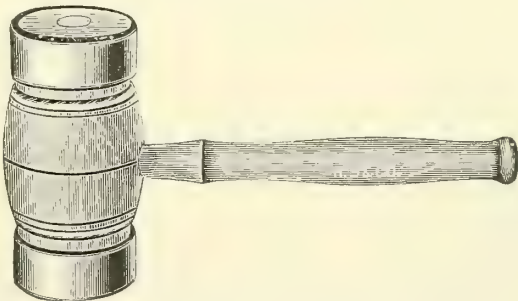
Square



Lignum-Vitæ

Number	0	1	2	3
Size of head, inches	4x7	3½x6	3x6	2¾x5½
Dozen	\$7.00	6.30	5.95	5.60

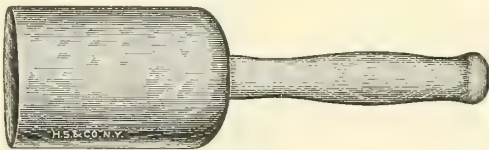
Round with Ring



Second-Growth Hickory

No. 48. Malleable iron rings, 3¼-inch face, dozen..... \$6.00

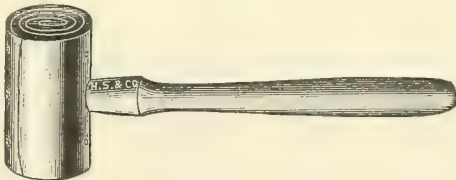
Carvers



These Mallets are made of carefully selected, thoroughly seasoned lumber. The handle is exactly centered, giving an evenly balanced mallet.

Number	1	2	3
Diameter of face, inches	2½	3	3½
Dogwood, dozen	.....	5.25	6.00
Lignum-vitæ, dozen	\$4.50	5.25	6.00

Raw-Hide



These are light mallets, made entirely of hide, excepting handle.

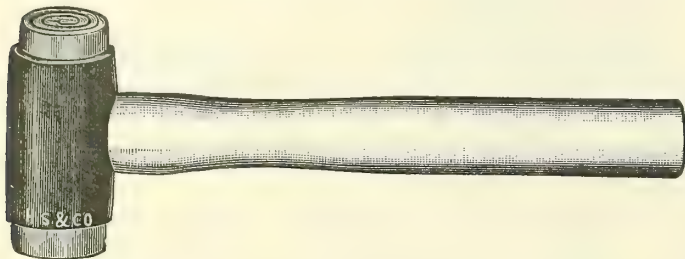
Number	0	1	2	3	4	5	6
Diameter of face, inches	1	1¼	1½	1¾	2	2¾	2¾
Length of face, inches	2¾	3⅛	3¼	3⅜	3½	4¼	4⅝
Weight, ounces	2	4	6	8	10	22	24
Dozen	\$3.96	5.04	6.00	6.96	8.88	19.56	22.20

For Raw-hide and Fibre-Faced Hammers, see next page

Hammers

Raw-Hide Faced

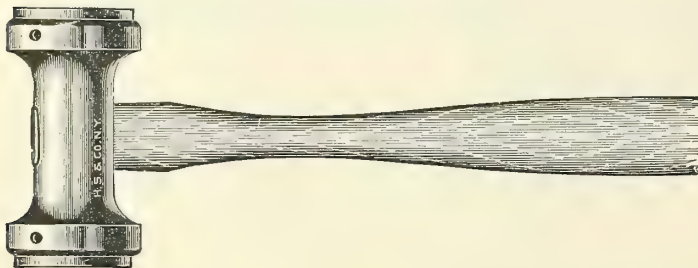
When a hammer is used on machinery or metal products, it is often necessary to protect the finished surfaces from injury. Soft metal hammers are effective while in shape, but soon become jammed out of true. The use of a separate piece of wood or soft metal is disadvantageous because it necessitates the use of both the operators hands. Hard Fibre and Rawhide Hammers are undoubtedly the best for continuous service, and when equipped with serviceable and removable faces they are practically indestructible.



Raw-hide faced Hammers are invaluable where it is desired to strike a hard blow without marring or bruising. The heads, when worn out, can be easily removed and new ones substituted.

Number	0	1	2	3	4	5
Weight, pounds	1/2	1 1/8	1 5/8	2 1/4	4	5 3/4
Diameter of face, inches	7/8	1 1/4	1 1/2	1 3/4	2	2 3/4
With iron stock, dozen	\$9.84	11.52	14.64	17.52	25.32	36.36
Extra faces, dozen pairs	3.00	3.24	3.96	5.04	6.96	9.96

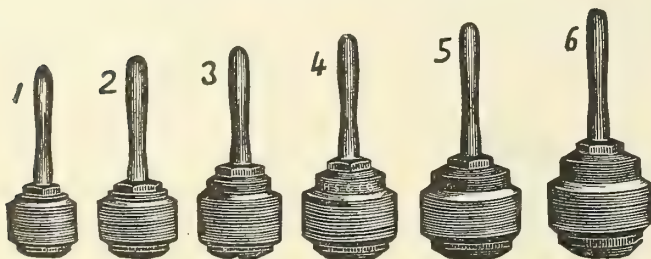
Fibre-Faced



The hard-fibre faces are removable and, on account of the texture, combine elasticity and toughness. Head of 5 ounces is of steel; of the 10, 16 and 24-ounce, of malleable iron. Spanner wrench furnished with each hammer to remove rings and faces.

Weight, ounces	5	10	16	24
Diameter of face, inches	3/4	1	1 1/4	1 3/4
Per dozen	\$6.00	6.00	9.00	12.00
Extra faces, per dozen pairs	.50	.50	.75	1.00

Raw-Hide Mallets or Mauls



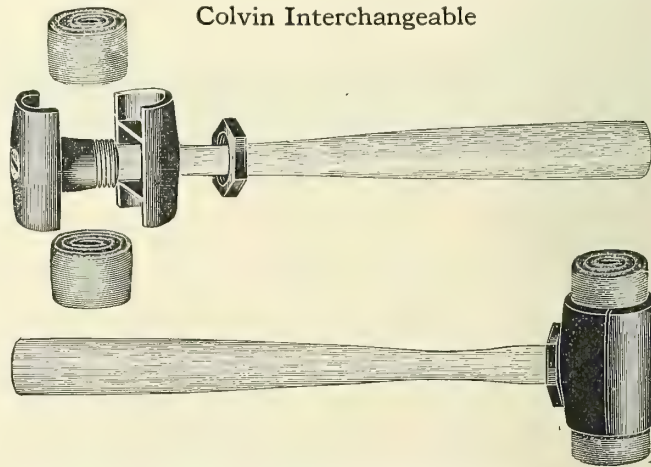
Filled with the best of lime-cured rawhide, in strongest shape possible to design. Second-growth hickory handles.

Number	1	2	3	4	5	6
Weight, pounds	3	4 1/2	6 1/4	8	10	12
Approximate diameter, inches	3 3/8	3 5/8	3 7/8	4 5/8	4 3/4	4 7/8
Each	\$1.50	1.75	2.00	2.25	2.50	2.75

Furnished with leather-covered steel handles, if desired, at special prices

For Fibre-head and Rawhide Mallets, see preceding page

Colvin Interchangeable



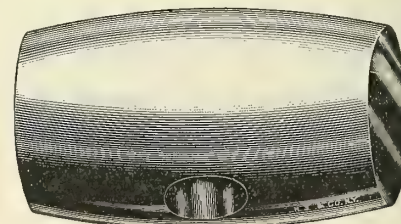
The heads or faces can be changed by unscrewing the nut. New heads can be fastened firmly without special fitting or driving by placing them between open sections and tightening nut.

Wooden, copper, lead or hard-rubber heads can be used in both ends or a different head in each end.

For engineers, machinists, electrical workers, metal workers, and all trades that use hand punches, dies, etc.

Number	1	3	4
Diameter of head, inches	1 1/4	1 3/4	2
Weight of hammer	1 lb., 2 oz.	1 lb., 11 oz.	3 lbs.
Each	\$1.00	1.50	2.00

Copper



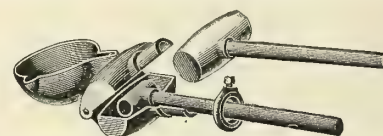
Best quality copper, smooth finish. Will not mar the work in finishing.

Weight, pounds	1 1/2	2	2 1/2
Each	\$1.00	1.25	1.50

Prices do not include handles

Moulds and Ladles

For Casting Soft Metal Hammers and Vise Jaws



When metal in ladle reaches melting point, by depressing handle, it will flow into mould and surround end of handle.

Handle consists of a piece of pipe, forged so as to form a T-shaped end.

Ladle can be used for other purposes such as babbitting bearings, etc.

There is no liability of the head being jarred off, and when hammered out of shape can be remelted in same ladle and run into duplicate handle.

Mould and Ladle Complete with One Lead Hammer			Mould and Ladle			Lead Hammer		
Number	Pounds	Complete	Number	Pounds	Complete	Number	Pounds	Complete
101	1	\$1.25	107	1	\$.85	113	1	\$.40
102	2	1.35	108	2	.85	114	2	.50
103	3	1.50	109	3	.90	115	3	.60
104	4	1.65	110	4	.95	116	4	.70
105	5	1.80	111	5	1.00	117	5	.80
106	6	2.00	112	6	1.10	118	6	.90

No. 119	Handles for Nos. 101-102, dozen	\$1.80
No. 120	Handles for Nos. 103-104-105-106, dozen	2.00
No. 121	Vise-jaw Moulds, complete, with one set jaws	1.50

SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

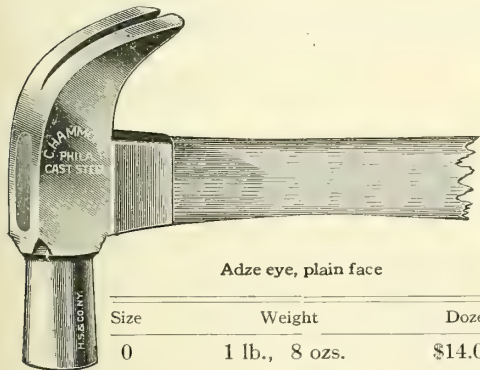
Nail Hammers

Hammond

We copy direct from C. Hammond & Son's own statement of their product:

"The C. Hammond brand of Hammers are forged from the best refined crucible cast steel made to our analysis. Each hammer is tempered individually by experienced hands, hardened to the proper degree for purpose for which tool is intended. The face and claw or the face and pein or face and ball depending on the pattern of hammer, are tempered separately and independent of the other end of the tool. Every article we manufacture is examined singly and separately by an experienced inspector after being finished, and thrown out if the slightest defect is found.

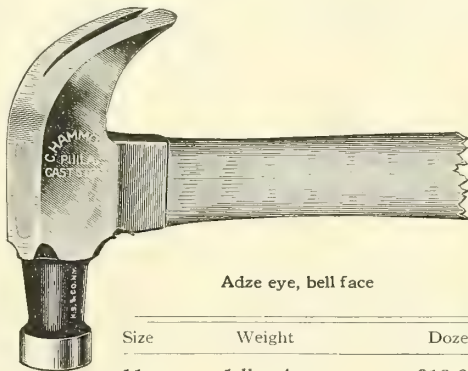
A better tool than the 'C. Hammond' brand Hammer cannot be produced. Our slogan: 'We could not make a better tool if paid double what we now ask,' is absolutely true."



Adze eye, plain face

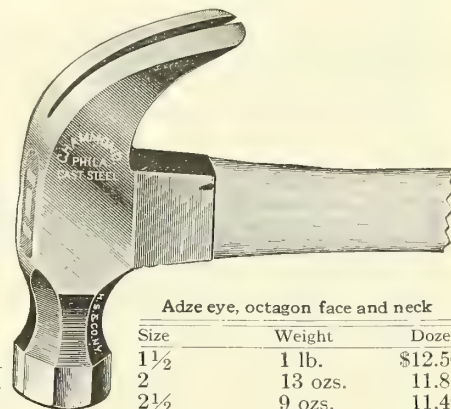
Size	Weight	Dozen
0	1 lb., 8 ozs.	\$14.00
1	1 lb., 4 ozs.	12.00
1½	1 lb.	11.30
2	13 ozs.	10.60
2½	9 oz.	10.20
3	7 ozs.	9.80
4	5 ozs.	9.60
5	3 ozs.	9.60

Adze eye, checkered face, size 1,
weight 1 lb., 4 ozs., dozen. \$13.20



Adze eye, bell face

Size	Weight	Dozen
11	1 lb., 4 ozs.	\$12.00
11½	1 lb.	11.30
12	13 ozs.	10.60
12½	9 ozs.	10.20
13	7 ozs.	9.80
14	5 ozs.	9.60
15	3 ozs.	9.60

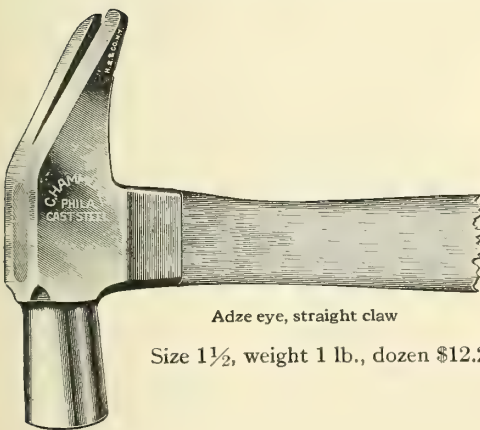


Adze eye, octagon face and neck

Size	Weight	Dozen
1½	1 lb.	\$12.50
2	13 ozs.	11.80
2½	9 ozs.	11.40
3	7 ozs.	11.10
4	5 ozs.	10.80
5	3 ozs.	10.80

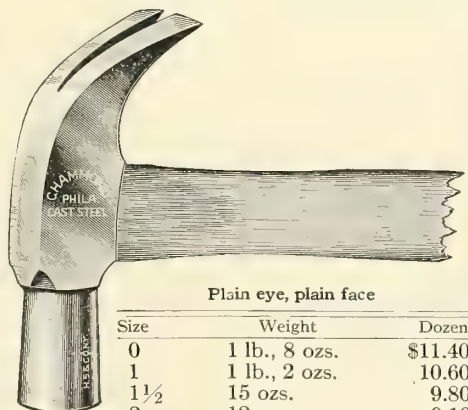
Nickel-plated ebonized handle

Size	Weight	Dozen
1½	1 lb.	\$16.70
2	13 ozs.	16.00
2½	9 ozs.	15.60
3	7 ozs.	15.20
4	5 ozs.	14.95
5	3 ozs.	14.95



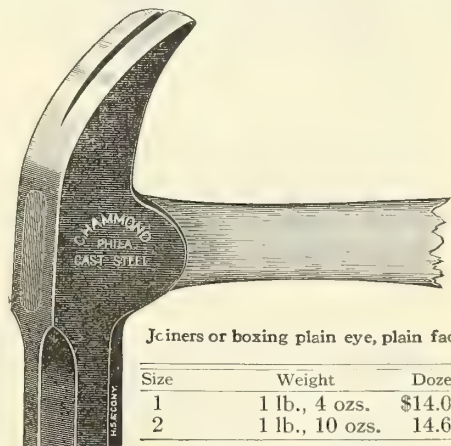
Adze eye, straight claw

Size 1½, weight 1 lb., dozen \$12.20



Plain eye, plain face

Size	Weight	Dozen
0	1 lb., 8 ozs.	\$11.40
1	1 lb., 2 ozs.	10.60
1½	15 ozs.	9.80
2	12 ozs.	9.10
3	7 ozs.	8.50

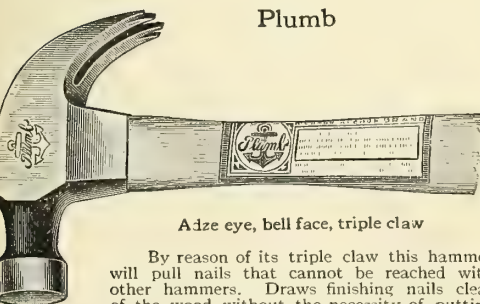


Joiners or boxing plain eye, plain face

Size	Weight	Dozen
1	1 lb., 4 ozs.	\$14.00
2	1 lb., 10 ozs.	14.60

Plain eye, checkered face

Size	Weight	Dozen
1	1 lb., 4 ozs.	\$15.00
2	1 lb., 10 ozs.	15.80



Plumb

Adze eye, bell face, triple claw

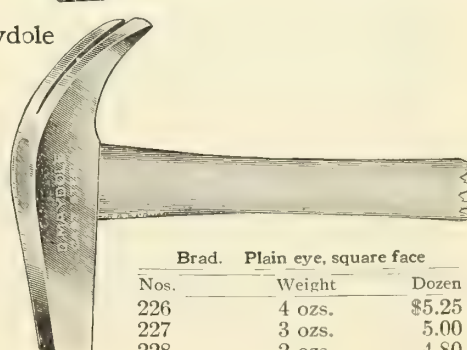
By reason of its triple claw this hammer will pull nails that cannot be reached with other hammers. Draws finishing nails clear of the wood without the necessity of putting a block under the head of the hammer.

Size 1½, weight 1 lb., dozen \$10.00



Adze eye, plain face

Size	Weight	Dozen
1½	1 lb.	\$8.00



Brad. Plain eye, square face

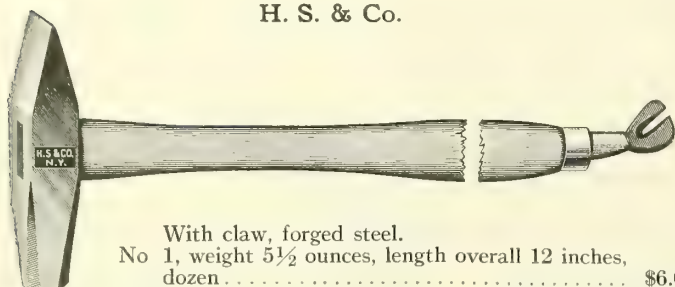
Nos.	Weight	Dozen
226	4 ozs.	\$5.25
227	3 ozs.	5.00
228	2 ozs.	4.80

All with white hickory handles, weights given do not include handles

Hammers

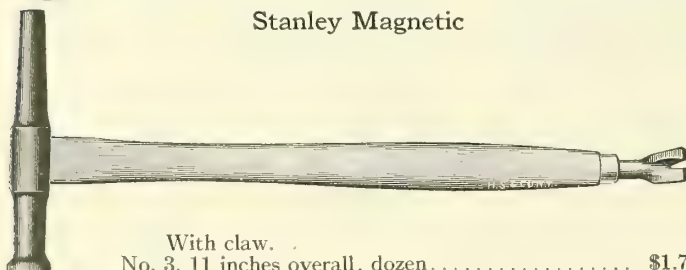
Tack

H. S. & Co.



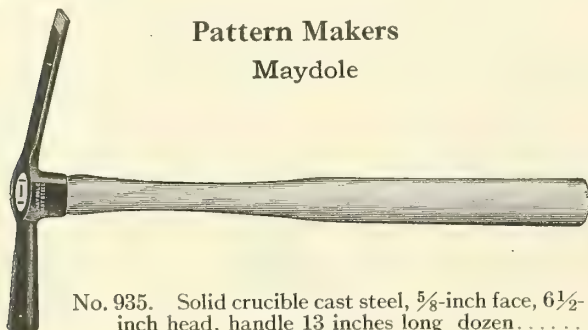
With claw, forged steel.
No. 1, weight 5½ ounces, length overall 12 inches,
dozen \$6.00

Stanley Magnetic



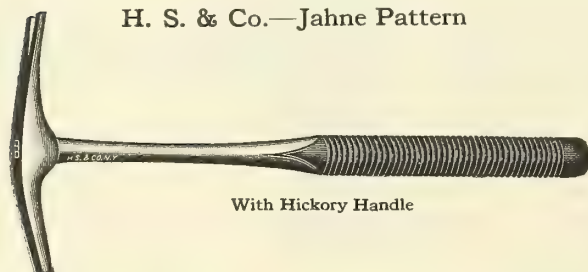
With claw.
No. 3, 11 inches overall, dozen \$1.75

Pattern Makers
Maydole



No. 935. Solid crucible cast steel, ⅝-inch face, 6½-inch head, handle 13 inches long dozen \$11.50

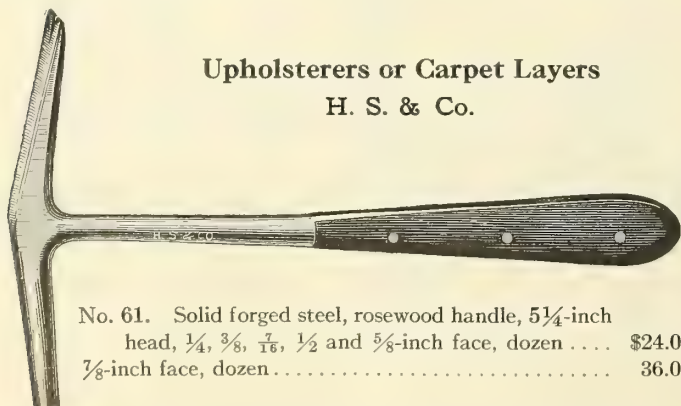
H. S. & Co.—Jahne Pattern



With Hickory Handle

Fine quality tool steel; ⅜, ¼, ⅙, ⅜, ⅙, ½, ⅞ and ⅝-inch face.
Dozen \$24.00

Upholsterers or Carpet Layers
H. S. & Co.

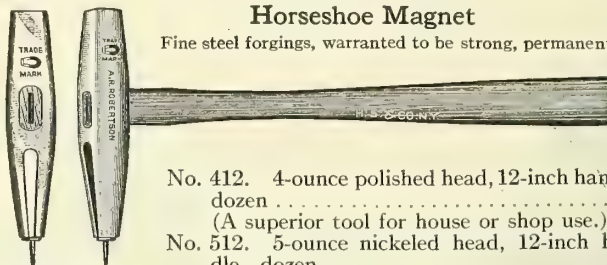


No. 61. Solid forged steel, rosewood handle, 5¼-inch head, ¼, ⅜, ⅙, ½ and ⅝-inch face, dozen \$24.00
⅞-inch face, dozen 36.00

Robertson

Horseshoe Magnet

Fine steel forgings, warranted to be strong, permanent magnets



No. 412. 4-ounce polished head, 12-inch handle, dozen \$6.00
(A superior tool for house or shop use.)

No. 512. 5-ounce nicked head, 12-inch handle, dozen 12.00

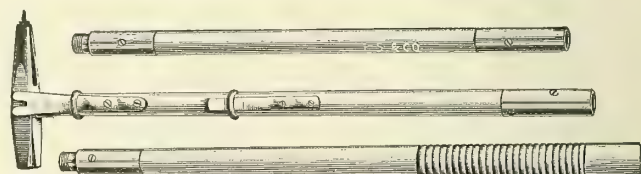
No. 612. 5-ounce nicked head, 12-inch handle, dozen 12.00
(Magnet end shaped especially for using small tacks.)

No. 812. 8-ounce nicked head, 12-inch handle, dozen 15.00
(For tacking canvas on walls and ceilings.)

Robertson Bill Posters

Horseshoe Magnet

Fine steel forgings, warranted to be strong, permanent magnets



Number	524	502	503	824	802	803
Weight, ounces.....	5	5	5	8	8	8
Handle {Type	Plain	2-section Jointed	3-section Jointed	Plain	2-section Jointed	3-section Jointed
Length, inches	24	36	45	24	36	45
Each	\$1.45	1.75	2.25	1.70	2.00	2.50

Upholsterers

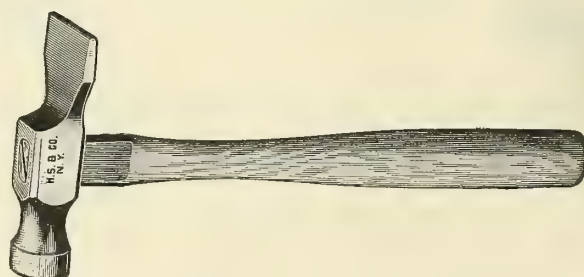
Robertson Horseshoe Magnet



Fine steel forgings, warranted to be strong, permanent magnets
No. 712. 7-ounce head, nickel-plated, 12-inch handle, dozen... \$30.00

Veneer

For Attaching Veneer



Malleable iron, polished.
Weight, 11 ounces, dozen \$6.00

Sledges and Heavy Hammers

(Not Handled)

Atha

Approximate dimensions are given for the most popular sizes, which are also a guide for dimensions of the other weights. All tools, unless otherwise noted, have a black japan finish with polished faces. All weights are approximate only.

Blacksmiths Sledges

No. 840 Regular Pattern Straight Pein

Weight, pounds.....	5	6	8	10	12	14	16	20
Length, inches.....		6½	7			8½		
Diameter face, inches.....		2	2¼			2¾		
Pein, inches.....		2	2¼			2¾		
Each.....	\$.95	1.10	1.30	1.60	1.95	2.30	2.60	3.25

No. 830 Regular Pattern Cross Pein

Weight, pounds.....	3	4	5	6	7	8	9	10	12	14	16	18	20
Length, inches.....				6½		7				8½			
Diameter face, inches.....				2		2½				2¾			
Pein, inches.....				2		2¼				2¾			
Each.....	\$.75	.85	.95	1.10	1.15	1.30	1.45	1.60	1.95	2.30	2.60	2.90	3.25

No. 850 Regular Pattern Double Face

Weight, pounds.....	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24
Length, inches.....					6¼		6¾				7¾				
Diameter face, inches.....					2		2¼				2½				
Each.....	\$.60	.75	.85	.95	1.10	1.15	1.30	1.45	1.60	1.95	2.30	2.60	2.90	3.25	3.90

Blacksmiths Hand Hammers

No. 861 New England Pattern Cross Pein

Weight, pounds.....					1½	2		2½	3	3½	4	4½
Length, inches.....					4½			4½			5¼	
Diameter face, inches.....					1½			1½			1¾	
Pein, inches.....					1½			1½			1¾	
Each.....					\$.60	.60		.70	.75	.80	.85	.90

Stone Sledges

A very convenient sledge for general and farm use as well as for breaking stone in quarries

No. 740 Oval Face

Weight, pounds.....	5	6	7	8	9	10	12	14	15	16	18	20	22	24
Each.....	\$.95	1.10	1.15	1.30	1.45	1.60	1.95	2.30	2.45	2.60	2.90	3.25	3.55	3.90

No. 730 Flat Face

No. 730 is the same as No. 740, except with polished flat face

Weight, pounds.....	6	8	10	12	14	16	18	20	22	24
Length, inches.....	6½	7½				8½				
Diameter face, inches.....	2	2½				2¾				
Width of bit, inches.....	2	2½				2¾				
Each.....	\$1.10	1.30	1.60	1.95	2.30	2.60	2.90	3.25	3.55	3.90

Striking and Drilling Hammers

No. 750 Long Pattern

Weight, pounds.....	2	2½	3	3½	4	4½	5	6	7	8
Length, inches.....					6½					7¾
Diameter face, inches.....					1½					1¾
Each.....	\$.60	.70	.75	.80	.85	.90	.95	1.10	1.15	1.30
Weight, pounds.....		9	10	12	14	16	18	20	22	24
Length, inches.....						8½				
Diameter face, inches.....						2¾				
Each.....		\$1.45	1.60	1.95	2.30	2.60	2.90	3.25	3.55	3.90

Hand Drilling or Stone Cutters Hammers

No. 780 New England Pattern

Weight, pounds.....	1	1½	2	2½	3	3½	4	4½	5
Length, inches.....		3½			4¾		4¾		
Diameter face, inches.....		1 ⅞			1¾		1 ⅞		
Each.....	\$.65	.65	.65	.85	.90	1.05	1.20	1.30	1.35

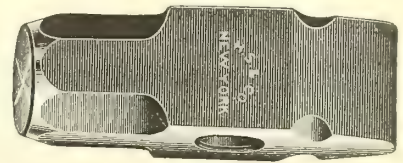
Spauling or Stone Hammers

No. 710 Single Face

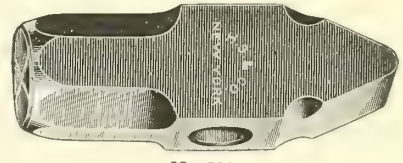
Weight, pounds.....	3	4	5	6	7	8	9	10	12	14	16	18	20	22	24
Length, inches.....						8					9½				
Face, inches.....						2½x1½					2¾x1¾				
Width of bit, inches.....						2½					2¼				
Each.....	\$.90	1.20	1.25	1.45	1.70	1.90	2.15	2.40	2.90	3.35	3.85	4.30	4.80	5.30	5.75

No. 720 Double Face

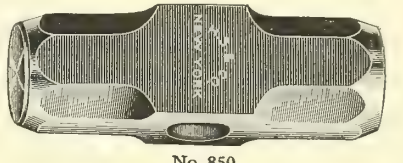
Weight, pounds.....	4	5	6	7	8	9	10	12	14	16	18	20
Length, inches.....					8					9½		
Face, inches.....					2½x1¼					2¾x1¾		
Each.....	\$1.20	1.30	1.45	1.70	1.90	2.15	2.40	2.90	3.35	3.85	4.30	4.80



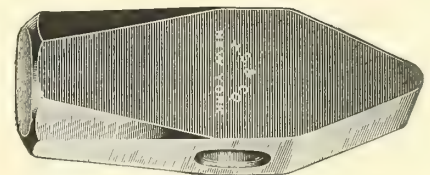
No. 840



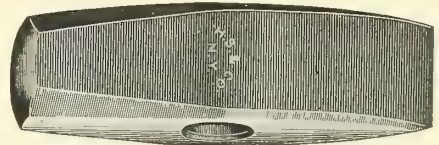
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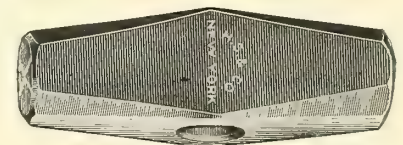
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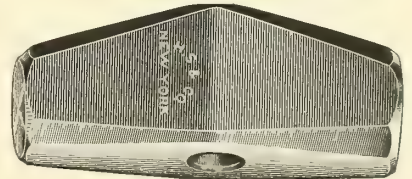
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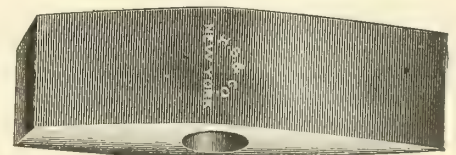
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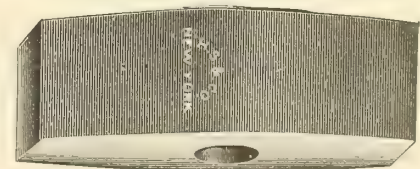
No. 750



No. 780



No. 710



No. 720

Hammers and Mauls

(Not Handled)

Atha

Cast Steel, Fully Warranted

Napping Hammers No. 890

Used for breaking stone in road work

Weight, pounds.....	1	1¼	1½	2	2½	3	3½	4	4½	5	5½	6	8	10	12
Length, inches.....	5							6½					7½		
Diameter face, inches	¾							1¼					1½		
Each.....	\$.60	.60	.60	.60	.75	.75	.85	.90	.95	1.00	1.10	1.15	1.45	1.80	2.15

Masons Hammers No. 670

These hammers have an axe finish and are in general use by stone masons

Weight, pounds.....	2	2½	3	3½	4	4½	5	6	7	8	10	12	14
Length, inches.....			6					7¼					
Face, inches.....			2¼x7/8					2½x1½					
Width of bit, inches.....			2¼					2½					
Each.....	\$.70	.90	1.00	1.15	1.30	1.50	1.50	1.80	2.10	2.40	3.00	3.60	4.20

Railroad Track Mauls No. 920

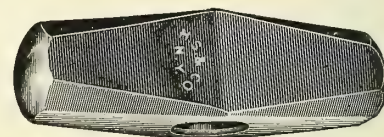
Weight, pounds.....		5	6	7	8	9	10	12
Length, inches.....			9½		10½		11¼	
Diameter small face, inches.....			1		1½		1¼	
Diameter large face, inches.....			1½		1½		1¾	
Each.....		\$.90	1.10	1.25	1.45	1.60	1.80	2.15

Woodchoppers Mauls No. 940

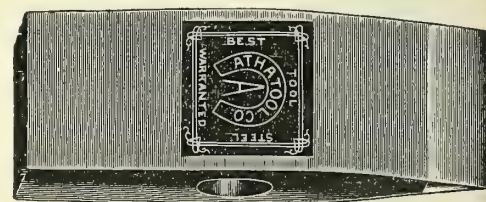
Weight, pounds.....		5	6	7	8	9	10
Length, inches.....			7¾		8½		9
Diameter head, inches.....			2		2½		2¾
Length of bit, inches.....			2		2½		2½
Each.....		\$1.10	1.30	1.55	1.75	1.95	2.15

Ship or Top Mauls No. 930

Weight, pounds.....		4	4½	5	5½	6	6½	7	8
Length, inches.....		8¼		8¾		9			
Diameter small face, inches.....		¾		1		1½			
Diameter large face, inches.....		1¾		1¾		2¼			
Each.....		\$1.00	1.15	1.25	1.40	1.55	1.65	1.75	2.00



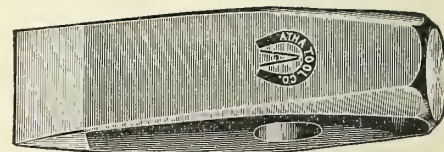
No. 890



No. 670



No. 920



No. 940

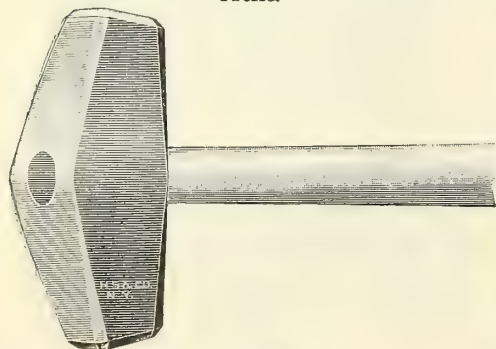


No. 930

Handled Hammers

Cast Steel, Fully Warranted

Hand Drilling or Stone Cutting
Atha

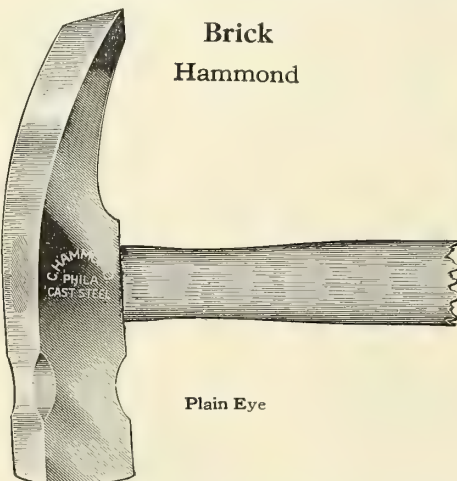


Length of Handle 10¾ inches

Size	Weight	Dozen
000	2 lbs., 8 ozs.	\$21.75
00	3 lbs.	24.00
0	3 lbs., 8 ozs.	26.25
1	4 lbs.	28.50
2	4 lbs., 8 ozs.	30.75
3	5 lbs.	33.00

Brick

Hammond

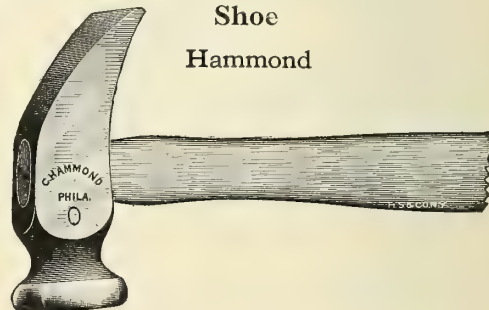


Plain Eye

No.	Weight	Dozen
360	1 lb., 8 ozs.	\$14.80
361	2 lbs.	16.20
362	2 lbs., 8 ozs.	19.00

Shoe

Hammond



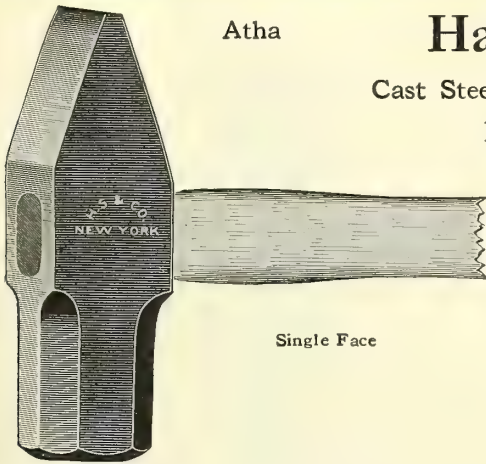
Size	Weight	Dozen
000	7 ozs.	\$6.90
00	9 ozs.	6.90
0	11 ozs.	6.90
1	13 ozs.	7.70
2	15 ozs.	8.40
4	1 lb., 3 ozs.	9.80
6	1 lb., 8 ozs.	11.10

For general information, see page 577

Atha

Hammers

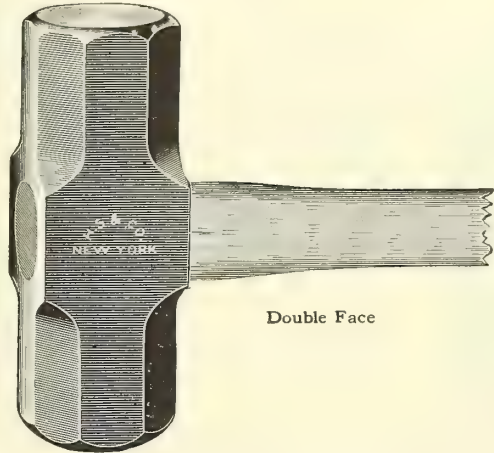
Cast Steel, Fully Warranted
Engineers



Single Face

Size	Weight	Length Overall, Inches	Dozen
0	1 lb. 2 ozs.	14	\$12.00
1	1 lb. 10 ozs.	15	13.00
2	2 lbs.	16	14.00
3	2 lbs. 8 ozs.	16	15.00
4	3 lbs.	16	16.00
5	3 lbs. 8 ozs.	16	17.00
6	4 lbs. 8 ozs.	16	19.00

Atha



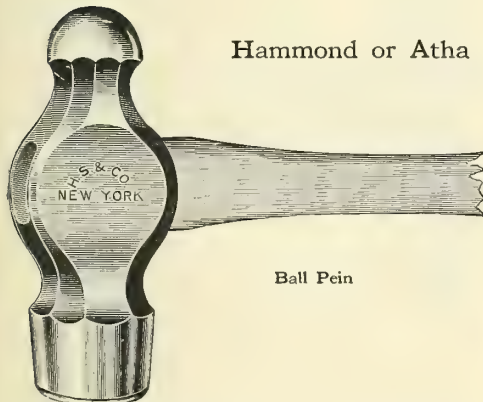
Double Face

Size	Weight	Length Overall, Inches	Dozen
1	1 lb. 8 ozs.	15	\$14.50
2	2 lbs. 6 ozs.	16	16.50
3	3 lbs.	16	18.00
4	3 lbs. 10 ozs.	16	19.50

Machinists

Cast Steel, Fully Warranted

Hammond or Atha

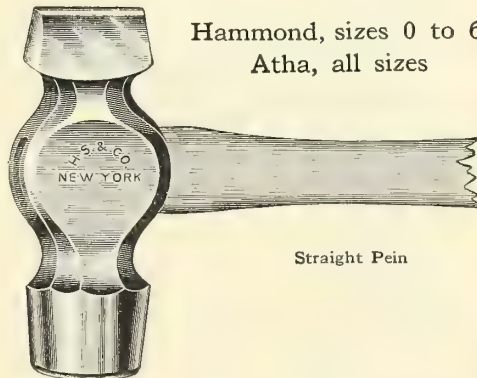


Ball Pein

Size	Weight	Dozen	
		Atha	Hammond
0000	6 ozs.	\$12.00	\$12.60
000	8 ozs.	12.00	12.60
00	12 ozs.	12.00	12.60
0	1 lb.	12.50	13.30
1	1 lb. 4 ozs.	13.50	14.00
2	1 lb. 8 ozs.	14.50	14.70
3	1 lb. 12 ozs.	15.50	16.10
4	2 lbs.	16.50	17.50
5	2 lb. 4 ozs.	17.50	19.60
6	2 lb. 8 ozs.	19.00	21.70

Hand-forged finish furnished if desired.

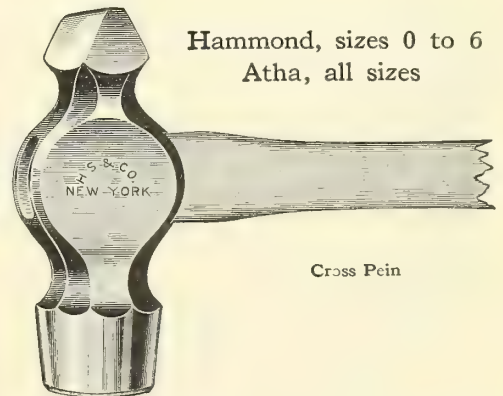
Hammond, sizes 0 to 6
Atha, all sizes



Straight Pein

Size	Weight	Dozen	
		Atha	Hammond
0000	6 ozs.	\$12.00	
000	8 ozs.	12.00	
00	12 ozs.	12.00	
0	1 lb.	12.50	\$13.30
1	1 lb. 4 ozs.	13.50	14.00
2	1 lb. 8 ozs.	14.50	14.70
3	1 lb. 12 ozs.	15.50	16.10
4	2 lbs.	16.50	17.50
5	2 lbs. 4 ozs.	17.50	19.60
6	2 lbs. 8 ozs.	19.00	21.70

Hammond, sizes 0 to 6
Atha, all sizes



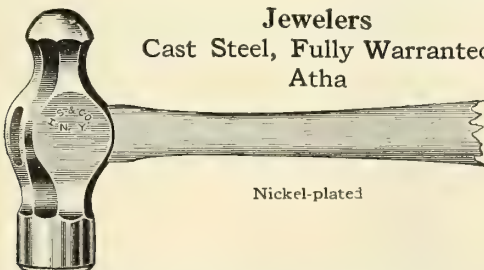
Cross Pein

Size	Weight	Dozen	
		Atha	Hammond
0000	6 ozs.	\$12.00	
000	8 ozs.	12.00	
00	12 ozs.	12.00	
0	1 lb.	12.50	\$13.30
1	1 lb. 4 ozs.	13.50	14.00
2	1 lb. 8 ozs.	14.50	14.70
3	1 lb. 12 ozs.	15.50	16.10
4	2 lbs.	16.50	17.50
5	2 lb. 4 ozs.	17.50	19.60
6	2 lb. 8 ozs.	19.00	21.70

For general information on Hammond Hammers, see page 577

Jewelers

Cast Steel, Fully Warranted
Atha



Nickel-plated

Size	Weight	Length Overall, Inches	Dozen
8-0	1¼ ounces	9	\$13.00
7-0	2 ounces	10	13.00
6-0	3½ ounces	11	13.00

Automobile and Motor Cycle
Vlcek



All Steel, Ball Pein

Drop-forged Steel, Fully Warranted

Drop-forged from one piece of steel. Particularly adapted for automobile or motorcycle use or in tool kits. Has tire remover on handle end.

For Automobiles		For Motorcycles	
Weight	10 ounces, length overall 10½ inches.	Weight	4 ounces, length overall 7½ inches.
Dozen	\$14.50	Dozen	\$12.00

Hammers

Blacksmiths Hand Atha

Cast Steel, Fully Warranted



Size	Weight	Dozen
0	1 lb. 10 oz.	\$13.00
1	2 lb.	14.00
2	2 lb. 10 oz.	15.00
3	3 lb.	16.00
4	3 lb. 8 oz.	17.00
5	4 lb. 8 oz.	19.00

Coopers Atha

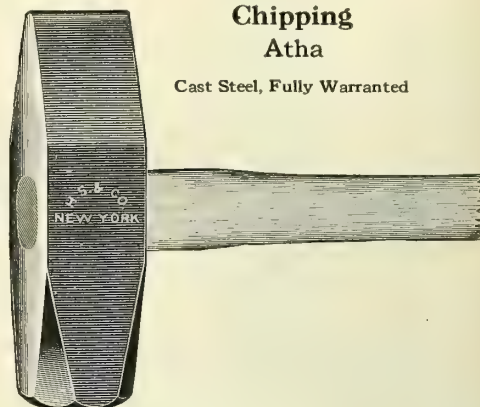
Cast Steel, Fully Warranted



Size	Weight	Dozen
2½	2 lb. 8 oz.	\$17.00
3	3 lb.	18.00
4	4 lb.	20.00
4½	4 lb. 8 oz.	21.00

Chipping Atha

Cast Steel, Fully Warranted

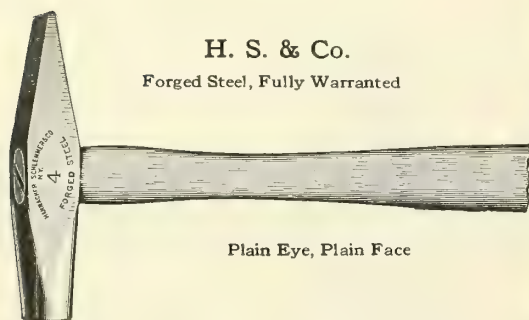


Size	Weight	Dozen
0	1 lb. 4 oz.	\$13.00
1	1 lb. 8 oz.	13.50
2	2 lb.	14.50
3	2 lb. 8 oz.	15.50
4	2 lb. 14 oz.	16.50

Riveting

H. S. & Co.

Forged Steel, Fully Warranted

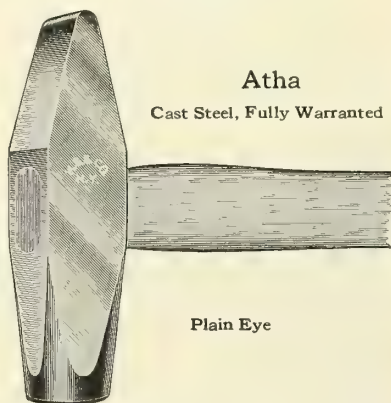


Plain Eye, Plain Face

Size	Weight	Dozen
3-0	1½ oz.	\$4.00
2-0	2 oz.	4.00
0	3 oz.	4.00
1	4 oz.	4.00
2	6 oz.	5.00
3	8 oz.	6.00
4	12 oz.	7.00
5	1 lb.	8.00
6	1 lb. 4 oz.	9.00

Atha

Cast Steel, Fully Warranted

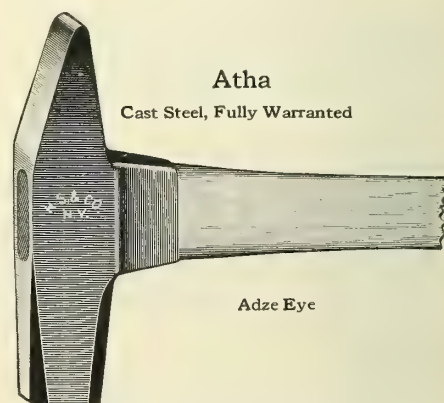


Plain Eye

Size	Weight	Dozen
0	4 oz.	\$5.50
1	7 oz.	5.75
2	9 oz.	6.00
3	12 oz.	6.25
4	15 oz.	6.50
5	1 lb. 2 oz.	7.00
6	1 lb. 6 oz.	7.50
7	1 lb. 10 oz.	8.00

Atha

Cast Steel, Fully Warranted



Adze Eye

Size	Weight	Dozen
0	5 oz.	\$7.00
1	9 oz.	7.50
2	11 oz.	8.00
3	15 oz.	8.50
4	1 lb. 2 oz.	9.00

Tinners Riveting

Atha

Cast Steel, Fully Warranted



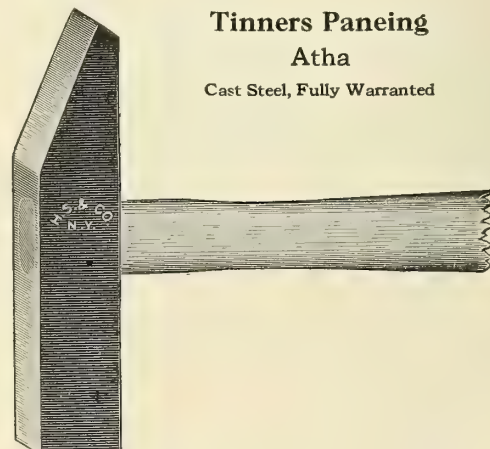
Octagon Face

Size	Weight	Dozen
1	8 oz.	\$6.00
2	12 oz.	6.25
3	1 lb.	6.75
4	1 lb. 4 oz.	7.25
5	1 lb. 8 oz.	7.75

Tinners Paneing

Atha

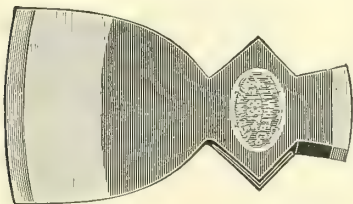
Cast Steel, Fully Warranted



Size	Weight	Dozen
0	5 oz.	\$5.75
1	8 oz.	6.00
2	12 oz.	6.25
3	1 lb.	6.75
4	1 lb. 4 oz.	7.25

Axes Without Handles

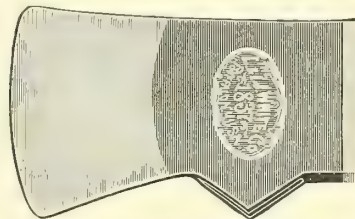
Ship
White



Number.....	1	2	3	4	5
Cut, inches.....	6	6¼	6½	6¾	7
Weight, pounds.....	4¾	5	5	5¼	5½
Dozen.....	\$36.00				

Dock

American A. & T. Co. or White



White No. 46A

Polished steel, capped, weight 5 pounds, dozen..... \$30.00

American A. & T. Co.

Polished, capped with crucible steel.

Weight, pounds.....	4	4½	5
Dozen.....	\$19.00	19.50	20.00

Wood Axes. Handled

Kelly Perfect



Yankee Pattern. Phantom Bevel

Yankee Pattern. Phantom Bevel. Full polished, the blade is made entirely of steel, shaped and formed so as to cut with least labor.

Weight, pounds.....	3	3½	4	4½	5	5½	6
Length of handle, before driven, inches.....	32	32	34	34	36	36	36
Dozen.....	\$16.50	16.50	17.00	17.50	18.00	18.50	19.00

Collins

Collins Axes have inserted hand-forged crucible steel bitts. Handles are best grade of hickory, 36 inches long

Weight, pounds.....	4	5
Dozen.....	\$17.00	18.00

Boys Axes

H. S. & Co.



Red Ridge Pattern. Red Enamel Finish

Number.....	1	2	3	4
Weight, pounds.....	2	2¼	2¾	3
Length of handle, inches.....	26	28	30	32
Dozen.....	\$11.75	12.00	12.70	14.00



Underhill Pattern

These Axes are intended principally for use in factories, warehouses, etc. The head is steel, partly painted red, and the handle is also painted red. Weight, 4½ pounds. No. 1 quality, 36-inch hickory handle, without brackets.

Dozen..... \$33.00

Collins Genuine

These Axes are recommended for use in hotels, public buildings, etc., where a high-grade tool is required and appearance is essential. Polished steel. Weight, 5½ pounds. 36-inch handle, without brackets.

Dozen..... \$39.00

Kelly Flint Edge



Connecticut Pattern. Cannon Finish

Hand tempered in natural gas by a special process. Made of doubly refined steel, with crucible bitt. With No. 1 elastic hickory handles.

Weight, pounds.....	3	4	5
Length of handle, before driven, inches....	32	34	36
Dozen.....	\$14.50	15.00	16.00

Ice Axe

H. S. & Co.



Boston Pattern

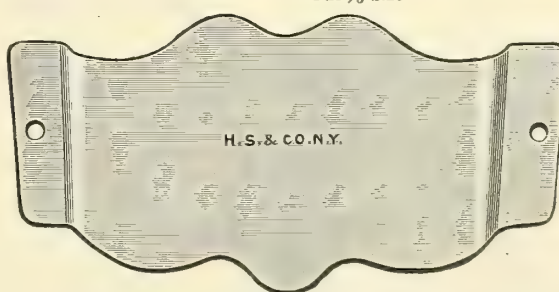
Weight, 3 pounds. Dozen \$16.00

Fire Axes

H. S. & Co.

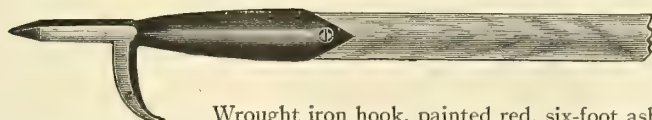
Brackets For Fire Axes

Cut ½ Size



Iron, painted red, dozen sets.....	\$7.00
Brass, polished, dozen sets.....	18.00

Fire Hook



Wrought iron hook, painted red, six-foot ash handle, stained yellow, each..... \$2.00

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

Hatchets

Hunters Pattern

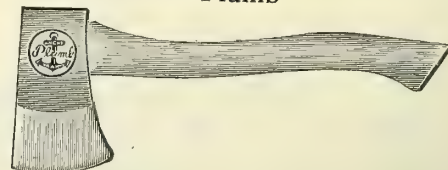
American A. & T. Co. Ridge Brand
Red Enamel Finish



The cutting edge is finest crucible tool steel

Number.....	0	1	2	3
Weight, pounds..	1 1/4	1 1/2	1 3/4	2
Dozen.....	\$10.50	10.95	11.25	11.85

Sportsmans Pattern Plumb



Superior cast steel, warranted, with axe-shaped handle

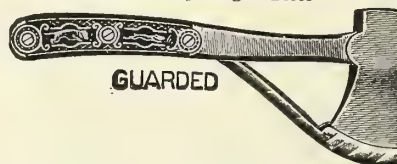
Size.....	3-0	2-0	0
Weight.....	12 oz.	1 lb. 1 lb., 4 oz.	
Dozen.....	\$8.50	8.65	8.90
Size.....	1	2	3
Weight.....	1 lb. 8 oz.	1 lb. 12 oz.	2 lbs.
Dozen.....	\$9.25	9.50	10.90

Safety Pocket Marble

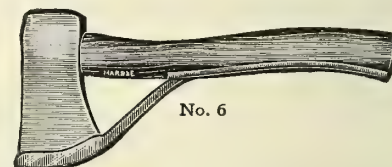


GUARDED

No. 2 Drop-Forged Steel



GUARDED



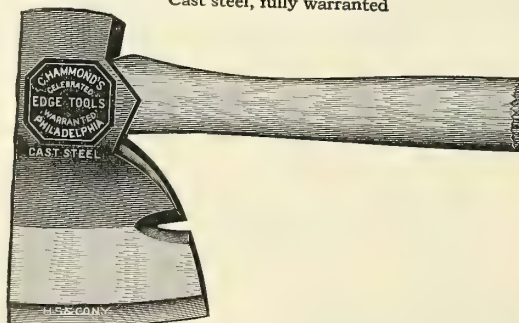
No. 6

Blades are tool steel, correctly tempered and sharpened. Nickel-plated guard and receiver. Nos. 2 and 3 have rubber side plates.

No. 2	Steel handle, weight 20 ounces, length 11 inches, blades 2 3/8 x 4 inches, each...	\$2.50
No. 3	Steel handle, 27 ounces, length 12 inches, blades 2 1/2 x 4 3/8 inches, each.....	3.00
No. 6	Hickory handle, 22 ounces, length 12 inches, blades 2 3/4 x 4 3/4 inches, each...	1.50

Flooring Hammond

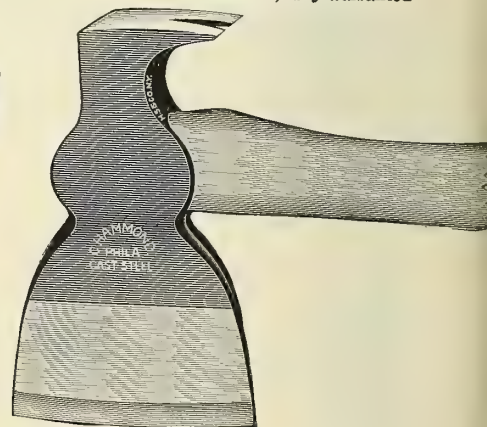
Cast steel, fully warranted



Size.....	1	2	3
Cuts, inches..	3 3/4	4	4 1/2
Weight.....	1 lb. 6 ozs.	1 lb. 10 ozs.	2 lbs. 4 oz.
Dozen.....	\$15.60	16.80	18.00

Claw Hammond

Cast steel, fully warranted



Size.....	1	2	3
Cuts, inches	3 1/2	3 3/4	4
Weight.....	1 lb. 4 ozs.	1 lb. 8 ozs.	1 lb. 12 ozs.
Dozen.....	\$12.00	12.70	14.00

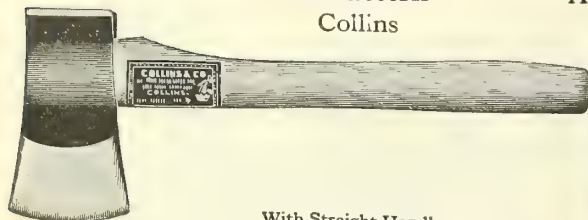
Shingling

Perfect Handle

A solid one-piece drop-forged hatchet and handle, with wooden sides on handle. Guaranteed in every particular.

Size.....	2
Cuts, inches.....	3 1/2
Weight.....	1 lb. 12 ozs.
Dozen.....	\$18.00

Axe Pattern Collins

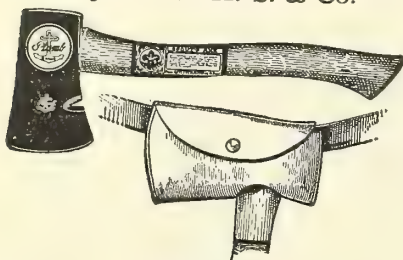


With Straight Handle

Made of soft iron, with soft steel head and inserted crucible cast steel cutting edge.

Number.....	1	2	3
Cuts, inches.....	3 1/2	3 3/4	3 7/8
Weight, with handle, lbs.	2	2 1/2	3
Dozen.....	\$11.40	12.00	13.20

Boy Scout—H. S. & Co.

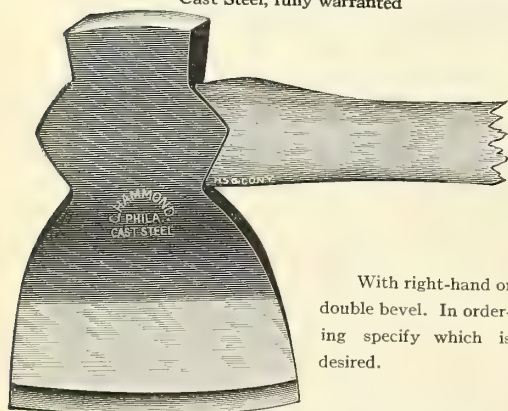


With Nail Slot

Weight, with handle, 1 pound 5 ounces.	
With sheath, dozen.....	\$17.00
Without sheath, dozen.....	12.50

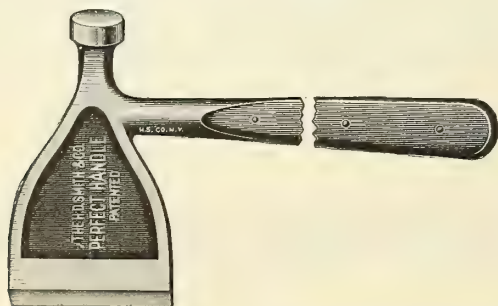
Broad Hammond

Cast Steel, fully warranted



With right-hand or double bevel. In ordering specify which is desired.

Number	Cuts Inches	Weight	Dozen
1	4	1 lb., 6 ozs.	\$15.60
2	4 1/2	1 lb., 10 ozs.	16.80
3	5	2 lbs., 4 ozs.	18.00
4	5 1/2	2 lbs., 10 ozs.	19.70
5	6	3 lbs.	21.80
6	6 1/2	3 lbs. 12 ozs.	24.00
7	7	4 lbs. 4 ozs.	26.40
8	7 1/2	5 lbs.	28.80



Hatchets

Hammond

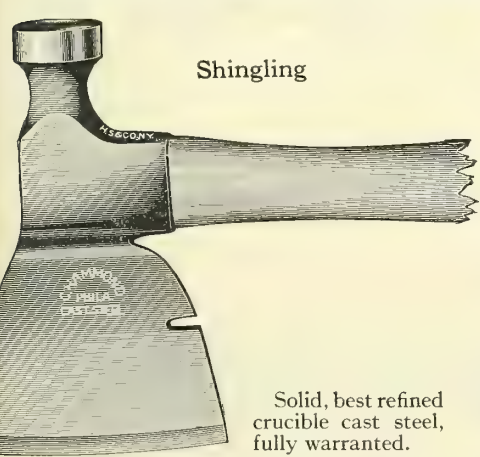
The "C. Hammond" Brand Hatchets, bronze finish, are forged, having Swedish iron body with best tool steel on head and inserted for cutting edge. No other known metal is so tough and yet so pliable as Swedish iron. These qualities give the required strength to the hatchet as a whole and especially over the eye where the greatest strength is required.

The fancy light pattern, thin blade hatchets are forged from the best refined crucible steel.

Each hatchet is tempered individually by experienced mechanics and hardened to the proper degree for the purpose for which the tool is intended. The bit and face are tempered separately and independent of each other.

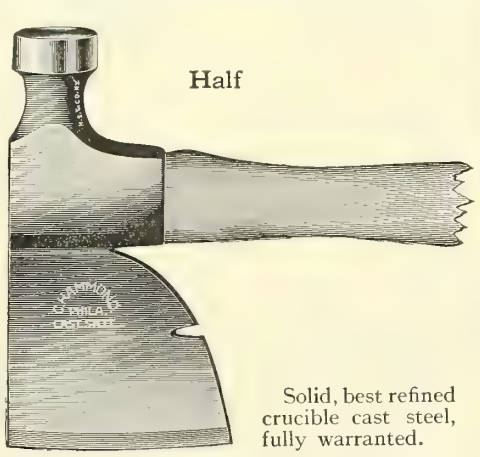
Every article is examined singly and separately by experienced inspectors after being finished and thrown out if the slightest defect is found.

A better hatchet than the "C. Hammond" brand cannot be produced. Our slogan, "We could not make a better tool if paid double what we now ask," is absolutely true.



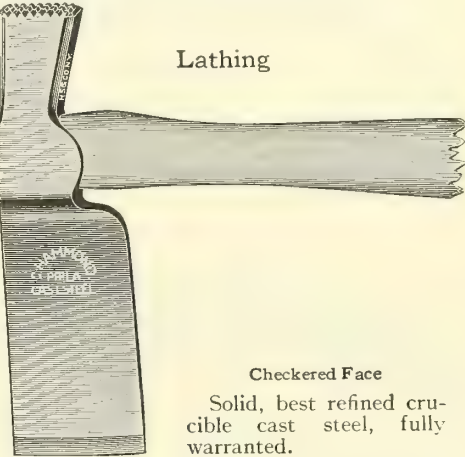
Shingling

Solid, best refined crucible cast steel, fully warranted.



Half

Solid, best refined crucible cast steel, fully warranted.



Lathing

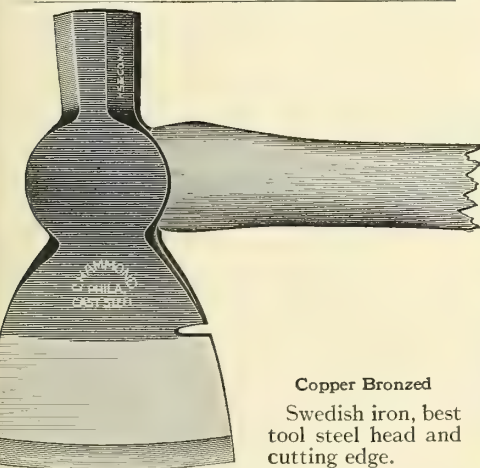
Checked Face

Solid, best refined crucible cast steel, fully warranted.

Size	Cuts Inches	Weight	Dozen
1	3¼	1 lb.	\$17.40
2	3½	1 lb. 4 oz.	18.00

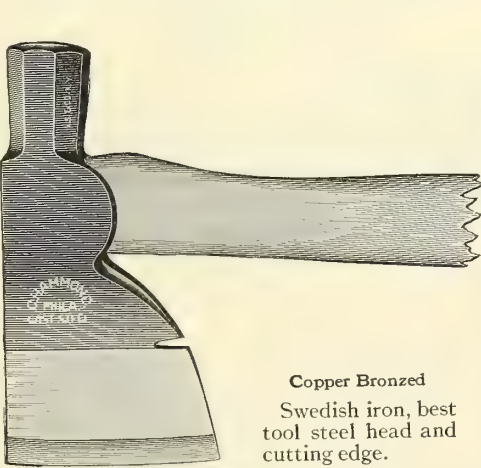
Size	Cuts Inches	Weight	Dozen
1	3	1 lb.	\$17.40
2	3¼	1 lb. 4 oz.	18.00

No. 95. Weight 14 ounces, cuts 2⅛ inches, dozen \$16.90



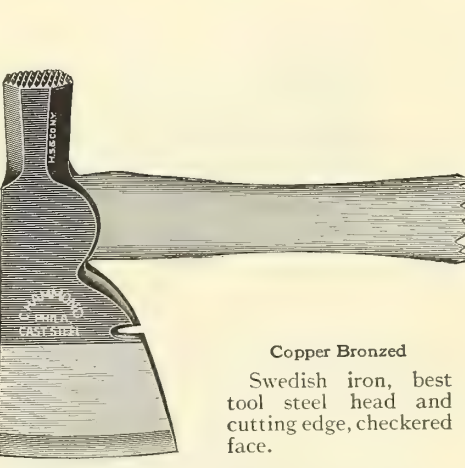
Copper Bronzed

Swedish iron, best tool steel head and cutting edge.



Copper Bronzed

Swedish iron, best tool steel head and cutting edge.



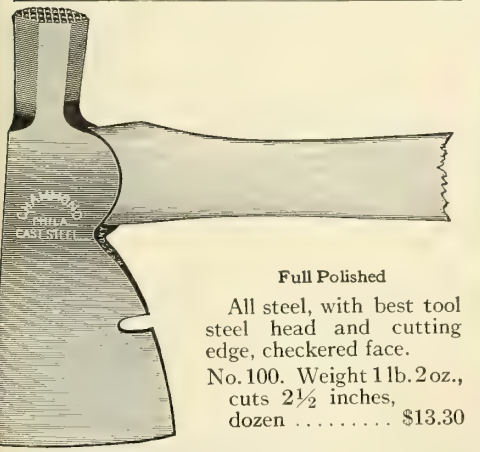
Copper Bronzed

Swedish iron, best tool steel head and cutting edge, checked face.

Size	Cuts Inches	Weight	Dozen
0	3¼	1 lb.	\$9.85
1	3½	1 lb. 4 oz.	10.60
2	3¾	1 lb. 8 oz.	11.30
3	4	1 lb. 12 oz.	12.00
4	4¼	2 lb.	13.30

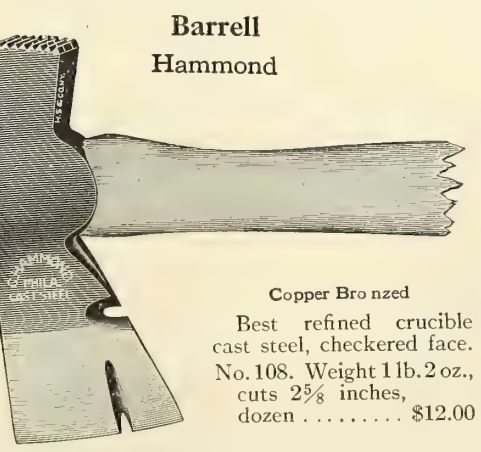
Size	Cuts Inches	Weight	Dozen
1	3¼	1 lb. 4 oz.	\$11.30
2	3½	1 lb. 8 oz.	12.00
3	3¾	1 lb. 12 oz.	12.70

Size	Cuts Inches	Weight	Dozen
1	2½	12 oz.	\$10.60
2	2¾	1 lb.	11.30
3	3	1 lb. 4 oz.	12.00



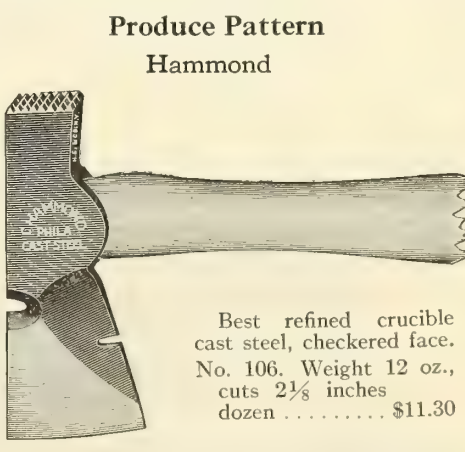
Full Polished

All steel, with best tool steel head and cutting edge, checked face.



Copper Bronzed

Best refined crucible cast steel, checked face.



Produce Pattern

Hammond

Best refined crucible cast steel, checked face.

SEE DISCOUNT SHEET

PAGE 585

Picks

H. S. & Co.

Railroad or Clay



Solid Cast Steel, Oil Finished

Weight, pounds	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	
Per dozen	\$13.00	14.00	15.00	16.00	18.00	20.00	
Straight weights, pounds	4	5	6	7	8	9	10
Per dozen	\$13.00	13.50	14.50	15.50	17.00	19.00	21.00

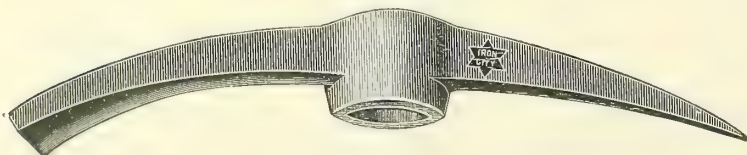
Adze Eye Contractors



One-pound tool steel each end, long, slim pencil points. Other styles of points if desired.

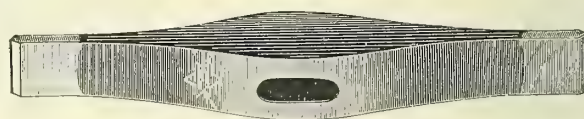
Weight, pounds	7	7½	8	8½	9	9½	10
Per dozen	\$18.50	19.00	19.50	20.50	21.50	22.50	23.50

Tamping



Weight 6 to 7 pounds, dozen	\$18.00
Weight 7 to 8 pounds, dozen	19.00
Weight 8 to 9 pounds, dozen	20.00

Mill

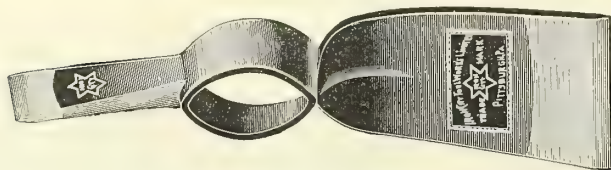


Weight 2 to 3 pounds, dozen	\$22.00
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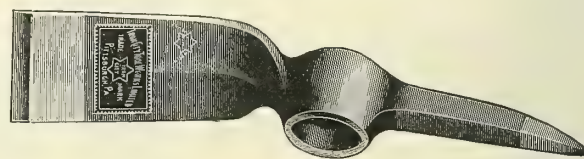
Mattocks

H. S. & Co.

Adze Eye

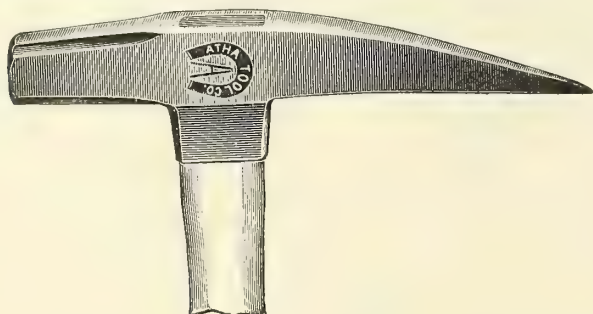


Adze Eye Pick



Number		Dozen
2	Long Cutter, 6 pounds (regular)	\$17.00
3	Short Cutter 5½ pounds (regular)	16.50
2	Long Cutter, 5 pounds or lighter	16.00
3	Short Cutter, 5 pounds or lighter	16.00

No. 6.	Weight 6 pounds, dozen	\$17.00
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Prospecting Picks

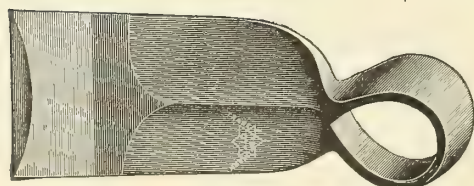
Atha

Head is 13 inches over all. Hickory handle

Size	1	2
Weight, pounds	1	1½
Dozen	\$15.00	16.00

Grub Hoe

H. S. & Co.



Number	Weight, Pounds	Dozen
0	3	\$12.50
1	3½	13.00
2	4	13.50
3	4½	14.00

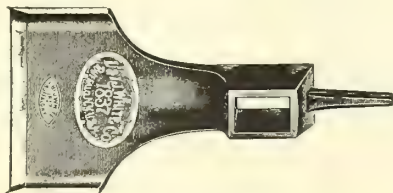
Adzes

House Carpenter



Cuts, inches.....	4	4 1/4	4 1/2	4 3/4	5
Weight, pounds	3 1/2	3 1/2	3 3/4	3 3/4	4
Dozen.....	\$24.00				

White



Lipped

Cuts, inches.....	4 1/4	4 1/2
Dozen.....	\$33.00	36.00

Ship Carpenter



Plain

Cuts, inches.....	4 1/4	4 1/2
Dozen.....	\$30.00	33.00



Coopers

Checked Face

Nos. 0, 1 and 1 1/2 are used on tight barrels. Nos. 2, 2 1/2 and 3 are used on flour or (slack) barrels

Selected Applewood Handles, Bolted

Number	0	1	1 1/2	2	2 1/2	3
Dozen.....	\$36.00	33.00	31.50	30.00	30.00	30.00
Cuts, inches.....	3 1/2	3 1/4	3	2 3/4	2 3/4	2 1/2
Weight, pounds.....	4 1/2	4	3 1/2	3	2 1/4	2 1/2

Coopers Drivers

Atha

Regular Pattern



Size.....	1	2	3
Length, inches.....	4 1/4	4 1/2	5
Weight, pounds.....	1	1 5/16	2
Dozen.....	\$12.75	13.50	18.00

Nantucket Pattern



6 inches long, 1 3/4 inch edge, weight, 1 3/4 pounds.	
Dozen	\$13.50

White
Short and Oval



Highly Tempered

Dozen (not handled), 2 to 2 1/2 inches..	\$10.00
Dozen (not handled), over 2 1/2 to 3 inches.....	11.25
For hickory handles add \$2.00 to dozen list.	

Wedges

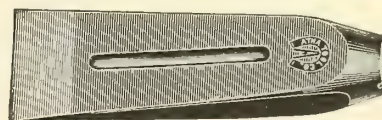
Atha

Rock



Weight, pounds	4	5	6
Length, inches.....	8 1/2	8 3/4	9
Diameter head, inches	1 3/8	1 3/8	1 1/2
Width of Bit, inches	1 1/4	1 3/8	1 3/8
Each	\$1.20	1.50	1.80

Woodchoppers Truckee Pattern



Straight Bit

Weight Pounds	Length Inches	Diameter Head Inches	Width of Bit Inches	Each
3	.....	.....	.....	\$ .50
3 1/2	.....	.....	.....	.60
4	9 3/4	1 1/4	1 5/8	.65
4 1/2	.....	.....	.....	.75
5	.....	.....	.....	.85
5 1/2	.....	.....	.....	.95
6	11 3/8	1 1/2	1 7/8	1.00
7	.....	.....	.....	1.15
8	11 3/4	1 5/8	2 1/4	1.30
9	.....	.....	.....	1.50
10	.....	.....	.....	1.65

Where sizes are given they are approximate only for other weights, sizes are in proportion.

Pinch Bars

H. S. & Co.



No. 30

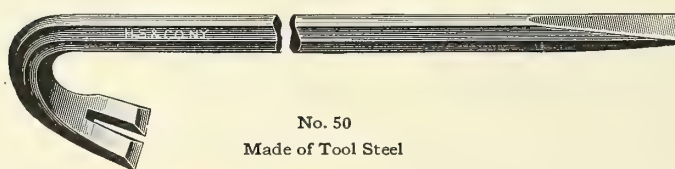
Made of Tool Steel

Diameter, inches.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Length, inches.....	24	30	36
Dozen.....	\$9.50	15.00	21.20

Can furnish pointed on handle end at same price

Ripping Bar with Bent Claw

H. S. & Co.



No. 50

Made of Tool Steel

30 inches long, $\frac{3}{4}$ -inch in diameter, dozen..... \$15.00

Crow Bars

H. S. & Co.

Pinch Point



No. 1161

Solid Forged Steel, fully Warranted

Wedge Point



No. 1160

Solid Forged Steel, fully Warranted

Weight, pounds.....	4	6	8	10	12	14	16	18	20	22	24	25
Size in square inches...	$\frac{3}{4}$	$\frac{7}{8}$	1	1	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{1}{2}$
Length, feet.....	$2\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4	$4\frac{1}{2}$	$4\frac{5}{8}$	$4\frac{1}{2}$	5	$5\frac{1}{3}$	$5\frac{7}{8}$	$5\frac{3}{4}$	$5\frac{3}{4}$
Each.....	\$1.05	1.05	1.05	1.15	1.20	1.25	1.45	1.60	1.80	2.00	2.15	2.25

Lining Bars

H. S. & Co.



No. 1150

Solid Forged Steel, fully Warranted

Weight, pounds.....	16	18	20	22	24	25
Length, inches.....	59	60	64	67	69	69
Square of stock, inches.....	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{1}{2}$
Each.....	\$1.70	1.90	2.10	2.30	2.50	2.65

Railroad Claw Bars

H. S. & Co.

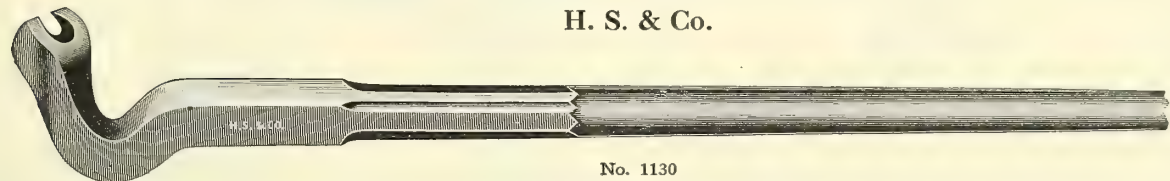


No. 1120

Solid forged steel, weight about 30 pounds, length 5 feet 5 inches, for 5/8-inch spikes, each . . \$4.50

Goose Neck Claw Bars

H. S. & Co.



No. 1130

Solid forged steel, weight about 25 pounds, length 5 feet 3 inches, each \$4.90

Telegraph Digging Bars

H. S. & Co.



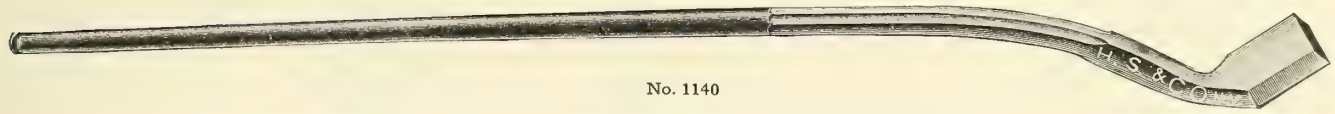
No. 1160-C

Solid forged steel, 1 1/8-inch size.

Length, feet	6	8	9
Weight, pounds	20 1/2	27 1/2	31
Each	\$3.10	4.15	4.65

Tamping Bars

H. S. & Co.

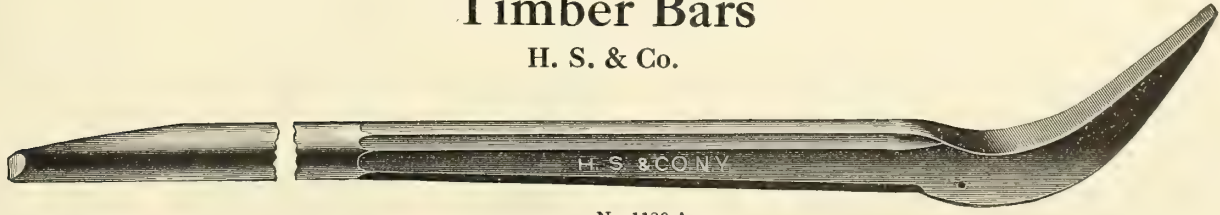


No. 1140

Solid forged steel, weight about 14 pounds, length 68 inches, handle 7/8-inch round, tamping end 3 1/2 x 3/4 inches, each \$1.80

Timber Bars

H. S. & Co.



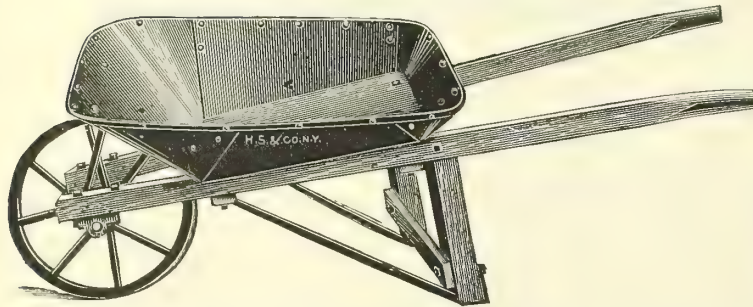
No. 1130-A

Solid forged steel.

Weight, pounds	12	14	16	18
Length, inches	50	1 3/16	56	56
Size of octagon, inches	1 1/8	1 1/16	1 1/4	1 3/8
Each	\$2.70	3.15	3.35	3.80

Wheelbarrows

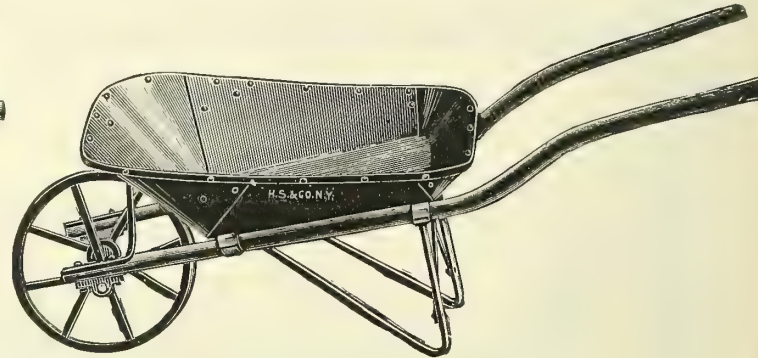
Sand or Mortar Perfect



Steel Tray Wood Frame Barrows are especially adapted to wheeling mortar and sand. While these are not quite as strong as steel barrows, they will serve the same purpose, and cost less. The Trays and Wheels are well braced and balanced perfectly. These barrows knock down completely for shipment and storage, and can be set up quickly and easily. Parts being interchangeable, can be easily replaced.

- No. 4 Capacity 3 cubic feet, each \$7.25
No. 5 Capacity 4 cubic feet, each 8.50

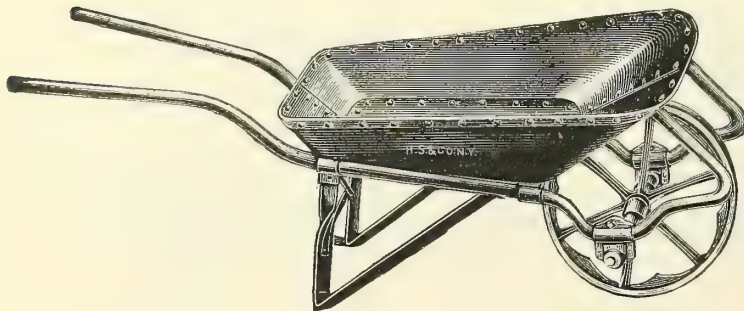
Steel Dirt Ideal



The Tray, of the most approved shape, is made of the best grade of steel, and has a strong iron band riveted around to stiffen it. Special attention has been paid to the bracing with a view to increased strength. The wheels are made of malleable iron, which are light and neat in form, but with an exact distribution of metal that secures strength and durability. The tubular iron handles are attached to tray by the use of malleable iron clips.

- No. 4 Greatest width of tray, 29 inches; greatest length, 32 inches; capacity, 3 cubic feet; 15-inch wheel; tray of No. 16 steel, each \$10.00

Steel Foundry



The Trays of these Barrows have heavier bottoms than sides. All wheels are 16-inches in diameter. Numbers ending with "A" have trays of Nos. 12 and 10 steel; numbers ending with "AA" have trays of Nos. 12 and 8 steel.

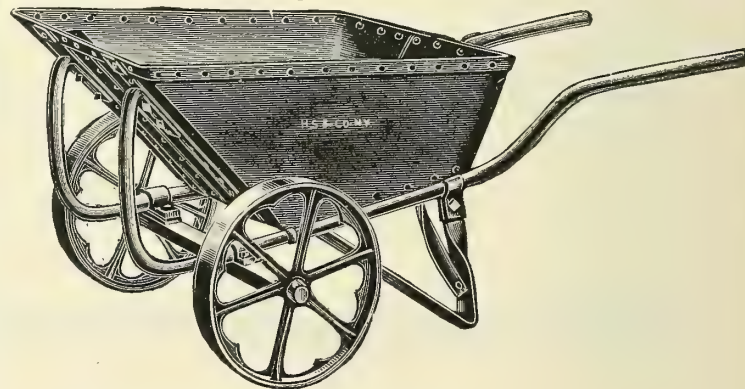
Number	Width Inches	Length Inches	Capacity Cubic Feet	Each
4A	29	32	3	\$14.00
4AA	29	32	3	15.00
5A	31½	36	4	15.00
5AA	31½	36	4	16.00
6A	32	38	4½	16.50
6AA	32	38	4½	17.50
7A	36	39	5½	20.00
7AA	36	39	5½	21.00
8A	40	40	7½	22.00
8AA	40	40	7½	23.00

Coal

Made in same style as above foundry type, with 16-inch wheels and heavier bottoms than sides. Trays are made of Nos. 16 and 12 steel.

Number	Width Inches	Length Inches	Capacity Pounds	Each
4	29	32	150	\$12.25
5	31½	36	200	14.25
6	32	38	225	15.00
7	36	39	300	18.00
8	40	45	450	20.00

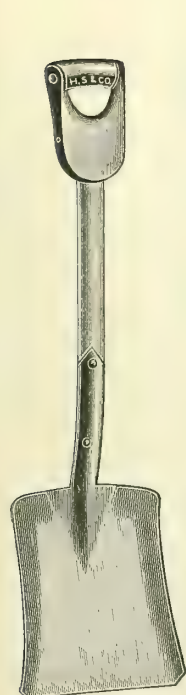
Steel Coal Barrows With Two Wheels



- Nos. 9½ to 13½ have trays of Nos. 14 and 10 steel.
Nos. 9½A to 13½A have trays of Nos. 12 and 10 steel.
Nos. 9½AA to 13½AA have trays of Nos. 12 and 8 steel.

Number	Width Inches	Length Inches	Capacity Pounds	Each
9½	32	34	260	\$28.00
10½	33	36	340	30.00
11½	35	38	400	32.00
12½	36	40	480	34.00
13½	38	42	600	38.00
9½A	32	34	260	29.50
10½A	33	36	340	31.50
11½A	35	38	400	33.50
12½A	36	40	480	35.75
13½A	38	42	600	40.00
9½AA	32	34	260	30.50
10½AA	33	36	340	32.75
11½AA	35	38	400	34.50
12½AA	36	40	480	36.75
13½AA	38	42	600	42.00

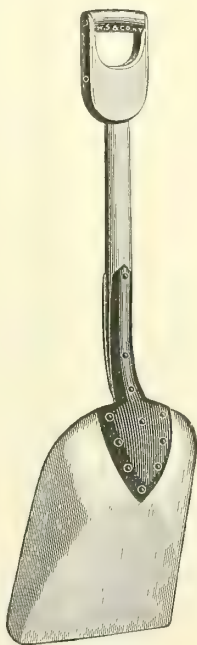
Steel Shovels and Scoops



Plain Back
Square Point
Shovel
D-Handle



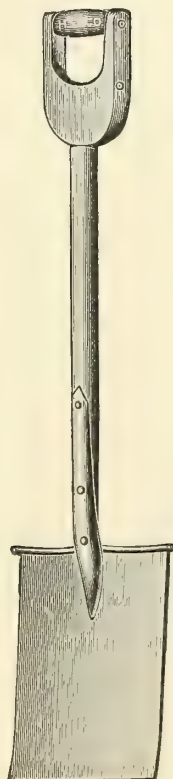
Plain Back
Round Point
Shovel
D-Handle



Polished
Scoop
D-Handle



Square Point
Shovel
Long Handle



Spade
D-Handle



Furnace
Scoop
D-Handle

Square Point Shovels—D-Handles

Number.....	2	3	4
H. S. and Co. plain back, polished, dozen.....	\$9.00	9.50	10.00
Baxter Back Strap, Socket Strap, polished, dozen.	\$12.10	12.60	13.10

Round Point Shovels—D-Handles

Number.....	2	3	4
H. S. and Co. plain back, polished, dozen.....	\$9.00	9.50	10.00

Scoops—D-Handles

Number.....	2	3	4	5	6	7	8	9
Baxter back strap, socket strap, polished, dozen.	\$12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50
Sanderson, best steel polished, dozen.....	\$14.00	14.50	14.75	15.25	16.00	16.25	16.50	17.00

Square Point Shovels—Long Handles

Number.....	2	3	4
H. S. and Co. plain back, polished, dozen....	\$9.00	9.50	10.00

Round Point Shovels—Long Handles

Number.....	2	3	4
H. S. and Co. plain back, polished, dozen....	\$9.00	9.50	10.00

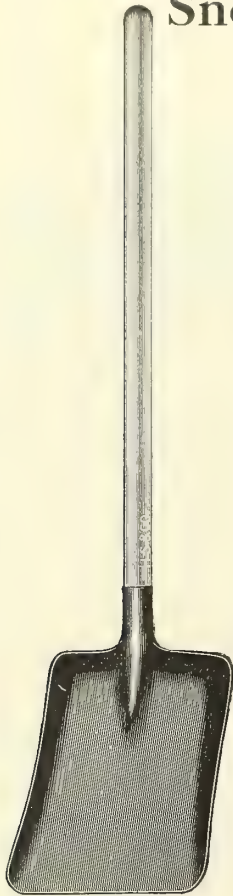
Spades—D-Handles

Number.....	2
H. S. and Co. plain back, polished, dozen.....	\$8.50
Baxter plain back, polished, dozen.....	13.10

Furnace Scoops—D-Handles

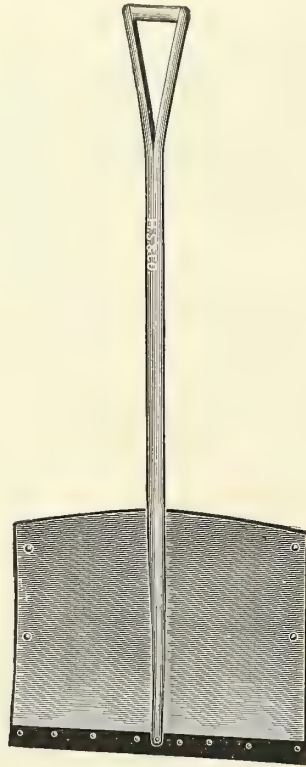
Rowland, black, dozen.....	\$8.00
Sanderson, No. 7, Long Bill, black, dozen.....	16.25

Snow Shovels



Long Handle, Steel

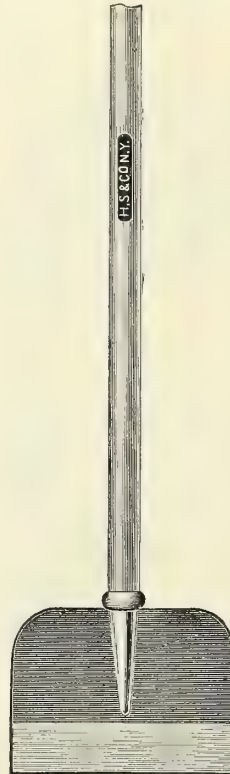
"Best" Dozen \$8.00



"D" Handle, Wood

No. 96 Dozen \$7.50

Sidewalk Ice Choppers



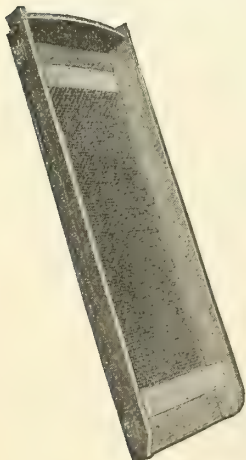
Extra heavy, 7½-inch blade,
6 inches deep, 4½-foot handle;
malleable iron caps.
No. SC x 7½ Dozen ... \$9.00



Extra heavy, steel laid blade,
capable of removing any thick-
ness of ice.

No. 79A Width of blade
5¾ inches, dozen..... \$15.00
No. 79Y Width of blade
4¼ inches, dozen..... \$10.00

Sand, Ash and Cinder Screens



Wood frames made of seasoned
chestnut, 7/8 inch thick.

Weight: Small, 27 pounds; large,
32 pounds.

The bottoms in these screens are of
a medium grade square mesh wire
cloth, furnished in two grades, Plain
Steel Wire, or Galvanized After
Weaving.

No. 0, 7/16-inch space, used for
cleaning coarse gravel.

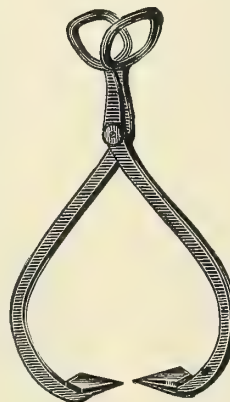
No. 1, 3/8-inch space, used for
cleaning gravel and sand.

No. 2, 1/4-inch space, used for
cleaning coarse sand.

No. 3, 3/16-inch space, used for
cleaning medium sand.

Outside Dimensions of Frame, Inches	Screen Surface Inches	Each
Small 22 x 60	20 x 42	\$5.00
Large 26 x 66	24 x 48	6.50

Ice Tongs



With duck bill points.

No. 1 Dozen..... \$15.00

Ice Chisel

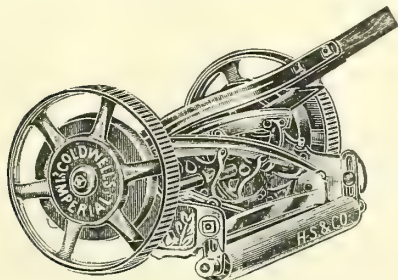


Steel blade and handle, 4½
inches wide, 48 inches overall.

No. 159 Dozen..... \$16.00

Lawn Mowers

Coldwell Imperial



The bearings are split, adjustable hangers of phosphor bronze. The driving wheels are 10¼ inches in diameter. The revolving cutter gears are fine cut and keyed to the revolving cutter shaft, and do not revolve when the mower is being drawn backward, thus greatly saving the wear of the gears. Both wheels are provided with triple-pawl ratchets which, being made of malleable iron, are practically indestructible. The bottom knife bar is bolted fast to the side frames, thus insuring a four-sided rigid frame to build the mower up on and the knives are adjusted by means of split hangers, which raise or lower the revolving cutter, so constructed that all wear can be taken up in the bearings. These features together with the 6-inch diameters of revolving cutters make them particularly light running and fine cutting lawn mowers.

The mowers are finished in white, with red and gold trimmings. The workmanship and material are the best that can be obtained. They are equipped with terrace mowing arrangement, and are guaranteed to give entire satisfaction to the purchaser.

With 4 blades

14-inch, each	\$20.00	18-inch, each	\$24.00
16-inch, each	22.00	20-inch, each	26.00

Add \$1.00 to above for list on five-blade mower.

Coldwell Lakewood

Ball Bearing

It has high wheels (9 inches), flat steel sliding pawls in the ratchets, and large diameter revolving cutter (5 inches) furnished with four blades.

The Lakewood Lawn Mower is equipped with adjustable ball bearings, the adjustment being made with single screw. They are also provided with a locking screw which holds them securely in place.

The bottom knife is made of the best tool steel, and all other material entering into its construction is the same as that used in many high-grade mowers. These mowers are finished in aluminum, red and gilt trimmings. Guaranteed against defects in manufacture.

Size, inches	14	16	18
Each	\$12.00	\$13.00	\$14.00

Coldwell Horse and Motor

Catalog and Prices on Application

Reading Royal

Ball Bearing

The driving wheels are 11 inches in diameter—exceptionally large—which allows speed and ease in operation. Complete ball bearing, with bicycle cones made of tool steel, carefully hardened and ground. The steel balls are ⅝ inch in diameter and the ball races are 1½ inches. The machines are equipped with three pawl ratchets and a train of three gears, with a driving mechanism on each side of mower. The tie rod is attached to the upper part of the frame. The diameter of the revolving cutter reel is 6½ inches, and it is equipped with four cutting blades. The machines are decorated in gold with red striping.

These mowers are guaranteed to give complete satisfaction to the user.

Size, inches	14	16	18	20
Each	\$13.00	14.00	15.00	16.00

Reading Regent

Ball Bearing

These mowers are the same in every essential detail as the Reading Royal, listed above, except they are equipped with five cutting blades instead of four. Decorated in gold with green striping.

These mowers are guaranteed to give complete satisfaction to the user.

Sizes, ins. 14 16 18 20				
Each	\$13.50	14.50	15.50	16.50

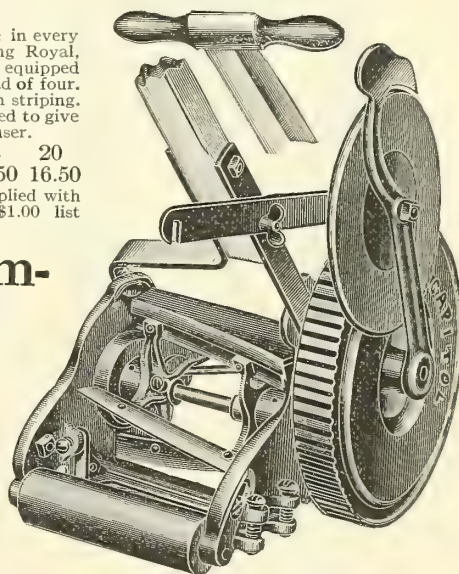
Above mowers will be supplied with parallel split bearings at \$1.00 list cheaper.

Lawn Trimmer and Edger

Capitol

Will trim and edge a lawn with remarkable speed and perfection; the shield over the blades protects the flowers. This machine has four crucible steel blades six inches in length, hardened and tempered in oil, with split bushings and double adjustment.

Each	\$7.50
----------------	--------



Water Weight Rollers

Dunham Hand

These Rollers are electric welded, making the water section one solid drum, no rivets being used. The drums cannot leak and the rolling surface is perfectly smooth, so lawn is never cut up. They are roller bearing and easy to operate. Made in two sections as shown, or in one section, if desired.

With Counter-Weights

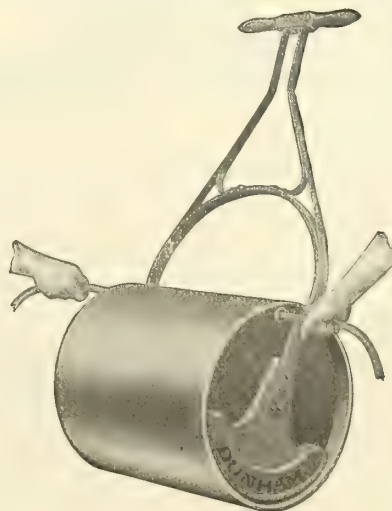
The handle weights (shown in illustration) are to counter-balance the weight of the handle and keep it in an upright position off the ground.

Number	Diameter Inches	Length Inches	Sections	Weight Empty Pounds	Filled With Water Pounds	Each
HW 2	14	20	1	120	260	\$12.50
HW 4	18	24	1	135	360	14.50
HW 6	24	24	1	185	560	18.50
HW 8	24	32	1	200	710	20.50
HW 10	18	24	2	160	360	19.50
HW 12	24	32	2	230	710	25.50
HW 14	24	24	2	200	560	23.50

With Handle Lock

This attachment locks the handle to the drum when the roller is not in use so that the handle remains upright. This serves the same purpose as the counterweights on the H. W. line (above).

Number	Diameter Inches	Length Inches	Sections	Weight Empty Pounds	Filled with Water Pounds	Each
WB 3	14	20	1	65	200	\$11.00
WB 5	18	24	1	80	310	13.00
WB 7	24	24	1	115	500	17.00
WB 9	24	32	1	130	650	19.00
WB 11	18	24	2	100	330	18.00
WB 13	24	32	2	160	650	24.00
WB 15	24	24	2	140	500	22.00



Style "HW"—Two Sections

Dunham Horse

Catalog and Prices on Application

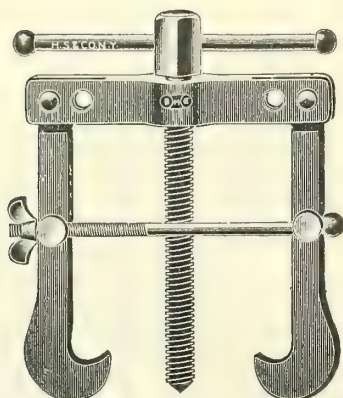
Automobile Tools

We do not make a complete listing of Automobile Tools, but Torches, Wrenches, jacks and all other articles required for repair work will be found under their respective headings. See index.

Wheel and Gear Pullers

For removing auto wheels, fly wheels, transmission and cam-shaft gears, commutators, sprockets, collars, pulleys, couplings, etc. Their use eliminates the danger of serious damage from using a hammer and chisel.

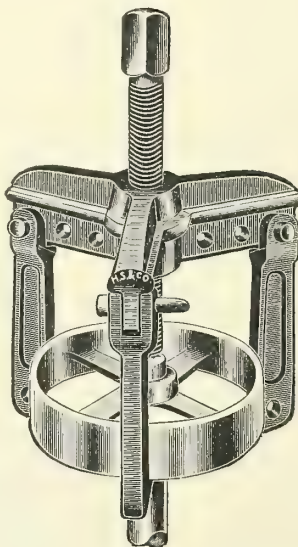
B. M. Co.



Drop-Forged from Tough Steel, Machine-Cut Steel Worm Screw

The "T" Handle will in most cases furnish sufficient leverage. If not, a wrench can be used.

Each \$3.00



No. 3

Drop-Forged from a High Carbon Steel, Case Hardened Machine Cut Worm Screws

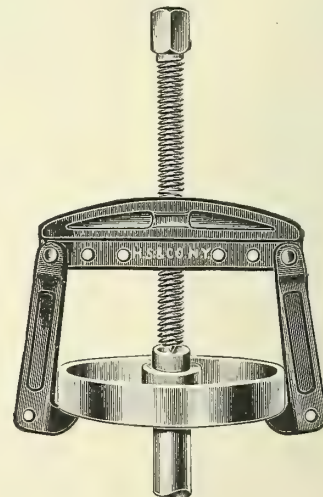
Number Three, Large Size, will reach work thirteen inches from end of shaft and twenty inches in diameter. Shipping weight, two arm, 28 pounds, three arm, 41 pounds.

Number Three, Combination Arms, are seven inches from center to center of holes.

Two-Arm Puller, complete, with two sets Combination Arms..... \$9.00

Three-Arm Puller, complete, with two sets Combination Arms..... 12.00

Crane



No. 2

Number Two, Small Size, will reach work eleven inches from end of shaft and sixteen inches in diameter. Shipping weight, two arm, 17 pounds, three arm, 22 pounds.

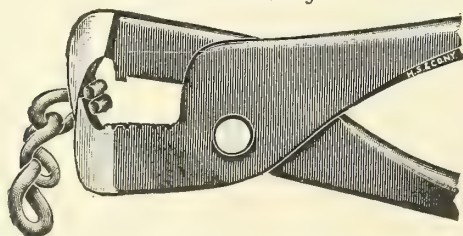
Number Two, Combination Arms, are six inches from center to center of holes.

Two-Arm Puller, complete, with two sets Combination Arms..... \$7.20

Three-Arm Puller, complete, with two sets Combination Arms..... 9.60

Tire Chain Repair Tools

The Necessity



It is made from best steel drop-forgings, milled accurately, fitted and tempered to withstand the roughest use. Net weight 14 ounces.

Guarantee: We will replace, free of charge, any tool broken through fault of material or workmanship, when used for the purpose for which it is designed, of opening and closing cross chains.

Dozen \$24.00

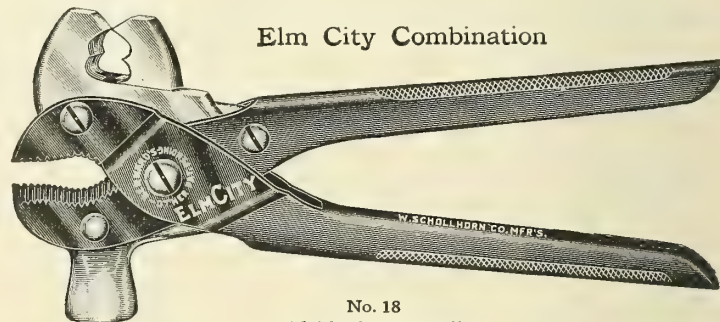
Tire Tool or Pry Bar
Perfect Handle



Drop-Forged. Accurately Tempered. Nicely Finished. Absolutely Guaranteed.

The handiest kind of a tool for taking off and putting on automobile tires quickly. 13½ inches long. 1-inch tapering to ¼-inch in width. ½-inch tapering to a curved and round point tapered to ⅛-inch thick.

No. 620. Dozen \$12.00



No. 18

8½ inches overall

Drop-forged hammer head and jaws, fully polished. Closed stamped steel handles and frame, finished in a dead black. Interchangeable cutting jaws. A high-grade tool for replacing the cross chains on Weed chains. Has a parallel movement. Cuts side chains but not cross chains. Can be used to replace links by spreading. Weight 23 ounces per tool. Fully warranted.

Dozen \$20.00

Cottor Pin Extractor
H. S. & Co.



Made of tool steel.

Polished, 7-inch, dozen \$3.75

For H. S. & Co. Tourist Auto-Kit Set, see page 559

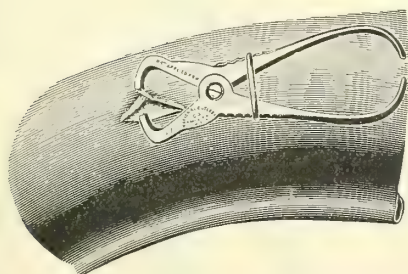
SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Automobile Tools

Tire Repair Tool
National

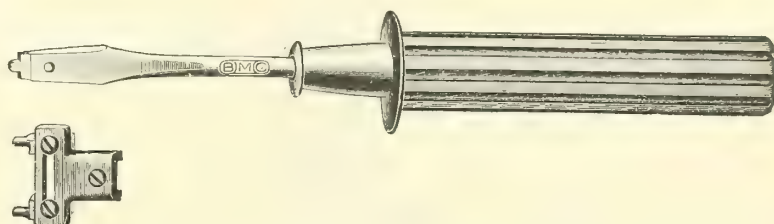


In order to make a first-class repair in tires by using putty and cement, the cut must be cleansed from sand, etc., and in order to clean the cut and insert the cement properly, a spreading prier must be used to spread the cut open and hold it open.

This Repair Tool is drop-forged from tool steel and arranged in such a manner that it can readily be inserted in a cut or blister to spread it open allowing free working at the cut in the tire.

Dozen \$12.00

Valve Grinder
B. M. Co.



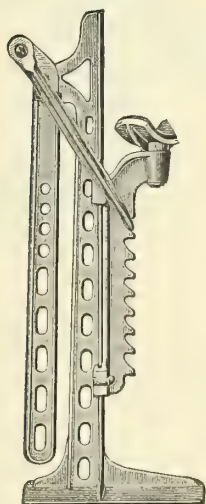
The blade is drop-forged from special screwdriver steel and is secured to the handle by a patented locking device.

The adjustable attachment is used when grinding valves that have grip holes in the head of valve stem instead of a slot, and is adjustable from $\frac{1}{2}$ to $1\frac{1}{4}$ inch.

In operating, the handle is rolled back and forth between the palms, the broad steel flange affording a slight downward pressure in addition to preventing the hands from slipping.

Tool, complete, dozen \$24.00
Without attachment, dozen 16.00

Tire Savers
Reliable



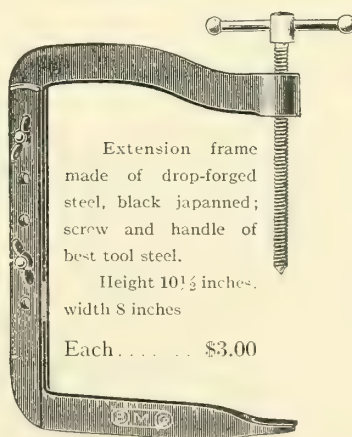
The life of tires can be prolonged one-third with a little care. Never allow the weight of the car to rest on the tires. Keep them off the oily floors, chain grips, etc. The floors of all garages have more or less oil, gasoline and water, which are natural enemies of rubber and fabric.

The above Tire Saver and Garage Jack is quickly adjusted to any height axle or hub without removing bolts or cotters. It has a swivel top and leather-faced saddle.

The lighter Tire Savers are used for cars weighing up to 3,000 pounds. The extra heavy are for cars weighing 3,000 pounds or over.

No. 1. Set of four \$6.70
No. 2. Set of four (extra heavy) 8.00

Valve Lifter
B. M. Co.

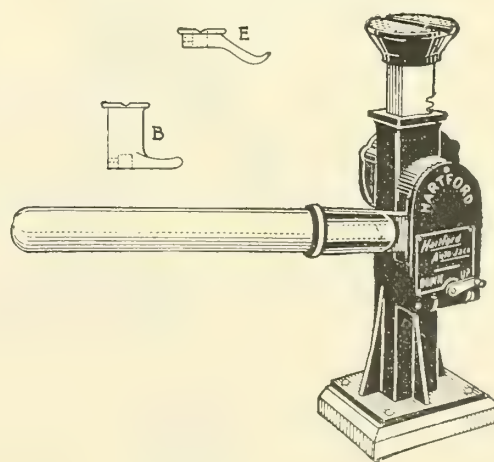


Extension frame
made of drop-forged
steel, black japanned;
screw and handle of
best tool steel.

Height $10\frac{1}{2}$ inches,
width 8 inches

Each \$3.00

Auto-Jack
Hartford



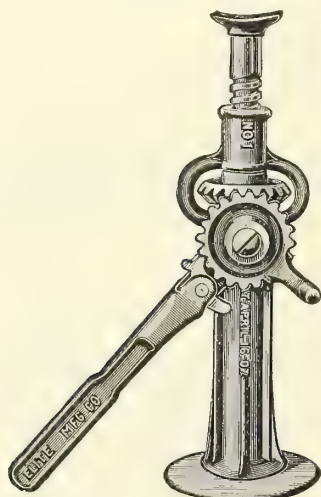
Nos. 2 and 3

The casing of this Jack is of toughest malleable iron; the lifting rack is cut from solid steel, and the gears are machine-cut, specially hardened. The actuating mechanism is made of chrome-nickel steel, hardened by a special tempering device, thus insuring maximum strength and minimum wear. Each Jack is fitted with a hardwood base, which gives perfect road stability when Jack is in use. Lift 7 inches, minimum height over-all $10\frac{1}{2}$ inches. No. 2 Jack, made with lip "B"; No. 3 Jack, with lip "E."

Each \$6.50

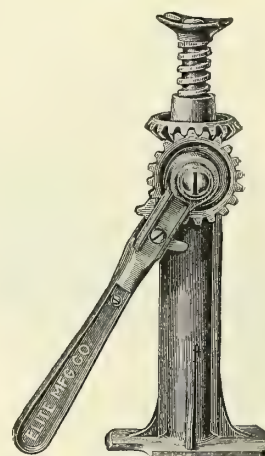
Automobile Jacks

Reliable

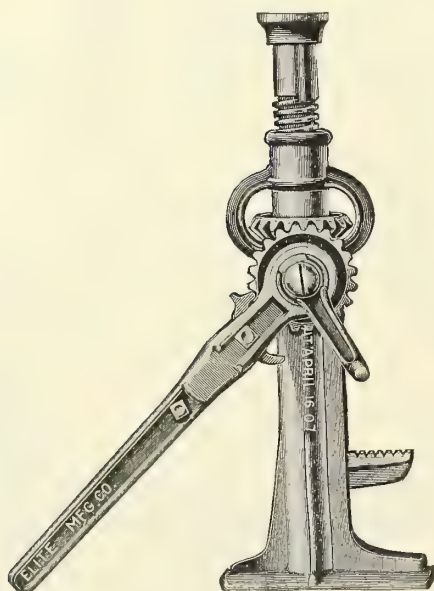


Nos. 1 and 2 Malleable Iron

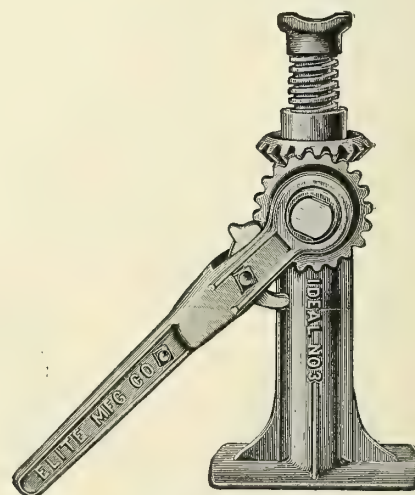
Ideal



Nos. 1 and 2 Malleable Iron



No. 4 Malleable Iron



No. 3 Malleable Iron

The Reliable is safe, strong, compact and durable. The lever does not interfere with springs or body.

Strength, simplicity, light weight and ease of operation all combined. It is self-contained with no loose parts to get lost, also self-locking at any point and is perfectly safe, as it will not let the load drop. For quick adjustment use crank on side gear.

The No. 4 is of heavier construction, and designed for use with trucks, street cars, and wherever a Jack of large capacity and light weight is required.

The Nos. 1 and 2 are made throughout of the best malleable iron with steel machine-cut screws. Designed and built to use for heavy automobiles under which it is difficult to operate a jack. The swivel top enables it to be placed in the most convenient position. Compact and light in weight but very powerful.

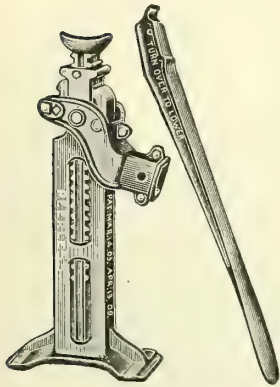
The No. 3 Jack is designed especially for heavy auto trucks, where extreme capacity, rigidity and strength are required. Constructed throughout of malleable iron with 1½-inch steel screw. Has a broad substantial base and all the desirable features of Nos. 1 and 2.

Number	Weight Pounds	Capacity Tons	Adjustment Inches	Each
1	5	2	10½ to 18	\$2.00
2	8	3	12 to 20	2.50
4	25	{Top, 10 Foot, 3 }	17½ to 26	10.00

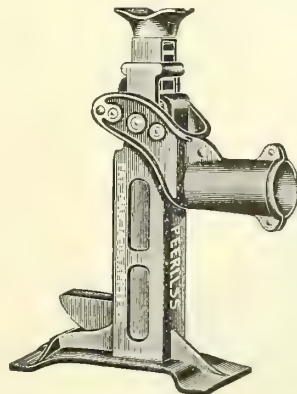
Number	Weight Pounds	Capacity Tons	Adjustment Inches	Each
1	5	2	10½ to 17	\$2.00
2	6	2	12 to 21	2.25
3	17	6	13 to 20	6.00

Automobile Jacks

Peerless



No. 58



Nos. 60 and 61

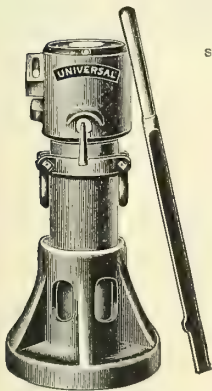
These Jacks are heavily built with substantial bases arched to prevent tipping; a powerful leverage and simple lowering device, operated by turning handle. Positive action. Works in any position. Can be used for pushing as well as lifting. The handle makes an excellent tire tool.

- No. 52 For cars of 2 tons. Similar in design to No. 58, with low bracket like Nos. 60 and 61. 11 inches high, 6 inch rise, weight 5 lbs., each..... \$3.00
- No. 55 For cars of 1 ton. Similar in design to No. 58, 10 inches high, 7-inch rise, weight 5 lbs., each 2.50
- No. 58 For cars of 2 tons. 9¾ inches high, 6¼-inch rise, weight 7 lbs., each..... 3.00
- No. 60 For trucks of 5 tons. 11 inches high, 4-inch rise, weight, 8 lbs., each..... 6.00
- No. 61 For trucks of 5 tons. 14 inches high, 7-inch rise, weight 10 lbs., each..... 7.00

Hydraulic Jacks

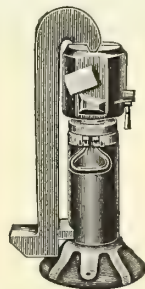
Dudgeon Universal Double Pump

The Double-Pump feature enables operator to work rapidly, as Jack may be worked with double speed until heavy-lifting strain begins. These Jacks can be operated horizontally as well as vertically.



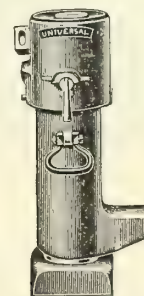
Broad Base

For railroad work, etc., where stability is required.



With Independent Claw

For railroad work, etc., where stability and a low lift are required.



Regular Claw

For general use and for work that will not permit the head to be placed under the load.

No.	Lift Tons	Run Out Inches	Height Inches	Diameter of Base Inches	Weight Pounds	Each
614	10	12	25	11	109	\$ 95
615	10	18	31	11	125	110
616	15	12	25	12	135	125
617	15	18	32	12	158	150
618	20	12	26	13½	168	150
619	20	18	32	13½	227	175
620	30	9	22	14	210	170
621	30	12	27	14	271	200
622	30	18	33	14	310	235
623	40	12	27	14½	340	240
624	40	18	35	14½	392	280
625	50	12	28	15½	427	260
626	50	18	36	15½	491	310
627	60	12	30	16	508	310

No.	Lift Tons	Run Out Inches	Height Inches	Diameter of Base Inches	Weight of jack with claw Lbs.	Weight of jack without claw Lbs.	Each
639A	10	12	26	11	155	105	\$ 95
639B	10	18	32	11	195	125	110
639C	15	12	26	11	195	135	135
639D	15	18	32	11	210	155	160
639E	20	12	27	12	252	170	175
639F	20	18	33	12	295	190	200
640	30	9	22	12	270	190	190
641	30	12	27	12	330	213	220
642	30	18	33	13	385	260	260
643	40	12	27	13	380	270	260
644	40	18	33	13	465	315	300
645	50	12	28	15	530	379	300
646	50	18	33	15	580	480	350
647	60	12	28	16	625	460	350

No.	Lift Tons	Run Out Inches	Height Inches	Weight Pounds	Each
629A	10	12	25	125	\$100
629B	10	18	32	144	120
629C	15	12	26	162	150
629D	15	18	32	190	185
629E	20	12	26	203	200
629F	20	18	33	245	240
630	30	9	22	290	225
631	30	12	26	310	250
632	30	18	32	364	285
633	40	12	27	355	300
634	40	18	34	460	325
635	50	12	27	450	325

Jack Screws

The easiest acting and best constructed jack screws on the market. Barrels of cast-iron; screws of steel; threads on the screws lathe cut. Furnished with levers unless ordered without.

Number	Diameter of Screw Inches	Height of Barrel Inches	Minimum Height of Jack Inches	Net Rise Inches	Maximum Height of Jack Inches	Weight Pounds	Estimated Lifting Capacity Tons	With Lever	Without Lever
1	1¼	6	9	4	13	8½	5	\$2.20	\$2.00
2	1¼	7	10	6	16	9½	5	2.50	2.30
3	1½	7	10¾	5	16	16	8	2.70	2.50
4	1½	9	12¾	7	20	20½	8	3.10	2.90
5	1½	11	14¾	9	24	22½	8	3.20	4.00
6	1¾	9	12¼	6	18	22½	12	3.40	3.10
7	1¾	10½	14¼	8	22	25	12	3.60	3.30
8	1¾	12½	16	10	26	29	12	3.90	3.60
9	1¾	14½	18¼	12	30	32	12	4.30	4.00
10	2	8	12¼	5	17	27	15	4.30	3.90
11	2	10	14	7	21	31	15	4.60	4.20
12	2	12	16¼	9	25	35	15	5.30	4.90
13	2	16	20¼	13	33	41	15	6.00	5.60
14	2½	9½	15	8	23	45½	20	6.40	5.70
15	2½	11½	16¾	10	27	50	20	7.10	6.40
16	2½	15½	20¾	14	35	62	20	8.10	7.40
17	2½	19½	25	18	43	75	20	9.50	8.80



Jack Screws Number	1, 2, 3, 4, 5	6, 7, 8, 9	10, 11, 12, 13	14, 15, 16, 17
Diameter of lever, inches...	⅝	¾	⅞	1
Length of lever, inches...	17	18	19	24
Weight of lever, pounds...	1½	2¼	2¾	5¼
Each.....	\$.20	.30	.40	.70

Gasoline, Benzine and Oil Cans

Gasoline, Storage or Garage

McNutt Non-Explosive

These cans remove all elements of danger, as actual contact with fire will not cause an explosion. Eclipse pattern, approved by New York City Fire Department



Plug Closure

Five-gallon, each \$6.00
Ten-gallon, each 7.50



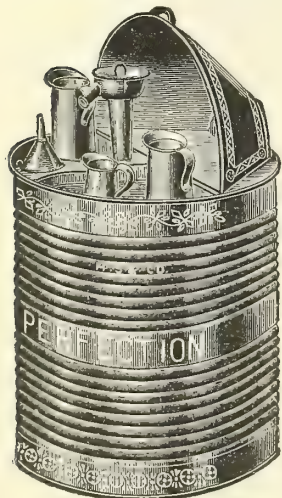
Eclipse Automatic Closure

Two-gallon, each \$3.50
Three-gallon, each 4.00
Five-gallon, each 6.00



Globe Automatic Closure

One-gallon, each \$2.50
Two-gallon, each 3.00
Three-gallon, each 3.50
Five-gallon, each 5.00



H. S. & Co.

For Miscellaneous Oils
With Corrugated Bodies and Bottoms

Have Steady Stream Pumps, which can be detached and used in pumping oil from barrel into the tank. Each tank furnished with a 1-pint, 1-quart and 2-quart tin measure, and a 1-quart tin funnel.

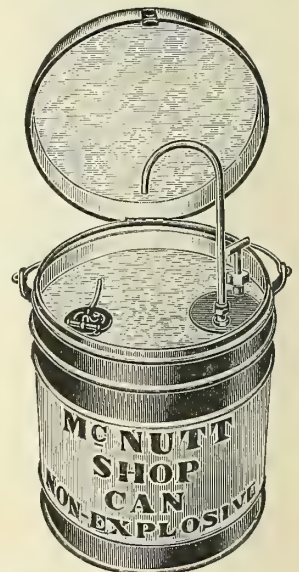
30 gallons, each \$4.00
60 gallons, each 4.70
106 gallons, each 8.00

Pump

McNutt Non-Explosive

Used by printers, lithographers, in rubber factories and by manufacturers in general for filling priming cans, torches, lamps, etc.

Five-gallon, each \$8.50



Cleaning or Priming

Adaptable for Starting Motors, Cleaning Machinery, etc., as well as for Printers Use

McNutt Non-Explosive



"Eclipse"

Used in the engraving and printing departments of the U. S. Government.
1-quart, steel, each \$1.50

McNutt Non-Explosive



½-pint, brass, each \$1.00
1-pint, brass, each 1.25
1-quart, brass, each 1.75

Success, Safety

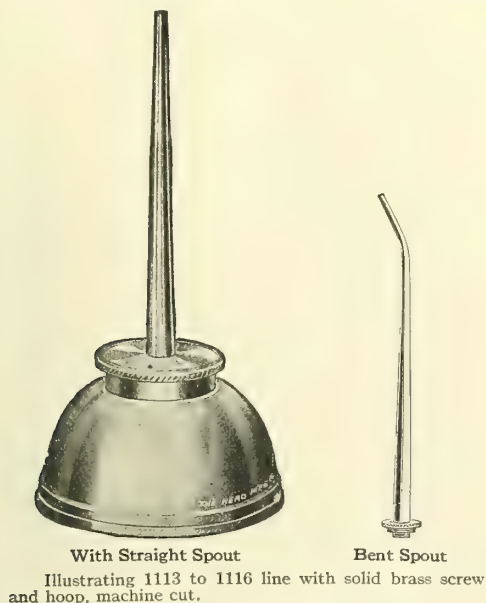


Made of heavy brass; stoppers turned from solid brass. No vapor or fluid can escape, excepting by pressure on the circular plate below the nozzle—when this pressure is released the stopper automatically and instantly closes.

1-pint, each \$.70
1-quart, each85
2-quarts, each 1.50

Oilers

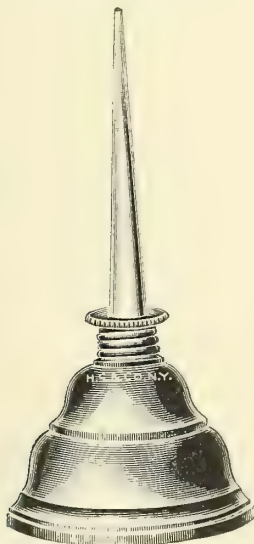
Drawn Steel, Copper-Plated, or Drawn Brass



Number	Dozen	Drawn steel, heavily copper-plated, tempered spring steel bottoms				Drawn Brass	
		Diameter of Bottom Inches	Height of Body Inches	Length of Spout Inches	Capacity Ounces	Number	Dozen
1112	\$4.50	2¾	1⅝	2½	2½	120	\$6.50
1113	5.50	3½	1⅞	3	4½	130	8.00
1113A	6.00	3½	1⅞	5	4½	130A	8.75
1114	6.50	3½	1⅞	9 (Bent)	4½	140	9.20
1114A	7.50	3⅞	2½	3	9	140A	10.20
1114AA	8.00	3⅞	2½	5	9	140AA	10.80
1114B	8.50	3⅞	2½	9 (Bent)	9	140B	11.20
1115	9.25	4⅜	2⅞	3	13½	150	12.00
1115A	9.75	4⅜	2⅞	5	13½	150A	13.00
1116	10.50	4⅜	2⅞	9 (Bent)	13½	160	14.00

Copper-plated steel spouts, for Nos. 1112 to 1116, \$2.25 to \$9.00 dozen, according to length.
 Drawn brass spouts, for Nos. 120 to 160, \$3.00 to \$7.50 dozen, according to length.

Chace Pattern



The body and screw are substantially made of one piece of seamless metal. A turned-in flange holds the washer firmly in place. The bottom is double-seamed.

Number.....	0	1	2	3	4	5	6
Diameter, inches.....	2⅝	2⅝	3⅝	3¾	4⅞	4½	4¾
Capacity, in fluid ounces.....	1¼	2	4	6½	8¾	11	14
spouts, dozen.....	\$1.25	1.50	2.00	2.25	2.75	3.50	4.50
Brass throughout, dozen.....	2.25	2.50	3.50	4.00	4.75	6.00	7.50

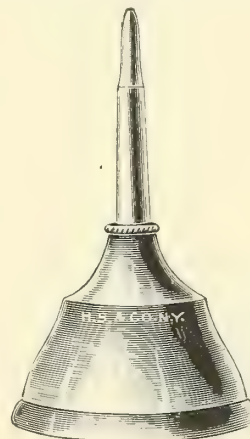
Extra Spouts Tin for Zinc Oilers

No.	Gross
No. 0.....	\$3.50
No. 1.....	4.00
No. 2.....	4.50
No. 3.....	4.75
No. 4.....	5.00
No. 5.....	5.50
No. 6.....	6.00

Brass, for Brass Oilers

No.	Gross
No. 0.....	\$4.00
No. 1.....	4.50
No. 2.....	5.50
No. 3.....	6.25
No. 4.....	7.25
No. 5.....	8.25
No. 6.....	9.25

Hammer Malleable Iron



No. 2

Brass bottom, with steel spring inside

Number.....	2	3	4
Base, inches.....	3¼	3¾	4
Capacity, gills.....	1½	2	3
Dozen.....	\$4.00	4.40	4.80

Properties of a Perfect Lubricant

Lubricating material should be rigidly examined for the following six properties, and every engineer desirous of securing the best results should satisfy himself on each point before approving any oil:

- (1) Sufficient body, thickness, or viscosity to keep the metal parts from actually coming into contact with each other under the maximum pressure which may be applied to them.
- (2) Fluidity to just the extent which will not interfere with requirement No. 1 and still permit a free movement of the parts.
- (3) Great power for absorbing and carrying away heat which simply means keeping the bearing cool.
- (4) Constituent parts requiring an extremely high temperature to decompose or evaporate and a very low temperature to solidify.
- (5) Absolute freedom from any tendency to decompose or oxidize by exposure to the air, which means it will not gum or clog the bearings.
- (6) The absence of acidity or moisture or any other property which might have a tendency to corrode or rust the metal.

Railroad Oilers

These Oilers have a brass union where the spout joins the body, enabling the spout to be pointed in any direction for delivering the oil.
The advantage over the old style solid screw thread is apparent to any person using such an oiler.

Steel. Copper-Plated

Number	Capacity	Diameter Inches	Height Inches	Spout Inches	Dozen
10	1-pint	3 $\frac{3}{8}$	5	12	\$14.00
11	1-quart	4 $\frac{1}{8}$	6	18	18.00

Extra Spouts

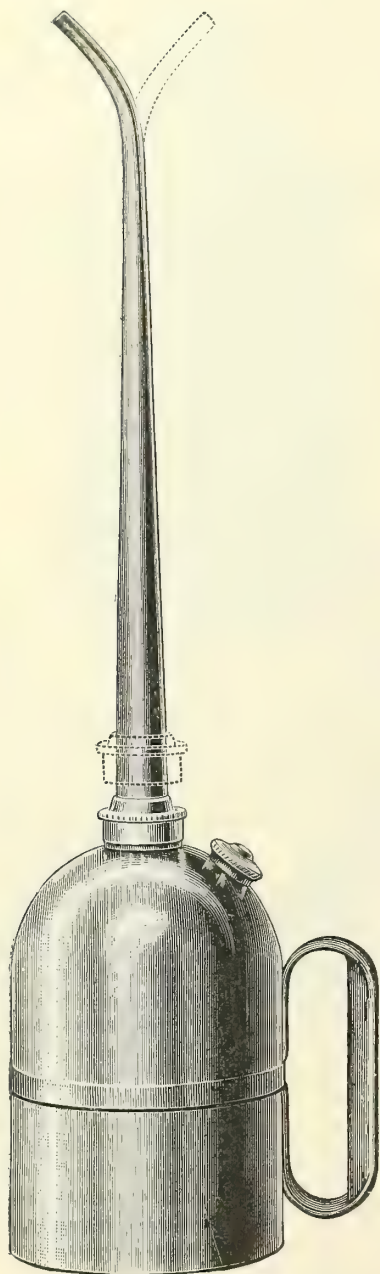
Inches	Dozen
12	\$5.75
18	7.00

With large spout 1 $\frac{1}{2}$ inches at base, 12 inches and 14 inches in length.

- No. 101 1-quart Railroad Oiler, 4 $\frac{1}{8}$ inches diameter, 6 inches high, 12-inch spout, dozen..... \$18.00
No. 111 2-quart Railroad Oiler, 5 inches diameter, 8 inches high, 14-inch spout, dozen..... 20.00

Extra Spouts

Inches	Dozen
12	\$7.00
14	9.00



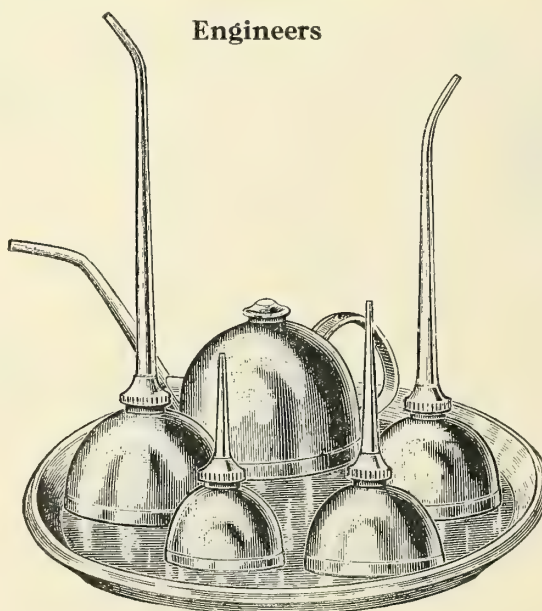
No. 101



No. 11

Oilers in Sets

Engineers



Brass

Steel

- No. 30 Five pieces, polished, 12-inch tray, set..... \$6.00 No. C30 Five pieces, copper-plated, 12-inch tray, set..... \$5.00
No. 40 Six pieces, polished, 14-inch tray, set..... 9.00 No. C40 Six pieces, copper-plated, 14-inch tray, set..... 7.00

In all Oiler Sets the tray counts as one piece. When desired for use on board ship they should be specially ordered, as trays are provided with racks to hold oilers in position.

Pump Oilers

Indestructible Copperized Steel

The bodies are drawn from 20-gauge cold-rolled steel, heavily electro copper-plated, making them practically indestructible. Made to order from 20-gauge brass or nickel-plated steel. The spout connections are made by means of a union, making all spouts interchangeable.

With Howland Pumps

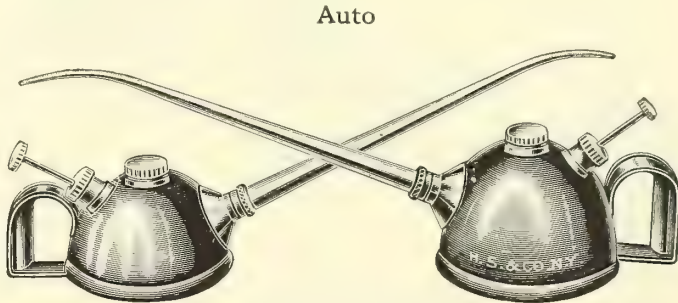
Having two valves working automatically, which deliver the oil to the bearings exactly as desired



Regular

No. 1000, 1-pint, 3 $\frac{3}{8}$ -inch diameter, 9-inch spout	Dozen \$30.00
No. 2000, 1 $\frac{1}{2}$ -pint, 3 $\frac{3}{4}$ -inch diameter, 12-inch spout	40.00
No. 3000, 2-pint, 4 $\frac{1}{8}$ -inch diameter, 15-inch spout	50.00
No. 4000, 4 - pint, 5 - inch diameter, 18-inch spout	60.00

Drawn in two pieces



Auto

Drawn in one piece

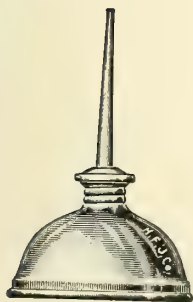
These Oilers are especially adapted for automobiles, motor boats, stationary engines, etc. They form part of the equipment of some of the finest automobiles manufactured, both at home and abroad.

No. 800, $\frac{1}{2}$ -pint, 3 $\frac{3}{4}$ -inch diameter, 3-inch spout	Dozen \$23.00
No. 801, $\frac{1}{2}$ -pint, 3 $\frac{3}{4}$ -inch diameter, 5-inch spout	23.50
No. 802, $\frac{1}{2}$ -pint, 3 $\frac{3}{4}$ -inch diameter, 9-inch spout	24.00
No. 803, 1 - pint, 4 $\frac{1}{4}$ -inch diameter, 5-inch spout	25.25
No. 804, 1 - pint, 4 $\frac{1}{4}$ -inch diameter, 9-inch spout	25.75

Sewing Machine and Phonograph Oilers

H. S. & Co.

Sewing Machine



No. 559
(Formerly No. 3566)

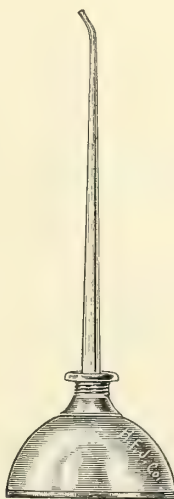
Made from zinc. Standard chace - oiler thread.



No. 766

Made from highly polished zinc. Also furnished brass-plated.

Phonograph



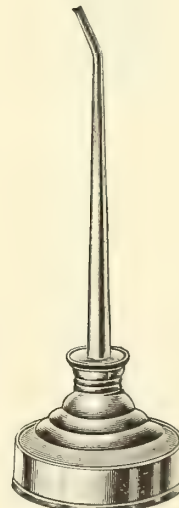
No. 562

Formerly No. 3445
Made from tin-plate; brass hoop; body and spout heavily nickel-plated.



No. 560

Formerly No. 3566A
Made from zinc. Standard chace - oiler thread.



No. 766A

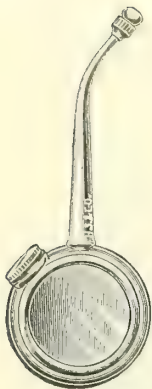
Made from highly polished zinc. Also furnished brass-plated.

Numbers	559	766
Diameter of bottom, inches	2 $\frac{1}{16}$	1 $\frac{3}{4}$
Height of body, inches	1 $\frac{5}{16}$	1 $\frac{1}{4}$
Length of spout, inches	2 $\frac{1}{8}$	1 $\frac{1}{4}$
Capacity, fluid ounce	1	$\frac{1}{2}$
Zinc, gross	\$6.00	\$5.50
Brass-plated, gross		8.00
Air-tight screw-thread stoppers, gross	1.50	

Numbers	562	560	766A
Diameter of bottom, inches	1 $\frac{7}{8}$	2 $\frac{1}{8}$	1 $\frac{3}{4}$
Height of body, inches	1 $\frac{1}{4}$	1 $\frac{5}{16}$	1 $\frac{1}{4}$
Length of spout, inches	3 $\frac{7}{8}$	3 $\frac{7}{8}$	3 $\frac{7}{8}$
Capacity, fluid ounces	$\frac{1}{2}$	1	$\frac{1}{2}$
Zinc, or tin plate, gross	\$10.00	\$7.00	\$6.50
Brass-plated, gross			10.00
Air-tight screw-thread stoppers, gross	1.50	1.50	

Pocket Oilers

H. S. & Co.



Finely nickeled, with needle-point stopper.

No. 12 R Sheet steel with brass spout, 1½ inches diameter, 4¼ inches over all, dozen \$1.80

No. 13 R All brass, 1⅞ inches diameter, 4⅝ inches over all, dozen \$3.00

H. S. & Co.



No. 969. Nickel-plated body is the same as No. 968 without cap; with needle and cork attachment, and with curved spout 4 inches long, making it 6¼ inches over all.

Dozen \$3.00

H. S. & Co.



No. 968 Nickel-plated cap is fitted with needle and cork attachment, preventing stoppage of tip and leakage. 3¼ inches over all when closed

Dozen \$1.50

Perfect



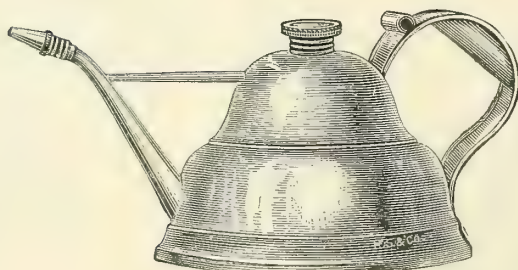
For Bicycles, Guns, Fishing Tackle, Typewriters, Sewing Machines, Roller Skates, etc.

Consists of tube, tip and cap. The tip throws only a few drops at a time thereby avoiding loss.

Dozen \$4.00

Engineers Fillers

H. S. & Co.



Zinc, Chace Pattern

Number	733	734	735	736	737	738
Capacity	1 pt.	1½ pts.	1 qt.	1 qt.	2 qts.	2 qts.
Diameter of bottom, inches	4⅞	5¼	6	6	7⅞	7⅞
Height of body, inches	4	5	5¼	5¼	6½	6½
Length of spout, inches	4¾	4¾	4¾	7½	7½	9½
Dozen	\$4.00	5.00	6.00	7.00	12.00	13.00



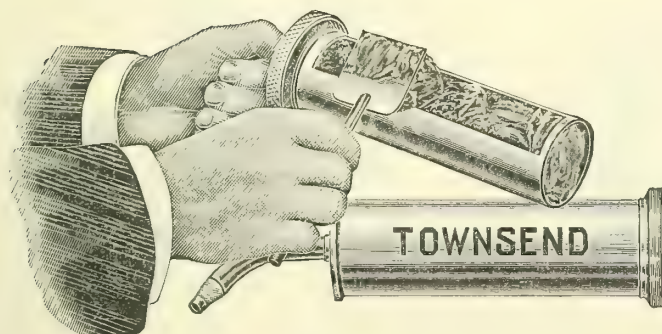
Drawn Seamless Bodies

Diameter of bottom, inches	4⅞	4¾	5¼	6
Height of body, inches	3¼	4	4¾	5¾
Length of spout, inches	4½	7	7	7
Capacity	1 pt.	1½ pts.	1 qt.	2 qts.
Copper-plated {	Number	19	19A	210
Dozen		\$14.00	17.00	20.00
Brass {	Number	180	190	200
Dozen		\$20.00	22.00	30.00

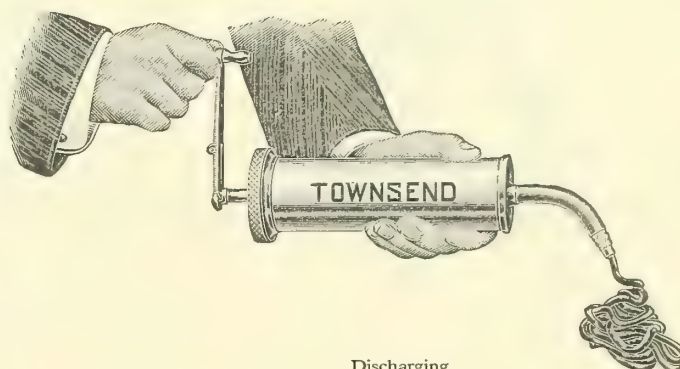
Oil and Grease Guns

(Handy Devices for Unhandy Places)

Townsend Grease



Filling



Discharging

This Gun is made of two brass tubes, each .04 inch thick, and secured with cap and funnel at opposite ends. Spout is brass tubing $\frac{5}{8}$ inch diameter, and nozzle is turned from solid brass rod; together they are 5 inches long. Nozzle has $\frac{3}{16}$ inch hole. Extra length of spout or any size nozzle at special prices. Quickly and completely filled from large opening in the side, with steel paddle supplied with each gun. Has quadruple screw with crank handle, which will discharge a pound of grease exactly where wanted in 15 seconds.

Made in four sizes: 1-pound \$5.00, 12-ounce \$4.00, 8-ounce \$3.50, 6-ounce \$3.00.

B Line

Oil and Gasoline (All Metal)

Boulevard



Handles gasoline, light or heavy oils, and light greases. Made of seamless brass tubing, polished and lacquered. The metal plungers are ground to perfect fit.

	Each
3 ounces, 4x1½ inches.	\$1.50
5 ounces, 6x1½ inches.	1.75
8 ounces, 9x1½ inches.	2.00
10 ounces, 10x1¾ inches.	2.50
18 ounces, 10x2¼ inches.	3.50

Back Bay One Hand



Made of seamless brass tubing, polished and lacquered. The metal plungers are ground to perfect fit. May be easily worked with one hand.

	Each
3 ounces, 4x1½ inches.	\$1.75
5 ounces, 4x1¾ inches.	2.00

Oil, Grease and Gasoline

Boston Combination



Will handle with equal facility gasoline, light or heavy oil, non-fluid oil or the heaviest grease.

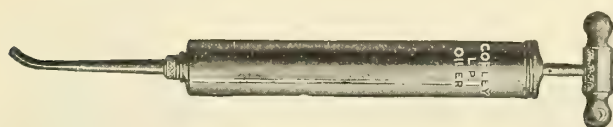
For oils or light greases it is used like an ordinary oil gun. For handling heavy greases, screw lock-nut down firmly, then turn handle forward on the heavy square screw thread, forcing grease out in ribbon, which will quickly pack gear case or transmission. Polished and lacquered brass.

	Each
3 ounces, 4x1½ inches	\$1.75
5 ounces, 6x1½ inches	2.00
8 ounces, 8x1¾ inches	2.50
10 ounces, 10x1¾ inches	3.00
18 ounces, 10x2¼ inches	4.00

Each of the above Oilers are equipped with oil tip, grease tip and plug for closing. When used with gasoline, lubricate occasionally.

Copley

(Leather Packed)
Oil



	Each
3 ounces, 5x1¼ inches	\$1.00
5 ounces, 8x1¼ inches	1.25
8 ounces, 12x1¼ inches	1.75
12 ounces, 14x1½ inches	2.50
18 ounces, 16x1¾ inches	3.25
30 ounces, 18x2¼ inches	4.00

For handling oil lubricants only (not gasoline). Recommended where a lower priced gun is desired. Piston packings are of specially selected leather and will give long service. B Line (above) Tips fit these guns. Body is seamless brass tubing, polished and lacquered, with piston rods of Bessemer steel. The larger sizes have wooden handles. 4-inch tapered tip with each gun.

Hand Lamps

Malleable Iron

H. S. & Co.

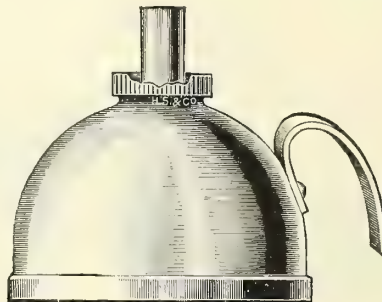
Seamless Steel



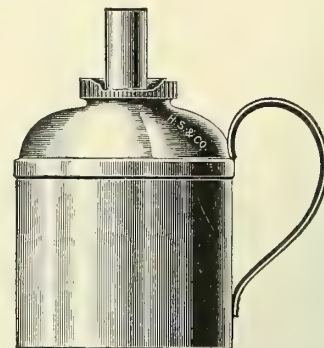
With oil tubes, Kerosene Burner

3 3/8-inch diameter, 1/2-pint capacity.

Dozen \$5.00



Nos. 20 and 21



No. 23. Copper-plated inside and out to prevent rusting

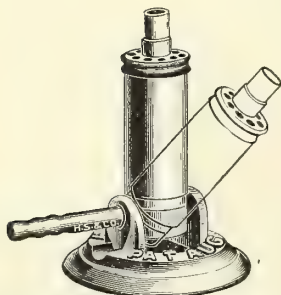
Number	Capacity	Diameter of Bottom, Inches	Height of Body, Inches	Spout Inches	Dozen
20	3/8 pt.	3 1/2	1 7/8	2 1/4	\$6.00
21	1 pt.	4 3/8	2 1/2	1 1/2	12.00
23	1 1/2 pts.	4 1/8	4 5/8	1 7/8	12.00

Ball Lamp Wicks

For above hand lamps, pound, \$.30

Bunsen Burners or Gas Heaters

H. S. & Co. Adjustable

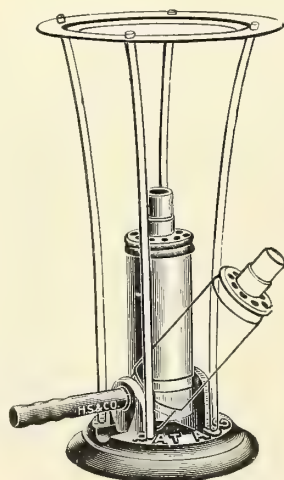


No. 1

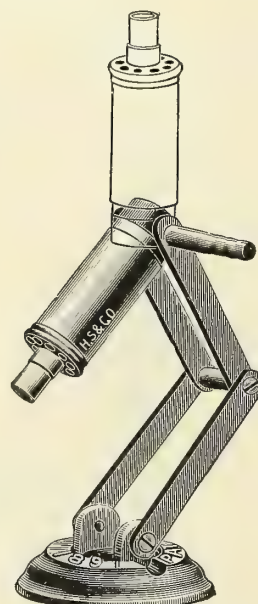
With attachments these burners are ideal for the laboratory, office and workshop; are entirely safe, cannot blow out nor can the flame recede inasmuch as the gas inlet is protected from side draughts. The burners can be inclined or tilted at hinge, which is of great importance as it prevents foreign bodies obstructing them. The air is admitted at the top of the burner and, being very near the flame, is superheated before it mixes with the gas whereby a hotter flame is obtained with less consumption of gas.

No. 1 Hinged Burner, each..... \$.75
No. 2 Hinged Burner, each..... 1.15
No. 3 Triple hinged stand, each..... 1.20

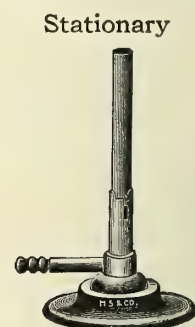
For Blow Pipe fitting above Bunsen Burners, see next page.



No. 2

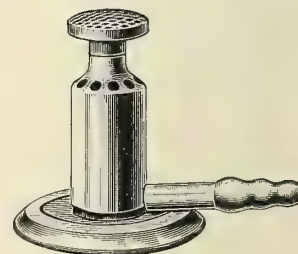


No. 3



No. 1851

Each..... \$.50



No. 4

2 1/2 inches high. Each.. \$.50

Brown & Sharpe



No. 850

For tempering drills, punches, chisels, small tools, etc.

This Heater, in many instances, takes the place of a forge in tempering machinists' small tools and is more convenient and economical in time and fuel. It is provided with a collar with holes corresponding to those in the lower part of the tube. By this arrangement the supply of air can be regulated and the intensity of the flame controlled.

Each..... \$.75

Buzzer



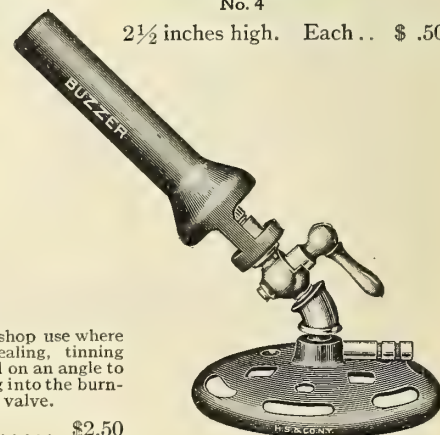
Torch or Individual Burner

High-power flame, automatic blast, atmospheric burner.
Each..... \$2.00 With Pilot Light, each.... \$ 2.50

Buzzer

Adapted for laboratory or shop use where intense heat is required: annealing, tinning baths, melting lead, etc. Placed on an angle to prevent anything from dropping into the burner which would tend to clog the valve.

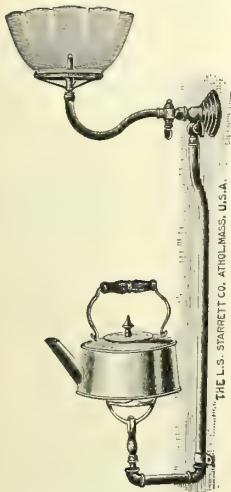
Each..... \$2.50
With Pilot Light, each..... 3.00



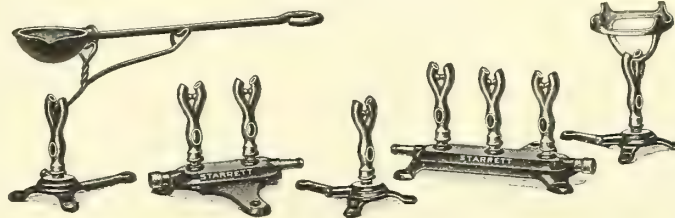
No. 12

Gas Heaters

Starrett Twin Tube



Showing Single Burner attached to ordinary gas connection.



B, E, G C B D B, F

These Double-Tube Gas Heaters are made with nickel-plated burners and japanned bases, and are most convenient and effective heaters for use in various mechanical arts.

They are so made as to cause the gas and air to become thoroughly mixed for perfect combustion while passing through deflectors in base of tubes. The tubes are shaped to cause the flames to penetrate each other at cross angles, thus producing a clean, intense heat, free from smoke and with no waste of gas.

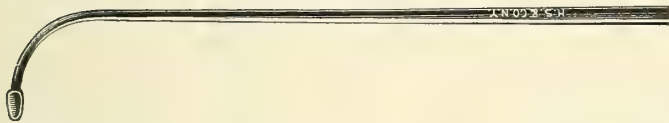
The Heater is convenient for tempering small tools, melting lead, babbitt, etc., and is suitable as a forge for light work. Plumbers, tinsmiths, electricians, jewelers, dentists, barbers and others will find it valuable. It will boil a quart of water in six minutes.

No. 100A.	Burner only, without base, each	\$.75
No. 100B.	One burner, with base, each	1.00
No. 100C.	Two burners, with base, each	2.00
No. 100D.	Three burners, with base, each	3.00
No. 100E.	Tool Holder, each	.15
No. 100F.	Dish Holder, each	.25
No. 100G.	Ladle, 14 inches long, 12-ounce, each	.25
No. 100H.	One burner with Base (B), with Tool Holder (E) and Dish Holder (F)	1.40

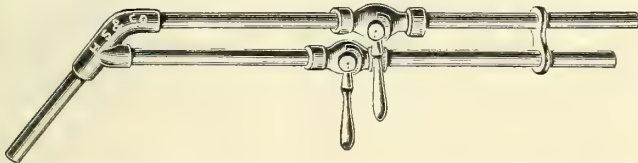
Unless otherwise ordered, No. 100H will be sent.

Blow Pipes

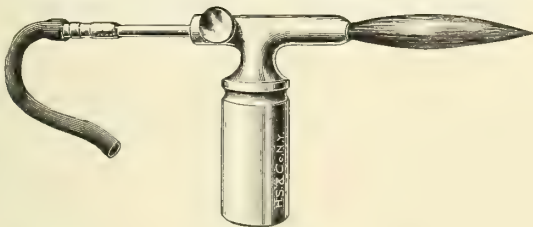
H. S. & Co.



Length, inches	7	8	9	10	11	12
Brass, dozen	\$1.10	1.30	1.40	1.50	1.70	1.90



No. 81.	Brass, with 1/8-inch bore (for Bellows see No. 102) each	\$1.50
No. 82.	Brass, with 1/4-inch bore (for Bellows see No. 102) each	2.25
No. 83.	Brass, with 5/16-inch bore (for Bellows see No. 103) each	3.00



To be used in connection with Bunsen Burners Nos. 1, 2, 3 or 4 shown on preceding page.

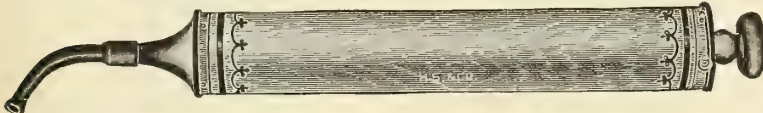
No. 5.	Each	\$.65
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Universal Dusters

H. S. & Co.



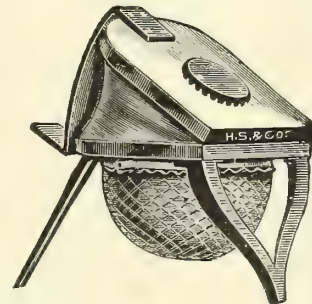
No. 122C.	16-inch cylinder, maple, ebonized trimmings, each	\$1.00
No. 122D.	18-inch cylinder, maple, ebonized trimmings, each	1.50



No. 122E.	18-inch cylinder, detachable nose, maple, ebonized trimmings, each	\$2.00
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Foot Bellows

H. S. & Co.



No. 102.	Suitable for blow-pipes Nos. 81 and 82, each	\$8.00
No. 103.	Suitable for blow-pipe No. 83, each	10.70

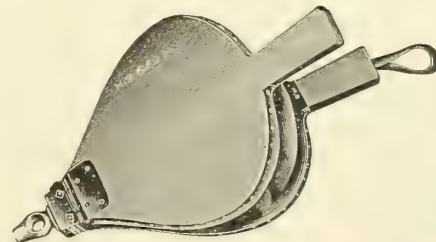
Moulders Bellows

H. S. & Co.



Standard

Made of clear first grade lumber and high grade leather.						
Width, inches	8	9	10	11	12	14
Dozen	\$14.00	15.50	17.50	20.00	22.50	30.00

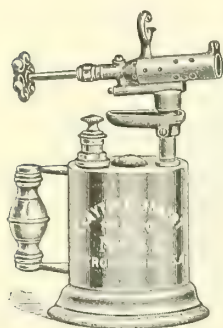


Cyclone

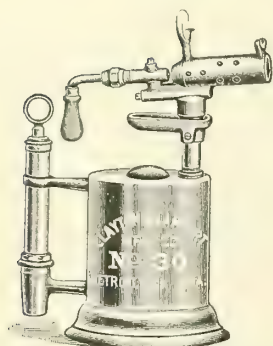
Width, inches	9	10	11	12
Dozen	\$23.00	25.50	30.50	36.50

Steel hinge, good clear boards that will not warp and covered with the best grade of selected sheepskin. The back suction through the side holes in spout insures the maximum amount of wind.

While the initial cost is a trifle more than that of the regular type, it is less expensive in the end.



No. 32

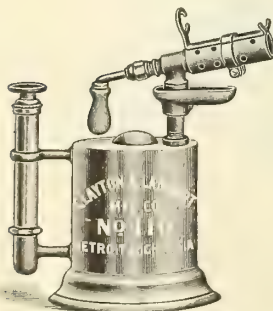


No. 30



No. 108

This soldering copper attachment is supplied with Nos. 116 and 118 torches free of charge.



No. 116

Torches

C. and L.

Gasoline

No. 32 produces a perfect fire, whether used indoors or outdoors, in any weather. Burner is made of special generator metal which holds the heat and is of the improved type, having a super-heated chamber for the gas and protecting the gas passing into the burner. The intensely hot blue flame burns steadily under extreme conditions; automatic brass pump in tank, fitted with check valve and provided with removable cork seat, insures abundant air pressure.

Capacity one quart, shipping weight 5 pounds, each.....\$5.50

No. 38 is exactly like No. 32 except pint size, shipping weight 3¾ pounds, each.....4.85

No. 31 is exactly like No. 32 except without hook and support for holding a soldering copper. The burner has a special generating chamber that super-heats the gas before it is burned and is fitted with clean-out plugs to facilitate cleaning the burner, should it become clogged from impurities in the gasoline.

Capacity one quart, shipping weight 5 pounds, each.....\$5.25

No. 37 is exactly like No. 31 except pint size, shipping weight 3¾ pounds, each.....4.60

No. 30 is sold at a reasonable price but has the invariable C. & L. quality in its material and construction. The burner, as in the higher priced torches, is made of special generator metal which holds the heat longer and greatly helps to produce a perfect blue flame. Has hook and support to hold soldering copper, a feature much appreciated in repair work.

Capacity one quart, shipping weight 4¾ pounds, each.....\$4.75

No. 29 is exactly like No. 30 except without hook and support for holding soldering copper. It is a popular-priced torch and is unsurpassed in point of utility and service by any other tool sold at the price.

Capacity one quart, shipping weight 4¾ pounds, each.....\$4.50

No. 108 is light and well balanced, and fills a long-felt want. The tank is made of heavy seamless drawn brass, reinforced, and C. & L. patented automatic brass pump, with double springs, forms the handle. Remember, a pump with double springs is far superior to a pump with a single spring. The burner is fitted with wood handle and made of bronze metal, producing a steady blue flame of intense heat. No better value was ever offered for the price. The burner is made with a hook and support for holding soldering copper.

Capacity one quart, shipping weight 5¼ pounds, each.....\$4.25

No. 107 is a duplicate of No. 108 except without hook and support on the burner. It is a first-class torch, extra good value for the money, and is sure to please.

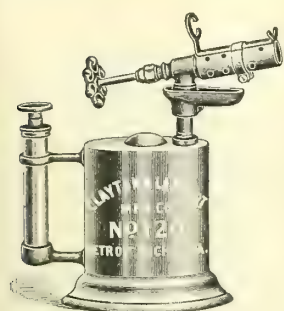
Capacity one quart, shipping weight 5¼ pounds, each.....\$4.00

No. 116 is a good torch, with special automatic pump in the handle, at a low price. The pump is made the same as in other competitive torches, with a single spring, and while not as efficient as the double spring pump, will give good service. The tank is made of seamless drawn brass and the burner of good bronze metal. A detachable hook and support for the burner tube is supplied free of charge.

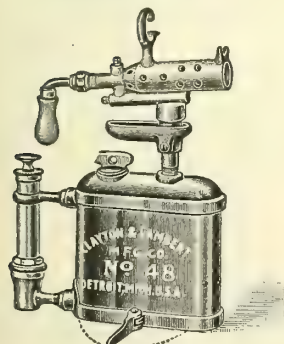
Capacity one quart, shipping weight 5 pounds, each.....\$3.30

No. 118 is similar to No. 116, except pint size. The same style of pump is used and it is supplied with detachable hook and support.

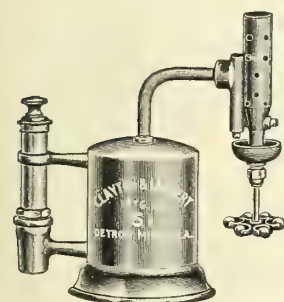
Capacity one pint, shipping weight 4¼ pounds, each.....\$3.10



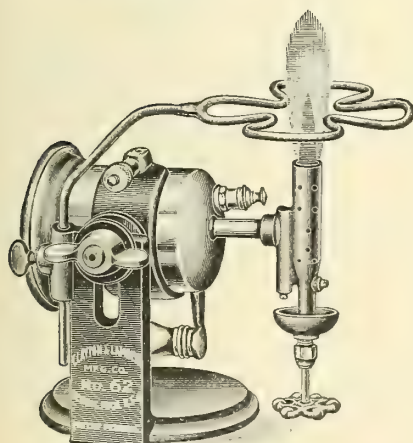
No. 120



No. 48



No. 61



No. 62



No. 96 Torch

Torches

C. & L.

Gasoline

No. 120 is a good one-quart Torch. While not as powerful as the higher grade torches, good results will be obtained for medium and ordinary work. It is fitted with single spring check valve which closes off the air automatically after each stroke of the plunger, and is supplied with detachable soldering copper attachment.

Shipping weight 5 pounds, each \$3.00

No. 122 is the same as No. 120 except pint size. Supplied with detachable hook and support, a convenience when used for repair work.

Shipping weight 4¼ pounds, each \$2.50

No. 48 is oblong, 1¾ inches thick, strongly made of heavy gauge brass and has hook and support to hold soldering copper—a great convenience to the repair man. Hinged supports at the base prevent tipping over.

Capacity one pint, shipping weight 5¼ pounds, each \$5.65

No. 47 is exactly like No. 48 except with plain burner tube.

Capacity one pint, shipping weight 4¾ pounds, each \$5.40

The Laboratory Type

No. 61 is designed to meet the requirements of laboratories, colleges, schools, etc. The rigid burner has a generating chamber which superheats the gas and is made of special generator metal, producing an intensely hot blue flame which is not affected by draft. The air pump is in the handle. Capacity one pint, shipping weight 5 pounds, each \$4.60

Adjustable Laboratory

No. 62 is especially adapted for use in schools and colleges and general laboratory work. The many adjustable features are important. The adjustable stand permits the flame to be pointed in any position desired. The torch itself is adjustable and is pint size. It is made of the very best material and produces a perfect blue flame of intense heat that can be easily regulated. It is strong and durable and is equipped with patented automatic brass pump in tank. The tripod, which is also adjustable, will hold any ordinary size pan or laboratory vessel and can be swung out of the way when not in use. Capacity one pint, shipping weight 12¾ pounds.

With stand, each \$6.70

Torch only, each 4.90

Stand only, each 3.00

Kerosene

No. 96 will be appreciated by all users of Kerosene Tools. The burner produces an intensely hot, clear blue flame, about 6 inches in length, generating sufficient heat to quickly melt a quarter-inch copper rod, and will be found excellent for brazing or for outside use under severe conditions of wind and weather. All parts are easily accessible and can be cleaned. The improved construction of the burner and the perfect combustion of the fuel practically eliminates carbon deposit. The tank is of heavy brass, fitted with automatic brass pump, by means of which ample air pressure is secured. A cleaning needle, for cleaning the burner orifice, is furnished free of charge. The No. 96 is the ideal torch for use where insurance restrictions forbid the use of gasoline.

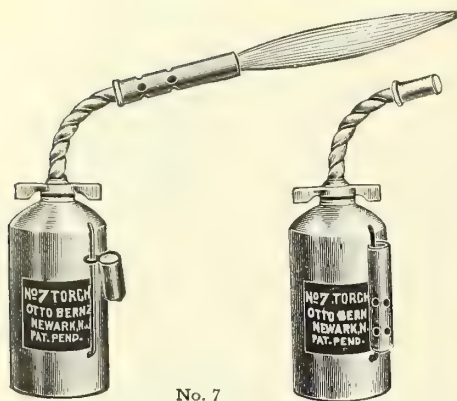
Capacity two pints, shipping weight 6½ pounds, each \$6.00

No. 95 is exactly the same in style and construction as No. 96 but smaller.

Capacity one pint, shipping weight 5¾ pounds, each \$4.50

Torches

Bernz
Gasoline



No. 7

No. 7 is an excellent Torch in all cases where a small flame is required. It may be heated and lighted with a match and is started very quickly. A cork-lined cap, a combination cleaner wire and holder and device for holding nozzle on side of body when not in use is supplied with each Torch. Will burn constantly for about three hours with one filling. Capacity $\frac{1}{4}$ pint.

Each \$2.00

Tinol
Alcohol



This Torch has a self-acting blow-pipe flame about $3\frac{1}{2}$ inches long, which gives intense heat without smoke or bad smell. It can be carried in the vest pocket, yet holds sufficient alcohol to burn for two hours. It is lighted or extinguished instantly. A screw cap prevents evaporation or leakage in any position. It is absolutely free from danger of explosion.

It is a useful and convenient tool. Its pointed flame will reach places that are inaccessible to other torches, and it enables the workman to work very rapidly.

It will be found exceedingly useful for heating glue, metals, tools, burning off paint, etc., and many other uses in the workshop beside soldering. It is also very useful for chauffeurs, travelers, campers, and others.

Each \$.50

Torches and Blow Pipes Combined

C. and L.
Alcohol



No 14

The No. 10 is a polished brass Blowpipe or Alcohol Torch. Similar to No. 14 illustrated. Evaporation of fuel is impossible, a closely fitting cap screwing down firmly over the wick, making the tank air tight. The Blowpipe is fitted to a threaded nut to adjust it for the work in hand. Size $1\frac{3}{4} \times 6$ inches.

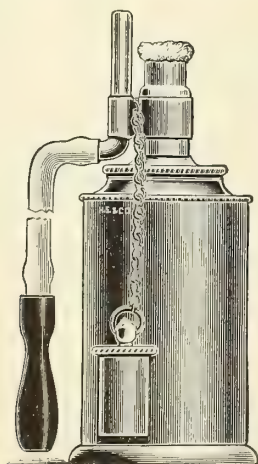
Capacity one-half pint, shipping weight 1 pound, each \$2.10

Gasoline or Alcohol

The No. 14 is similar to No. 10 but made with a chamber through which an air blast is passed charged with alcohol or gasoline, making an intense heat. Size $1\frac{3}{4} \times 6\frac{1}{2}$ inches. Polished brass.

Capacity one-half pint, shipping weight 1 pound, each \$2.50

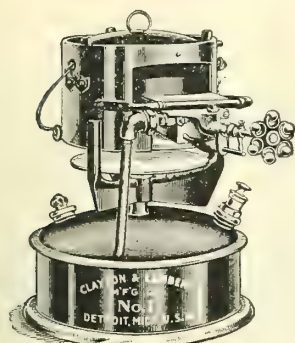
H. S. & Co.
Alcohol



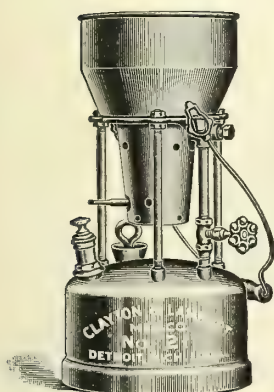
No. 3

- No. 1. Length overall $5\frac{1}{2}$ inches, diameter $1\frac{1}{2}$ inches, each . . . \$3.00
- No. 2. Length overall $6\frac{1}{4}$ inches, diameter $1\frac{1}{2}$ inches, each . . . 3.00
- No. 3. Length overall $5\frac{1}{4}$ inches, diameter 2 inches, each . . . 3.40

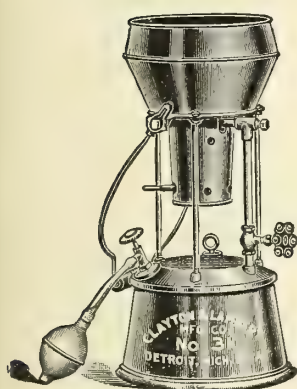
Heavily and substantially made from solid polished brass.
Provided with rubber tube and mouth-piece to blow flame on work.



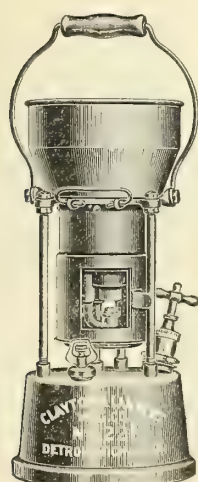
No. 1



No. 21



No. 31



No. 221

Fire Pots

C. & L.

Gasoline

No. 1 is adapted to a greater variety of uses than any other Fire Pot made. Tank is made of heavy galvanized iron, thoroughly braced, which enables it to withstand hard usage. Burner is made of special generator metal which holds the heat and works perfectly in windy or cold weather. Swiveled burner permits moving the flame up or down. No. 1 will easily heat a pair of 12-pound coppers and melt a pot of lead at the same time.

Capacity seven pints, shipping weight 14 pounds, each \$9.00

No. 71 is similar to No. 1 and is noiseless, smokeless and odorless. Has sub-flame for the generator which permits the heating flame to be turned very low when not in use. Burner has double heating surfaces and the gas is super-heated before it is burned, producing intensely hot blue flames which burn from each side to the center and are not affected by wind or cold. Heats 12-pound coppers while melting a pot of metal.

Capacity seven pints, shipping weight 15 pounds, each \$9.00

No. 5 is one size smaller than the No. 1. Top section accommodates 8-pound coppers and is removable, when the flame can be used as a torch or brazing fire. Burner produces a perfect blue flame of intense heat which is not affected by wind or cold. No. 5, like No. 1, has patented automatic brass air pump in the tank which quickly produces required pressure.

Capacity five pints, shipping weight 12 pounds, each \$6.75

No. 72 is one size smaller than No. 71. Heats 8-pound coppers while melting a pot of metal. Burner has double heating surfaces and produces intensely hot blue flames, which can be turned low, yet maximum degree of heat can be quickly obtained. Tank is made of heavy galvanized iron, thoroughly braced, to withstand hard usage. Smokeless, odorless and noiseless and very economical.

Capacity five pints, shipping weight 14½ pounds, each \$6.75

No. 21 is the latest, improved, up-to-date Coil Fire Pot, made with seamless drawn steel tank, large funnel and filler, heavy uprights, large valve, and heavy malleable top plate and one-piece steel shield. The burners and coils are made of extra heavy steel and the No. 21 produces a steady blue flame in hard wind or extreme cold. Tank is fitted with patented automatic brass pump.

Capacity one gallon, shipping weight 9¾ pounds, each \$6.00

No. 11 is exactly the same as No. 21 except that it is fitted with rubber bulb for producing air pressure.

Capacity one gallon, shipping weight 9¾ pounds, each \$5.50

No. 31 is made with heavy galvanized iron tank, with sloping sides fitted with heavy ring protecting the bottom of tank. All small fittings are made of malleable iron and are strong and durable. The burner and coil are made of the best steel. A good rubber bulb supplies the air pressure.

Capacity one gallon, shipping weight 12 pounds, each \$4.00

No. 41 is similar to the No. 31 except that an automatic brass pump with double-spring check valve is fitted to the tank to produce air pressure.

Capacity one gallon, shipping weight 12 pounds, each \$4.50

Kerosene

No. 221 Fire Pot contains many improvements that place it in the lead among Kerosene Tools. It is perfect in construction and remarkable in heat-producing qualities, using but little fuel, and will give the user extra good service. The burner is made with a powerful generator that superheats the kerosene gas before it is burned, securing perfect combustion of the fuel and the maximum degree of heat, burning with a clear blue flame free from smoke and odor. All parts are easily accessible for cleaning, and can be removed readily, if desired. The tank is made of heavy gauge steel, with bottom and fittings welded in, not soldered. All parts are made extra strong to withstand severe service. The pump is of brass, with automatic check valve, and of the very best improved construction. A cleaning needle is supplied free of charge.

Capacity 7 pints, shipping weight 16 pounds, list price, each \$10.00

Braziers

C. and L.
Gasoline



No. 105 Complete

No. 105 is designed for heavy brazing, preheating surfaces and other work requiring an intensely hot, concentrated flame, and for general repair, shop and factory use. A swivel connection enables the user to point the flame in any direction, as indicated. An adjustable brazing tripod is furnished with the complete Brazier.

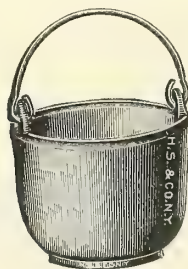
No. 105 Complete, with Tripod and Pump	\$37.50
Brazing Tripod, complete	7.50
Burners only	12.00

No. 11 is recommended for medium and light work, such as brazing bicycle tubing, tempering and annealing. The tank has a capacity of ten gallons and is constructed of heavy steel with welded seams and galvanized. Two rigid burners are placed opposite so that flames converge. Air pressure is quickly secured by a large compound brass pump.

No. 11 Complete	\$27.00
Burners only	3.75

Melting or Solder Pots

Regular
H. S. & Co.

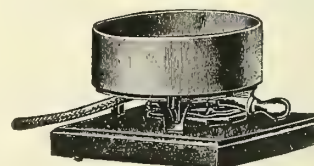


Cast Iron

Numbers	0	1	2	3	4	5	6
Outside diameter, inches	5	6	8	9	10½	12	13½
Depth, inches	3⅜	3⅞	4⅜	5	5⅞	6⅞	6½
Lead capacity, pounds	15¾	25½	44	79¾	118	182	228
Each	\$.40	.65	1.10	1.30	1.75	2.75	3.50

Sizes and capacity are approximate

Electric
Simplex



No. 1719

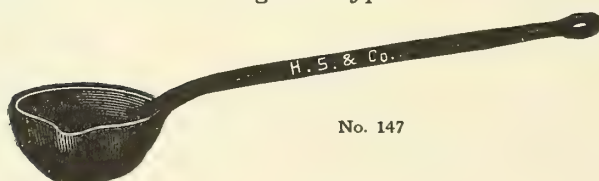
These pots are non-inductive and are equally effective with either direct or alternating current. It is important that actual operating voltage be given when ordering. Electric Pots are ready at a turn of the switch—no time is wasted in adjusting flame. They are arranged with three heats, one high, so that metal can be quickly melted, and two lower, so current can be reduced to keep proper temperature. Specially useful for tinning the ends of wire and other small articles in electric repair shops. Made of cast-iron, mounted on marbleized slate. May be connected to any lamp socket. Each pot is equipped with cord and plug.

Number	Capacity Pounds	Minimum	Watts Medium	Maximum	Each
1718	4	100	150	200	\$8.00
1719	10	200	300	440	12.00

Melting Ladles

H. S. & Co.

Regular Type



No. 147

Light

Warranted steel bowls, either single or double-lipped, with iron handle securely welded, making as solid as though one piece. Loop at end to hang up.

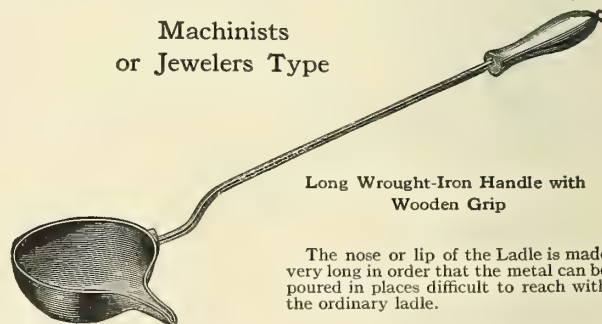
Diameter of Bowl Inches	Depth of Bowl Inches	Capacity of Each Bowl in Lead	Dozen
2½	⅞	1 lb. 2 oz.	\$2.75
3	1	1 lb. 13 oz.	3.50
3½	1⅞	2 lb. 15 oz.	4.00
4	1½	4 lb. 11 oz.	4.75
5	1⅞	7 lb. 11 oz.	6.50
6	2¼	10 lb. 7 oz.	8.00

No. 148

Extra heavy for use in foundries

Diameter of Bowl Inches	Depth of Bowl Inches	Capacity of Each Bowl in Lead	Dozen
6	2¼	12 lb. 5 oz.	\$10.00
7	2½	20 lb. 15 oz.	12.00
8	3¼	33 lb.	15.00
9	3½	42 lb. 12 oz.	20.00
10	3¾	60 lb.	24.00

Machinists
or Jewelers Type



Long Wrought-Iron Handle with
Wooden Grip

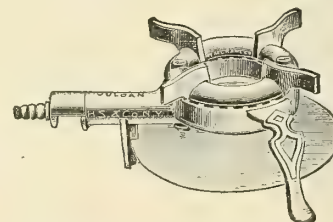
The nose or lip of the Ladle is made very long in order that the metal can be poured in places difficult to reach with the ordinary ladle.

Number	Diameter Inches	Will hold	Dozen
10	2	Will hold ¾ pound metal	\$3.00
11	2½	Will hold 1¼ pounds metal	3.60
12	3	Will hold 1¾ pounds metal	4.20

Gas Stoves

Vulcan

Single burner, 4 inches high, top 6 inches in diameter. Consumes 16 feet of gas per hour.



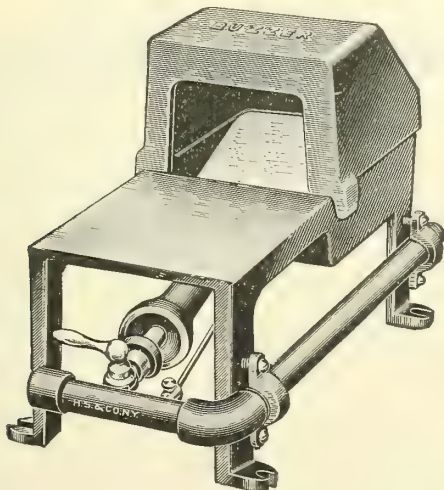
No. 5
Each.... \$1.10

Gas Soldering Furnaces

Buzzer Automatic Blast

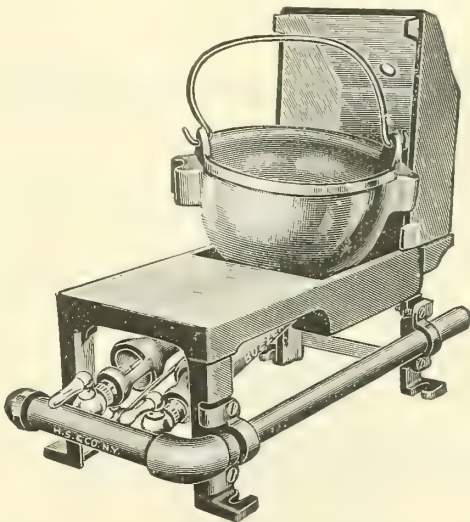
All Furnaces Equipped with Pilot Light

These Furnaces possess high efficiency, simplicity and durability. They are the hottest and quickest heating gas-soldering furnaces ever built without blowers, and with proper care will last a lifetime. They will pay for themselves many times over in the saving effected on coppers and gas. They create their own blast. Built for artificial or natural gas. If natural gas is used so specify on order.

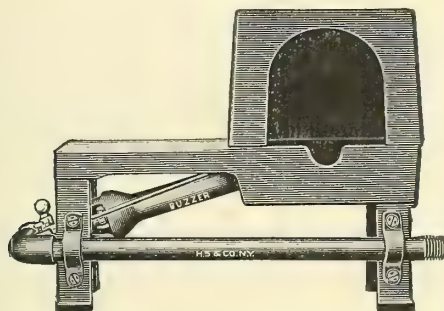


No. 1, with abrasive rest, which prevents tinning being drawn from the soldering coppers. The heating chamber is 3½ inches wide, 5¼ inches deep, and will take coppers up to 5 pounds in weight per pair. Total weight is 13 pounds.
The construction is such that the flame is drawn around and over the coppers.

Each \$6.00

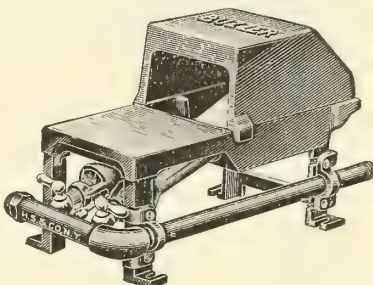


Cut showing hood reversed, for melting lead, babbitt metal, etc.



No. 3, with heating chamber, opening 3½ inches, total weight 15 pounds. This furnace is especially adapted for paint manufacturers and others using round or capping irons.
The hot blast flame impinges upon the side of the iron, passing under and around, distributing heat evenly.

Each \$8.00

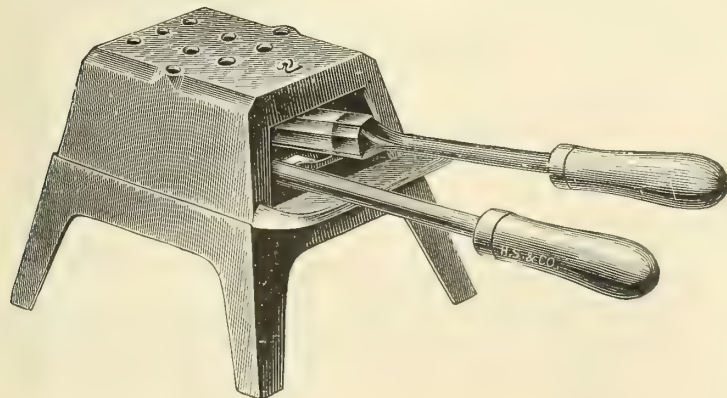


Cut showing hood in place, for use in soldering coppers

No. 2, with abrasive rest, preventing the tinning being drawn from the soldering coppers. The heating chamber is 4½ inches wide, 7 inches deep, and will take coppers up to 14 pounds in weight per pair. Same general design as No. 1 except with double burner, which makes it the hottest and quickest heating gas furnace of its size. Specially adapted for dressing tools and general shop use. Total weight is 15 pounds.

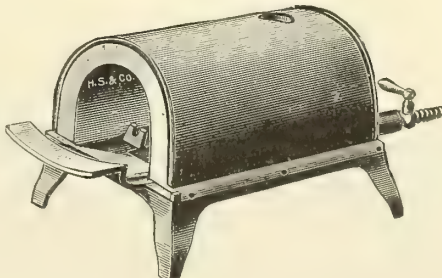
Each \$8.00

H. S. & Co.



No. 2 Will hold two No. 8 irons, each. \$2.25

Vulcan



Very substantial. Burner is protected against solder. Brick lined interior.

No.	Height Inches	Width Inches	Depth Inches	Capacity	Each
45	3	4½	7	2 No. 4 Irons	\$4.80
46	4	5	7	2 No. 8 Irons	6.60

SINCE
1848

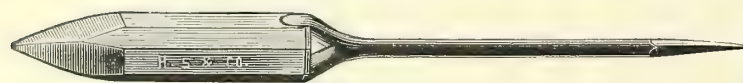
HAMMACHER SCHLEMMER & CO. NEW YORK

Soldering Coppers

Hand Forged. Guaranteed Not to Crack in Repointing

H. S. & Co.

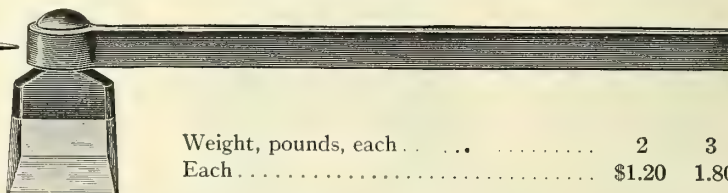
Pointed Pattern



Without Handles

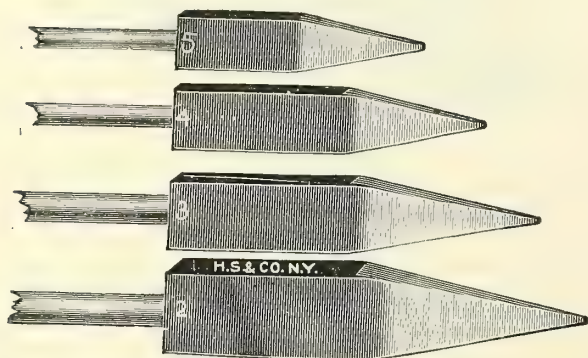
Weight, pounds, each ...	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5
Each	\$.30	.40	.55	.75	.95	1.20	1.45	1.90	2.40

Swivel Hatchet Pattern



Weight, pounds, each ...	2	3
Each	\$1.20	1.80

Jewelers



Specially adapted for electrical work and fine model making. Made of pure copper, tinned, ready for use.
Black enamel handles.

Number	1	2	3	4	5
Length over all, inches	12 1/2	11 1/2	9 1/2	8 3/4	8 3/4
Weight, ounces	5 1/2	3	1 3/4	1	7/8
Dozen	\$6.00	5.00	4.00	2.50	2.00

Plumbers Shave Hooks

H. S. & Co.

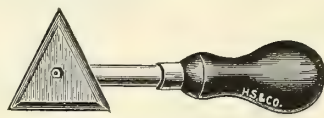
Cast Steel, Black Handles



Oval



Half-Oval



Triangular

Dozen	\$3.00
Extra blades, dozen	1.50

Book

Soft Soldering, Hard Soldering and Brazing

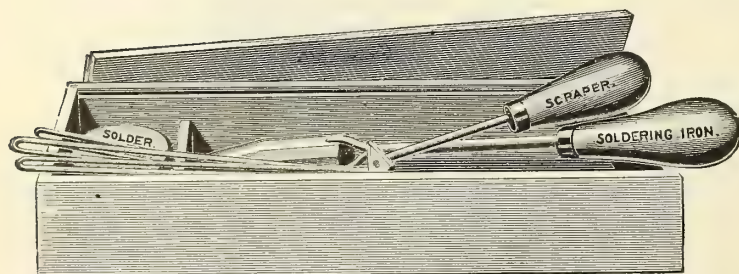
By James F. Hobart, M. E.

A comprehensive treatise in plain language on the many phases of soldering and brazing, most of which involve a wide range of manipulation. This is an "experience book," giving the results of long practice and experiment. Should serve mechanics as a practical aid to improved methods, and employers alert to the importance of efficiency and economy will find much of interest in it.

203 pages, 4 3/4 x 7 inches, each \$1.00

Soldering Outfits

H. S. & Co.



Each outfit is packed in a small wooden box and consists of a soldering copper, solder, rosin and a scraper.

No. 11 Dozen sets \$7.20

Tinol

Consisting of a tin of Tinol Paste, with Alcohol Lamp, in pasteboard box. Tinol is a metal, not a cement, and melts under heat, uniting readily with clean, hot surfaces of tin, brass, copper, iron or steel, but will not solder aluminum.

Set, as above \$1.00



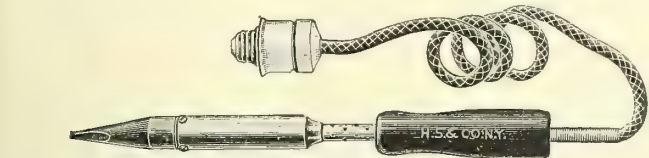
Electric Soldering Tools

These tools are satisfactory within the range of work for which they are designed. For all kinds of intermittent work they meet demands, but for continuous operations, they are not suitable in many cases. On this point we shall be glad to advise where a full statement of requirements is submitted. The field they cover is very broad and many thousands are in daily service.

Exact operating voltage should always be stated when ordering electrical equipment. All tools are plainly marked for the volts required and under no circumstances should the apparatus be used on a higher voltage current.

Automatic Control. It is important that the temperature of electric tools be kept within the desired working limit, and especially soldering irons. To this end we list Automatic Controlling Stands which we strongly recommend.

Simplex



Style of Point No. 239. Style of Heating Element and Handle, all Numbers



Style of Point No. 238



Style of Point No. 240 and Larger

Six feet of cord is supplied with each iron and a plug with each one except No. 250. Automatic Handle Switch, which operates to instantly cut off the current if the iron is laid anywhere except on the stand provided for it. This very desirable addition with suitable stand will be supplied for \$2.00 list in addition to the quoted price of irons. Plain Bench Stands for any size are furnished at 50 cents list each, but are not necessary if controller stands or automatic handle switches are selected.

Number		Watts	Each	Extra Tips Each
238	Telephone Type.....	75	\$7.00	
239	1/8-inch diameter, 11 inches long, for light wire work.....	75	6.00	
240	1-inch diameter, 12 inches long; light, for small work in general.....	100	6.25	\$.60
241	1 1/4-inch diameter, 15 inches long; medium, about equal to a 2-pound iron.....	220	6.50	.65
242	1 1/2-inch diameter, 15 1/2 inches long; about equal to a 3-pound iron.....	275	7.00	.75
243	1 3/4-inch diameter, 15 1/2 inches long; about equal to a 4-pound iron.....	350	8.00	.90
250	3-inch diameter, 16 inches long.....	450	21.00	3.00

No. 250 is a specially heavy iron, should not be connected to a lamp socket and is not equipped with a plug.

Automatic Stands



One of these stands should be used with the electric soldering iron whenever practical. It will save far more than its cost in current alone and insure the iron from danger of overheating, thus prolonging its life, but its most obvious advantage lies in keeping the iron ready for use through any length of time, and this without demanding any attention whatever from the workman.

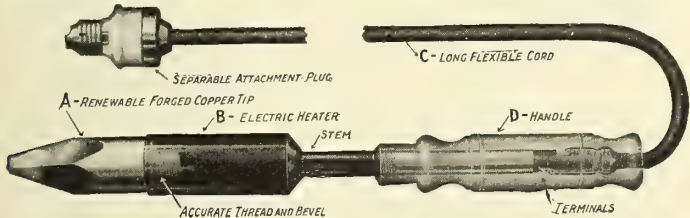
As soon as the iron is placed on top its weight causes the stand to tilt, which moves a rheostat switch that cuts off half the current. As soon as the iron is removed from the stand the full working current is restored. Thus an automatic control of the heat is insured. Stands must be ordered for each iron as listed.

Made of cast-iron and mounted on a slate base. Each stand is furnished with the necessary cord for connecting.

No. 1100	For No. 239 Iron, each.....	\$3.50
No. 1101	For No. 240 Iron, each.....	3.50
No. 1102	For No. 241 Iron, each.....	3.50
No. 1103	For No. 242 Iron, each.....	3.50
No. 1104	For No. 243 Iron, each.....	3.50

Vulcan

The heating unit in Soldering Tools is hermetically sealed so flux fumes cannot destroy it. The peculiar and patented construction forces all the heat to the tip. The tip is made of pure copper, hand-forged and tinned. The one-piece handle unscrews and slides back on the cord, exposing the very convenient terminals. Each tool has a six-foot cord and a separable Edison base plug. The tips screw in and are easily replaced when worn out.



Cut Showing Construction of Vulcan Tools



No. 100 Style of No. 200



No. 400 Style of Nos. 300, 500 and 700



No. 600



No. 800

Number	Watts Consumed	Total Length Inches	Total Weight Ounces	Diameter of Tip Inches	Each	Additional Tips
100	70	13 3/4	12	1/2	\$6.00	\$.30
200	150	14 1/8	18	7/8	8.00	.50
300	250	14 3/8	29	1 1/8	10.00	.75
400	350	14 3/4	46	1 3/8	12.00	1.00
500	120	11 3/8	16	7/8	7.00	.40
600	55	13 3/4	9	1/16	5.00	.25
700	60	10	9	1/2	5.50	.25
800	500	15 9/16	65	1 3/4	16.50	2.00

No. 100—Equal to 1 1/2 pounds per pair soldering copper. For telephone switchboards, electrical instruments, very light manufacturing, and small fuses.

No. 200—Equal to 3 pounds per pair soldering copper. For fast telephone work, light tinware, automobile repairs and general home use.

No. 300—Equal to 4 1/2 pounds per pair soldering copper. For medium tinware, general manufacturing, metal patterns, general automobile work and "tipping" in canneries.

No. 400—Equal to 6 pounds per pair soldering copper. For heavy tinware, sheet steel work, metal boat making, refrigerator work and automobile work.

No. 500—Equal to 2 pounds per pair soldering copper. About the same as the No. 200, but recommended when shortness is important.

No. 600—Equal to 1 pound per pair soldering copper. For extremely light soldering, light telephone, multiple switchboard repairs, electrical instruments and the smallest fuses.

No. 700—Equal to 1 1/2 pounds per pair soldering copper. Length 10 inches, weight 9 ounces, tip 1/2-inch diameter. For bench and open work where light short tip is wanted. Specially adapted for telephone inspector's or lineman's tool kit.

No. 800—Equal to 10 pounds per pair soldering copper. For very heavy metal patterns, copper cornice work, heavy sheet metal work, automobile radiator work and all kinds of heavy soldering.

Can Capping

Constructed with a circular tip the same diameter as the cap to be soldered. A spring plunger is provided to hold the cap down while the solder sets.

These tools may also be applied to power capping machinery, in which case the make of the machine must be specified.

When ordering send a sample of the cap to be used as the tip must be exactly the same diameter.

The standard No. 300 Soldering Tool is recommended for "tipping" in connection with the capping tool for sealing cans.

No. 402 Consuming 350 watts, each..... \$16.00

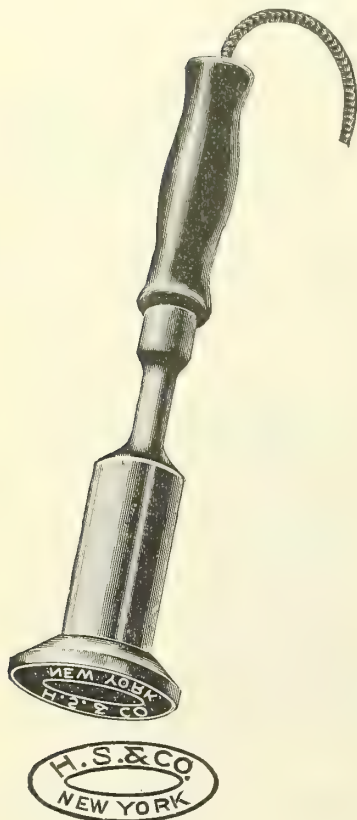
Additional Tips..... 2.65

See next page for Vulcan Holders and Temperature Controlling Devices

Branding Tools

Vulcan Electric

Brand quickly, accurately, economically, artistically and indelibly on wood, leather, rubber, fibre, pulp board, etc.



Number	Watts Consumed	Square Inches of Face-plate	Each	Add per Character or Inch of Border
200	150	Up to 1	\$10.50	\$.40
200	150	1 to 1½	11.00	.40
200	150	1½ to 2	11.50	.40
200	150	2 to 2½	12.00	.40
300	250	Up to 1½	13.00	.40
300	250	1½ to 2	13.50	.40
300	250	2 to 3	14.00	.40
300	250	3 to 4	14.50	.40
400	350	Up to 2	15.50	.40
400	350	2 to 3	16.00	.40
400	350	3 to 4	16.50	.40
400	350	4 to 5	17.00	.40
800	500	Up to 4	22.00	.40
800	500	4 to 5	23.00	.40
800	500	5 to 6	24.00	.40
800	500	6 to 7	25.00	.40
800	500	7 to 8	26.00	.40
800	500	8 to 9	27.00	.40
800	500	9 to 10	28.00	.40
800	500	10 to 11	29.00	.40
800	500	11 to 12	30.00	.40

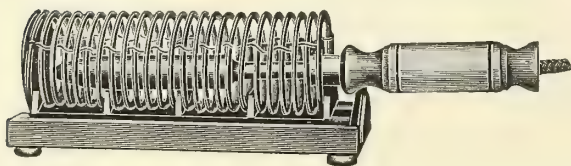
By the face-plate of the tool is meant the full size or area of the face on which the letters are to be cut, allowing $\frac{1}{16}$ inch all around the design.

For borders allow \$.40 for each inch of plain border. For fancy borders or intricate designs a greater allowance must be made.

In ordering always give the exact voltage of the circuit on which the brander is to be used. If this voltage is not constant the variations should be given. The standard voltages are as follows: 80, 90, 100, 104, 110, 115, 120, 180, 200 and 220.

The face-plates are made from a special hard bronze which is far more durable than steel or any other material that might be used.

Holders



Simple, strong, substantial cages for holding a soldering or branding tool when not in use.

It prevents a workman or other employee from touching or taking hold of a hot tool.

It keeps inflammable materials from touching a hot tool and so prevents fire and reduces the fire risk.

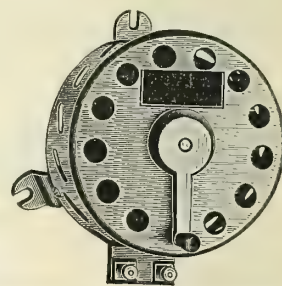
It is handsomely finished in nickel, the base being black enameled.

No. 2100. Each \$2.00

Temperature Controllers (Rheostats)

Very fast or heavy work requires a hotter tool than the standard. To secure this higher temperature the tools may be wound for a voltage lower than the voltage of the circuit, thereby increasing the current. In such cases a rheostat is recommended to be used with the tool so that the temperature may be controlled. When not in use the tool may be kept at the proper temperature, without allowing it to over-heat, by adjusting the rheostat to secure just the right amount of current.

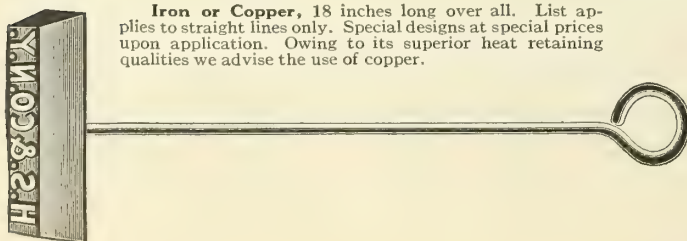
A rheostat is a good investment for any one using a tool that is kept on the circuit most of the time. It protects the tool from overheating and permits the workman to regulate the current to the right value, just as a gas flame is controlled by the gascock. Furthermore, a rheostat saves power as the current is reduced to just the value required without any being lost in overheating and excess radiation.



Style	For Tool Number	Each
A	100-600 and 700	\$3.60
B	200	4.20
C	300 and 400	4.80
D	800	5.50

See preceding page for Vulcan Electric Soldering Tools, to which the above attachment may also be applied.

H. S. & Co.



Iron or Copper, 18 inches long over all. List applies to straight lines only. Special designs at special prices upon application. Owing to its superior heat retaining qualities we advise the use of copper.

$\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ -inch, 5 letters or less, each	\$1.50
$\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ -inch, more than 5 letters, per letter	.30
$\frac{3}{4}$ -inch, 3 letters or less, each	1.50
$\frac{3}{4}$ -inch, more than 3 letters, per letter	.45
1-inch, 3 letters or less, each	2.25
1-inch, more than 3 letters, per letter	.60
Figures, 1-inch and under, per set of 9	9.00
Figures, 1½-inch, per set of 9	13.50

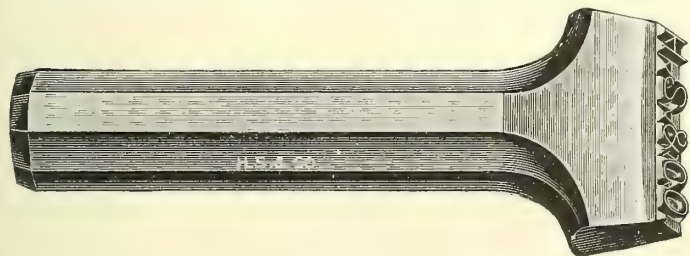
To order only. Prices on larger sizes will be quoted upon application.

Hand-Cut Steel Stamps

H. S. & Co.

Extra Fine Quality

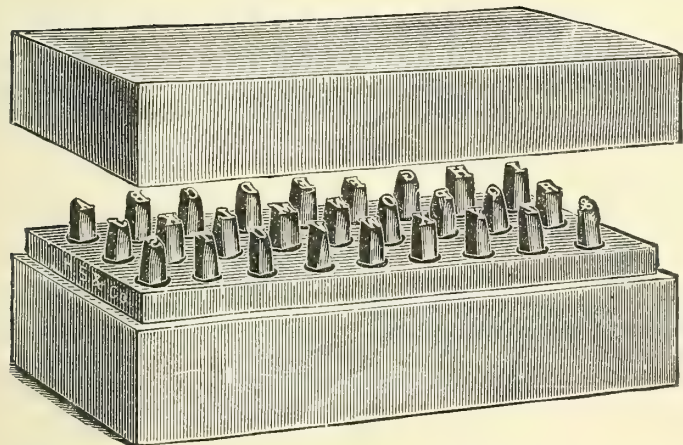
These Stamps are warranted in every way. They are hand-cut from Jessop Tool Steel and may be used for stamping on all kinds of metal, as well as on leather, wood, etc. When ordering, state on what material they will be used.



Size of letter or figure, inch...	$\frac{1}{32}$	$\frac{1}{20}$	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$
For each letter or figure.... \$	.16	.15	.15	.15	.15	.16	.20	.25	.30
Size of letter or figure, inch...	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
For each letter or figure... \$	.35	.45	.50	.60	.70	1.00	1.25	1.50	1.75

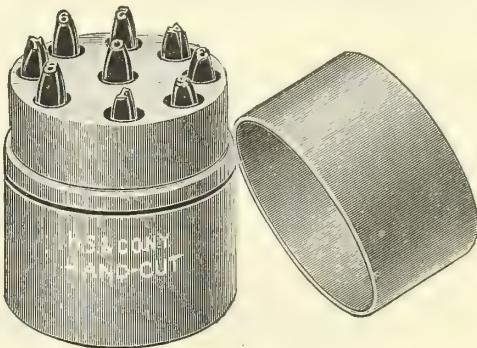
Stamps with letters or figures over $\frac{1}{4}$ inch are subject to additional charge of \$.72 per pound for forging. Prices for larger sizes than listed will be quoted upon application.

In Sets



Letters, in Sets of 27

Size of letters, inch	$\frac{1}{32}$	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$
Set of 27	\$4.50	3.00	3.00	3.00	3.60	4.20	5.10	6.60
Size of letters, inch	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	
Set of 27	\$9.00	11.25	15.00	24.00	30.00	45.00	48.00	



Figures, in Sets of 9

(Reverse 6 to make 9)

Size of figures, inch	$\frac{1}{32}$	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$
Set	\$1.50	1.00	1.00	1.00	1.20	1.40	1.70	2.20
Size of figures, inch	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	
Set	\$3.00	3.75	5.00	8.00	10.00	15.00	16.00	

Marking Outfit

H. S. & Co.



This outfit is put up to meet the demand for something by which tools of all shapes and sizes, either hard or soft, can be neatly marked without injury to the tool. Every year an immense number of tools and steel stamps are spoiled or injured by parties trying to stamp their names on stock as hard or harder than the stamps themselves.

With this outfit any person who can write or print well can turn out artistic work if he will carefully follow the directions.

The outfit consists of a jointed steel scribe, one bottle of varnish, one bottle of etching fluid, one bottle of cleaning fluid, a camel's hair brush and directions for using, all in a neat wooden box.

Set, in neat box..... \$1.00

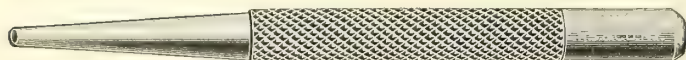
Nail Sets

H. S. & Co.

Round Knurled

Extra Fine Quality

Square Head Knurled



No. 10 Polished and Blued

$\frac{5}{16}$ -inch diameter, 4 inches long, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$ -inch, cupped points.
Dozen \$1.50

O. K.

Good quality at low price.

Round Knurled

Polished and Blued

$\frac{5}{16}$ -inch diameter, 4 inches long, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$ -inch cupped points.
Dozen \$1.20



No. 50 Polished and Blued

Will not roll away. Is hardened on both ends and will not curl up by hammer blows. $\frac{5}{16}$ -inch diameter, 4 inches long, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$ -inch cupped points.

Dozen \$1.80

Buck Bros.

Square with Round Points

Extra Fine Quality

Square with Square Points



No. 77 Polished

$\frac{5}{16}$ -inch diameter, 4 inches long, $\frac{1}{16}$ or $\frac{1}{8}$ -inch flat points.
Dozen \$1.80



No. 76 Polished

$\frac{5}{16}$ -inch diameter, 4 inches long, $\frac{1}{16}$ or $\frac{1}{8}$ -inch flat points.
Dozen \$1.80

Prick Punches

H. S. & Co.

Extra Fine Quality

Round Knurled

Square Head Knurled



No. 11 Polished and Blued

Diameter $\frac{5}{16}$ inch, 4 inches long.
Dozen \$1.50



No. 22 Polished and Blued, will not roll

Diameter $\frac{5}{16}$ inch, 4 inches long.
Dozen \$1.80

Buck Bros.



No. 88 Polished Steel

Sizes, inch	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	Assorted
Dozen	\$1.75	1.90	2.20	1.95

Centre Punches

H. S. & Co.

Extra Fine Quality

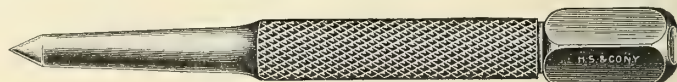
Round Knurled

Square Head Knurled



No. 10 Polished and Blued

Length, inches	$\frac{4}{16}$	$\frac{4}{8}$
Diameter, inch	$\frac{5}{16}$	$\frac{3}{8}$
Dozen	\$1.70	2.30



No. 20 Polished and Blued

Length, inches	$\frac{4}{16}$	$\frac{4}{8}$
Diameter, inch	$\frac{5}{16}$	$\frac{3}{8}$
Dozen	\$2.00	2.70

Machinist Octagon

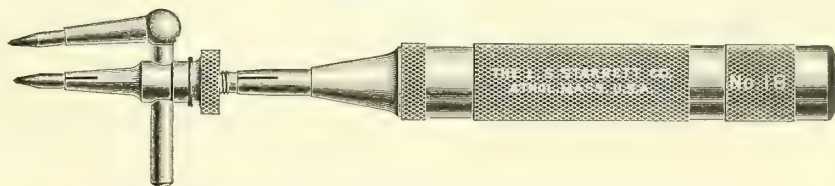


No. 020

Size, inch	$\frac{3}{8}$	$\frac{1}{2}$
Black, dozen	\$2.00	2.40

Automatic Center Punches

Starrett
Adjustable Stroke



Showing Spacing Attachment Applied to Starrett Center Punch No. 18

The ordinary hammer with center punches is not sufficiently accurate when laying out fine work. It requires the use of both hands and the accuracy of the blow depends upon the skill of the mechanic.

This Center Punch contains a mechanism which automatically strikes a blow of any required force when the punch is in the exact position desired by the operator. It is provided with a knurled adjustable screw-cap which, working in connection with a spring, regulates the stroke. For work requiring a heavy mark, turn cap down; for work requiring a light mark, turn it up. No hammer is needed to use it. The punch being placed in an upright position over the working line, a downward pressure releases the striking block and makes the impression without danger of slipping, as is liable when a hammer is used. When adjusted for either light or heavy stroke, all indentations are of a uniform size for the starting of the drill, etc., and accurate and quicker work can be done. The working parts are hardened, durable and accessible for such repairs as may ever be needed. The adjustable cap fits the hand, with no stroke-adjusting screw through and above it to bother. The point can be removed for regrinding and easily replaced. The AA size is $3\frac{3}{4}$ inches long when adjusted for medium stroke, $\frac{3}{8}$ -inch diameter, and weighs one ounce. The A size is 5 inches long when adjusted for a medium stroke, $\frac{1}{2}$ -inch in diameter, and weighs 3 ounces. The B size is 6 inches long when adjusted for a medium stroke, $\frac{5}{8}$ -inch in diameter, and weighs 4 ounces. It differs from the other sizes in being larger and capable of striking a much heavier blow.

No. 18AA Each.....	\$1.50	No. 18B Each.....	\$2.50
No. 18A Each.....	2.00	Extra points, each.....	.15

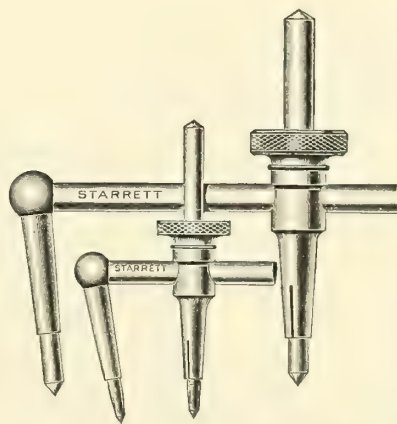
Unless otherwise ordered size A will be sent

Spacing Attachment for Above

For use with Automatic Punches No.18. This attachment is entirely self-contained and can be instantly applied in place of the regular points. It will be found an indispensable tool for the rapid and accurate spacing of any center distances within its range. The locating point is on the principle of a spring plunger, held in its lowest position by a light spiral spring. It is frictionally held and easily replaced.

The attachment is made in two sizes: Size A has a capacity from $\frac{1}{16}$ inch to $\frac{3}{4}$ inch and fits either center punch No. 18-AA or 18-A. Size B has a capacity from $\frac{1}{8}$ inch to $1\frac{3}{4}$ inches and fits Center Punch No. 18-B.

No. 18 S Size A, each.....	\$1.25
No. 18 S Size B, each.....	1.25
Extra points, each.....	.15



Spacing Center Punch

Starrett



No. 118

This Combination Prick or Center Punch and Spacing Tool is just the thing for laying off work quickly and accurately for drilling, cutting out dies, etc. The prick punch is solid — made from best tool steel, properly tempered. The guide point is set in a socket with a spiral spring to press it down. When the punch is struck the guide presses back into its socket, permitting the punch to be held straight over its work and insuring accurate results. The screw with check nuts sets the spacer right for small or large drill, and has a variation from $\frac{5}{64}$ inch to $\frac{3}{8}$ inch.

Each.....	\$.75
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Brown & Sharpe

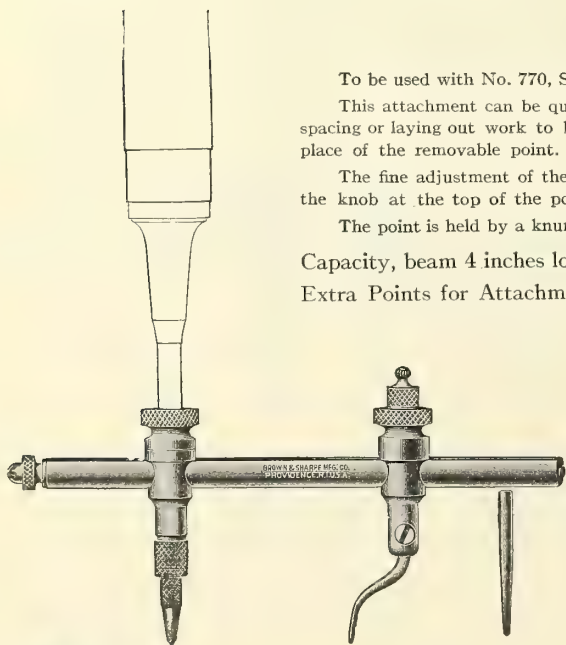
Adjustable

Extra Points, each15
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No. 775

Extra Points for Attachment, each,.....	.15
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Extra Fine Quality—Polished

No. 2	Centers shafts up to 2-inch diameter, dozen.....	18.00
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Pin Punches

H. S. & Co.

(Extra Fine Quality)

Octagon, Light

Round, Knurled



No. 46 A Blued Ends

Diameter 1/4 inch, point 1/16 inch, 4 3/8 inches overall,dozen..... \$5.25

No. 12 Blued

Length 4 1/4 inches, diameter 5/16 inch; 3/32, 1/8, 5/32-inch points, dozen..... \$1.50

Octagon, Heavy
Blued Ends



Size.....	1	2	3	4	5	6
Diameter of point, inch.....	5/16	1/4	7/32	3/16	5/32	1/8
Diameter of stock, inch.....	5/8	1/2	1/2	7/16	7/16	7/16
Length overall, inches.....	6 1/2	6 1/4	5 7/8	5 7/8	5 1/2	5 3/8
Dozen.....	\$3.50	2.50	2.50	2.20	2.20	2.20

In sets, consisting of one each of the above sizes, encased in neat leatherette pouch, per set..... \$.73

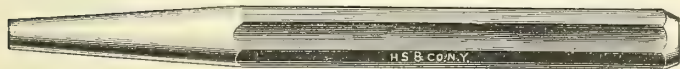
Metal Punches

H. S. & Co.

(Extra Fine Quality)

Solid Octagon

Hollow Round



No. 35 Blued Ends



No. 25 Blued Head

Size.....	0	1	2	3	4	5	6	7	8	Inches.....	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Diameter of steel, inch.....	1/2	7/16	7/16	3/8	3/8	3/8	5/16	5/16	5/16	Dozen.....	\$6.00	6.00	7.50	9.00	10.50	12.00	15.00
Length, inches.....	5	5	4 3/4	4 3/4	4 1/2	4 1/2	4 1/4	4	4	Inches.....	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Dozen.....	\$1.80	1.80	1.60	1.60	1.60	1.50	1.40	1.40	1.40	Dozen.....	\$18.00	21.00	30.00	33.75	37.50	41.25	45.00

Arch Punches

(For Leather, Cardboard, Paper, etc.)

H. S. & Co.

(Extra Fine Quality)

Solid Steel, Easy Cutting

No. 5 Blued

Sizes 3 inches and under are forged from the solid bar and are not welded

Inches.....	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	1	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$1\frac{5}{16}$	$1\frac{3}{8}$
Dozen.....	\$9.50	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	16.00	18.00	20.00	22.00	24.00	26.00
Inches.....	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4	
Dozen.....	\$29.00	32.00	35.40	38.40	42.00	46.80	51.60	57.60	64.80	73.20	90.00	108.00	130.00	150.00	170.00	190.00	

Round Punches

(For Leather, Cardboard, Paper, etc.)

H. S. & Co.

(Extra Fine Quality)



No. 10 Carbon Finish



No. 20 Full Polished

Size.....	0	1	2	3	4	5	6	7	Size.....	1	2	3	4	5	6	7	8
Inch.....	3/32	7/64	1/8	9/64	5/32	11/64	3/16	13/64	Drill gauge, No.	45	42	33	29	23	18	9	1
Dozen.....	\$3.25	3.25	3.25	3.25	3.25	3.25	3.25	4.25	Dozen.....	\$3.00	3.00	3.00	3.00	3.00	3.00	3.50	3.50
Size.....	8	9	10	11	12	13	14	15	Size.....	9	10	11	12	13	14	15	16
Inch.....	7/32	15/64	1/4	17/64	9/32	5/16	11/32	3/8	Inch.....	17/64	19/64	23/64	3/8	27/64	15/32	1/2	3/2
Dozen.....	\$4.25	4.25	5.25	5.25	5.25	6.25	8.25	8.25	Dozen.....	\$3.50	3.50	4.00	4.00	5.50	5.50	6.50	6.50

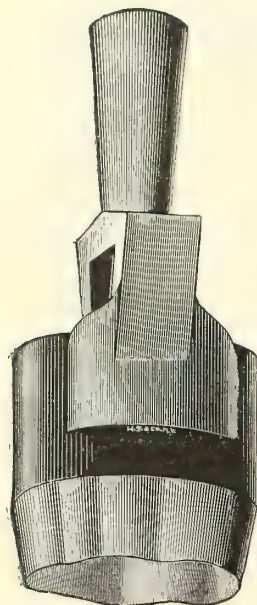
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Veneer Punches

H. S. & Co.

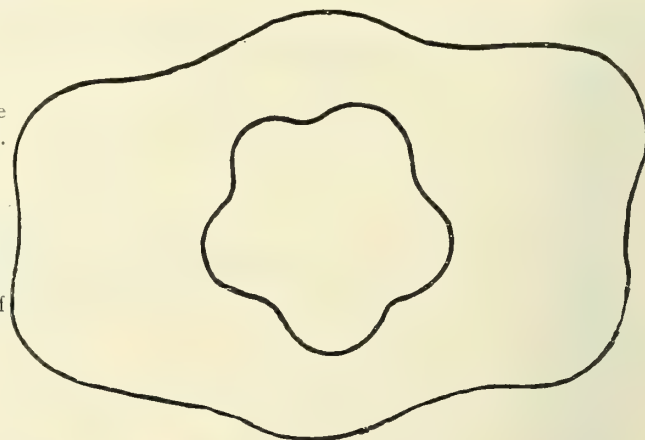
Extra Fine Quality



The smaller represents the general shape of the round, and the larger cut the general shape of the oval.

Size.....	1	2	3	4
Approximate diameter, inches.....	1¼-1½	1½-1⅞	2-2¼	2½-3
No. 42C Round, each	\$5.00	5.00	5.40	5.40
No. 42D Oval, each	5.00	5.00	5.40	5.40

We can make to order special sizes and shapes of Veneer Punches, from either a sketch or sample.

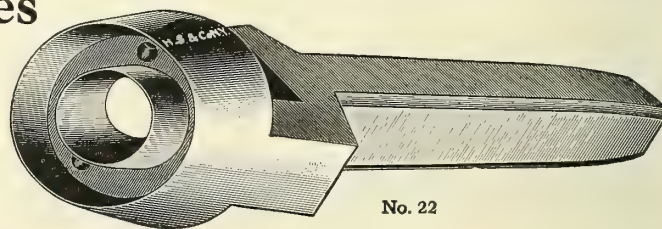


Washer Punches

H. S. & Co.

Extra Fine Quality

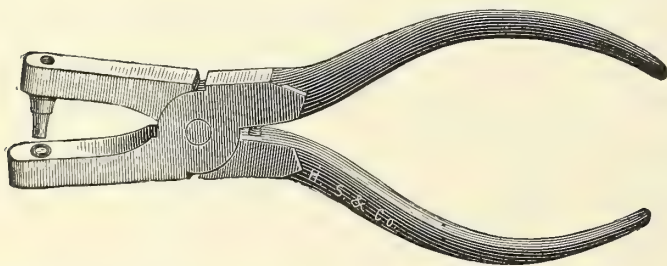
Cuts washers complete with one blow. Any size to order only. Prices only upon receipt of specifications.



No. 22

Spring Punches

For Leather, Cardboard, Paper, Etc.

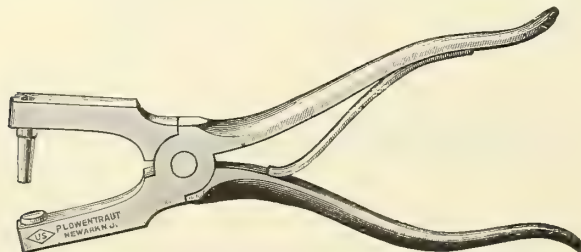


Size, inches.....	6	8
No. 109 Japanned handle, dozen.....	\$7.00	8.00

Extra Tubes for 109



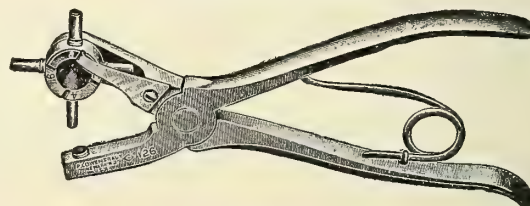
Stubs Steel Wire Gauge, Nos.....	10	15	20	25	30	35	40
The 6-inch can be furnished with tubes Nos. 15 to 40.							
The 8-inch can be furnished with tubes Nos. 10 to 35.							
Each.....							\$.30



Polished

With single joint, polished, drive tubes, 8 inches overall.	
No. 25½A Assorted Tubes Nos. 3 to 9, dozen.....	\$6.00
No. 25½A Tubes Nos. 1 and 2, dozen.....	8.00
No. 25½A Tubes Nos. 0, 00, 000, dozen.....	11.00

Revolving Type



Polished

Drop-forged steel with single joint, polished, drive tubes; 8½ inches overall.

Improved style of spring gives quicker action and affords heavier service.

No. 126A Four tubes, Nos. 4, 6, 8, 10, dozen.....	\$10.00
No. 126A Six tubes, Nos. 4, 6, 7, 8, 9, 10, dozen.....	12.50

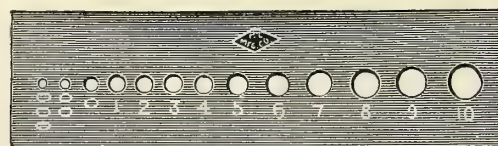


Plate showing sizes of tubes for No. 25½A Spring and No. 126A Revolving Punches.

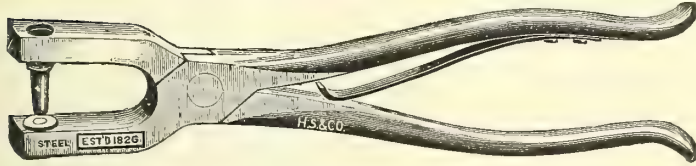
Extra Tubes

Extra Tubes Nos. 3 to 9. Drive, assorted, dozen.....	\$2.00
Extra Tubes Nos. 1 and 2. Drive assorted, dozen.....	3.00
Extra Tubes, 0, 00 and 000. Drive, assorted, dozen.....	5.00

Spring Punches

H. S. & Co.

All Steel. Extra fine quality with Steel Screw Tubes



No. 153 Polished, 8 inches overall

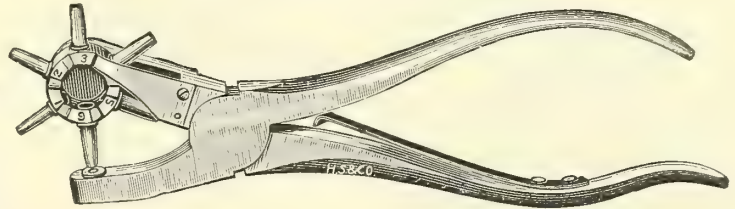
With Tubes Nos. 1 to 10, dozen	\$11.00
With Tubes Nos. 0 and 00, dozen	12.00
Extra screw tubes, Nos. 1 to 10, dozen	2.50
Extra screw tubes, Nos. 0 and 00, dozen	3.50

00 0 1 2 3 4

5 6 7 8 9 10

Size of Tubes for Punches No. 153, 155

Revolving with Side Spring



No. 155 Polished, 8 1/4 inches overall

With 4 Tubes, Nos. 3 to 6, dozen	\$20.00
With 6 Tubes, Nos. 1 to 6, dozen	24.00

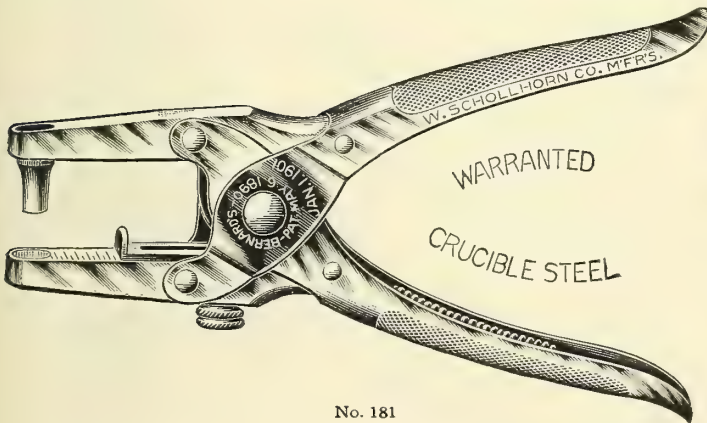
Pony Type. Nickel-Plated

Same style as above, only 5 1/2 inches overall. With four tubes, in leather case.

Dozen	\$20.00
Extra Screw Tubes for above, dozen	2.50

Bernard

With Screw Tubes and Adjustable Gauge. Warranted Crucible Steel



No. 181

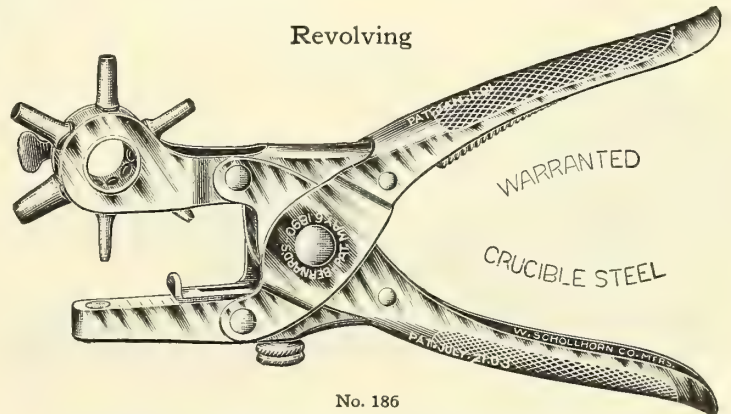
Is heavily and strongly made, to take large tubes only; will not take smaller than No. 8, 3/32 inch. 8 inches overall. With three tubes, Nos. 8 (7/32), 9 (8/32) and 10 (9/32).

Dozen	\$14.00
-------	---------

Extra Parts:

Tubes dozen, pairs	2.50
Gauges, dozen pairs	.50
Brass Anvils, dozen pairs	.60
Springs, dozen pairs	.75
Thumb Screws, dozen pairs	1.25
Handles, dozen pairs	9.00

Revolving



No. 186

Open throat, parallel jaws, full nickel-plated; 8 inches overall. With 6 screw tubes, Nos. 1 to 6.

Dozen	\$24.00
-------	---------

Extra Parts:

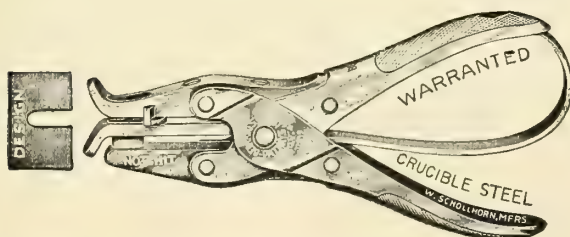
Tubes, dozen pairs	2.00
Gauges, dozen pairs	.50
Brass Anvils, dozen pairs	.60
Springs, dozen pairs	.75
Thumb Screws, dozen pairs	1.25
Handles, dozen pairs	9.00

SIZES OF TUBES FOR PUNCHES



Notchit Punches

Bernard



No. 151

Parallel jaws, full nickel-plated, 5 inches overall. Made especially for cutting out notchits in paper patterns. Used by cloak makers, etc.

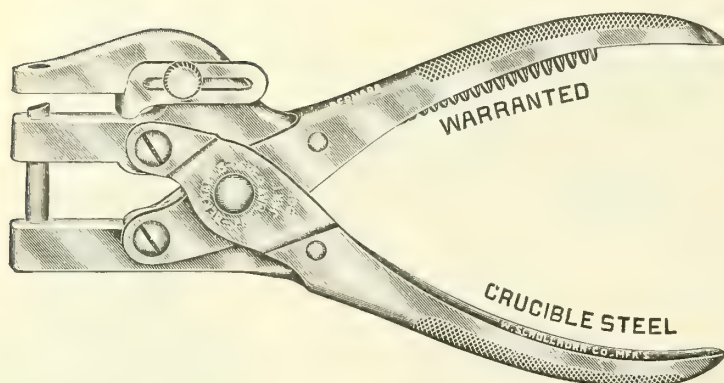
Dozen	\$20.25
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Extra Parts:

Jaws, dozen pairs	3.00
Strippers, dozen pairs	1.75
Springs, dozen pairs	1.25
Jaw Screws, dozen pairs	.40
Gauges, dozen pairs	.50
Handles, dozen pairs	4.00

Paper Punches

Hand



No. 140 Bernard

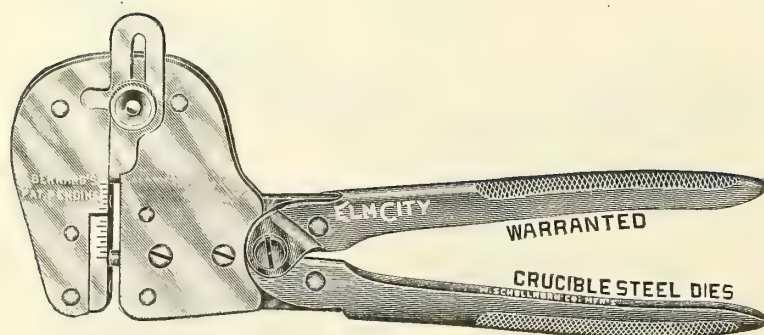
6½ inches overall

Especially made for loose-leaf sheets, etc. Made to punch ⅜ and ¼-inch round holes and will punch a hole 1 inch from edge of paper to center of hole; the jaws open ⅜ inch. Has drop-forged parallel jaws, fully nickel-plated. Stamped steel handles with spring, also a solid die with a diagonal cutting edge. Fully warranted.

Dozen \$20.00

Metal Punches

Hand



No. 17 Elm City

9 inches overall

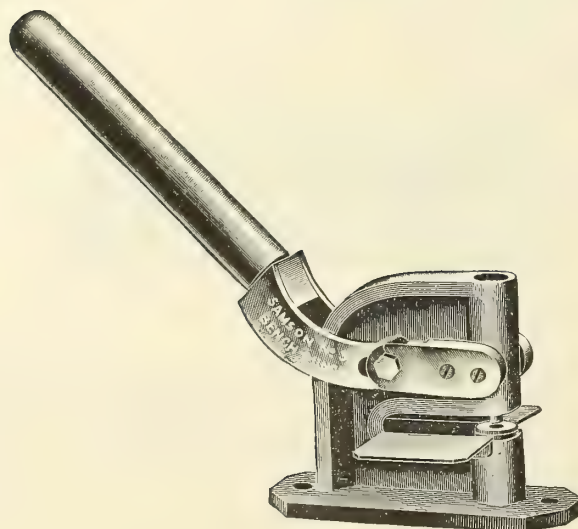
This Punch is made of stamped steel and has polished jaws or head with black handles. The dies work parallel and there is a gauge to set the holes. This punch has one-eighth inch opening between the jaws and will punch a hole 1 inch from edge of metal to center of hole. If the metal is not harder than regular cold-rolled stock, the ¼-inch dies will punch No. 14 gauge metal, the ⅜-inch dies will punch No. 13 gauge metal, and the ½-inch dies No. 10 gauge metal. This punch will be made with ⅛, ⅜, ½, ⅝, ¾, 1, 1½, 2, 2½ or 3 inch dies. Packed one tool to a box. Warranted.

Dozen \$30.00

Extra dies (one male and one female die to a set), dozen sets . . . 7.00
⅜-inch dies can be furnished, but are not recommended and not guaranteed.

Bench

No. 3



Made from cast steel, weight 16 pounds. Screws case hardened, all parts interchangeable. Steel tubing adjustable handle, japanned and polished. Packed in wooden boxes.

For trade requiring a punch which has a broader range and more power than the hand types.

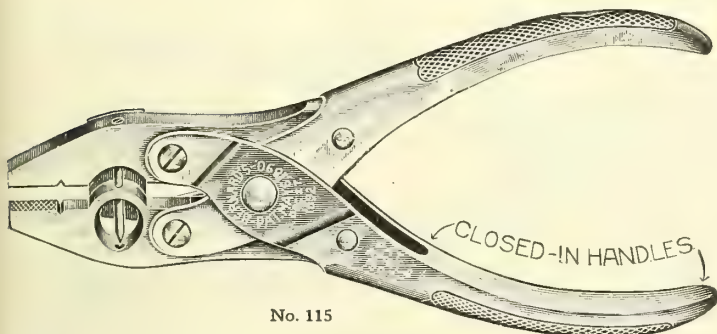
Is light in weight; powerfully and substantially made; compound leverage. Will take punches and dies from ⅜ to ½ inch, in sixteenths. Will punch a ⅜-inch hole through soft steel ⅝-inch in thickness.

In other metals and softer materials it will penetrate through any reasonable thickness to the size of its capacity, being ⅝-inch.

Price, each \$16.00
Extra dies, 5 in box 5.00

Combination Belt Punches, Cutters and Pliers

Bernard



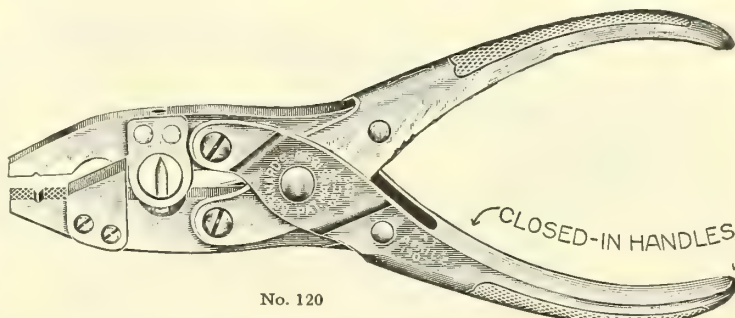
No. 115

Parallel jaws, closed-in handles, full nickel-plated. A combination tool for cutting and piercing round leather belting in one operation. The 5-inch used on ¼-inch belt, and the 6-inch on ⅜-inch belting.

Size, inches.....	5	6
Dozen.....	\$12.00	14.00

Extra Parts for Nos. 115 and 120

Size, inches.....	5	6
Jaws, dozen pairs.....	\$3.25	\$3.75
Knives, dozen pairs.....	1.50	1.75
Bolts, dozen pairs.....	.45	.55



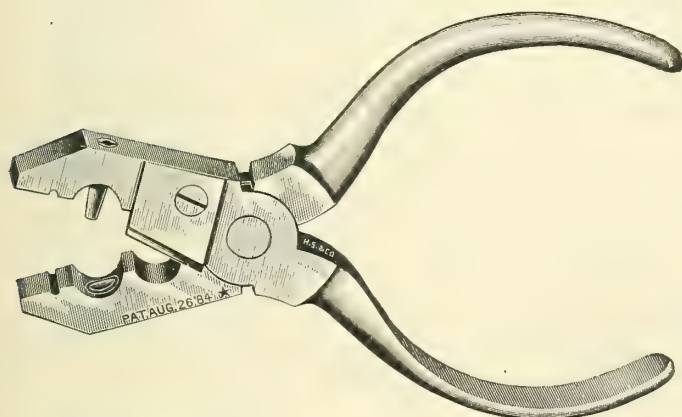
No. 120

Parallel jaws, closed-in handles, full nickel-plated. Made for the same purpose as the No. 115 tool, excepting that it cuts and pierces the belt in two separate operations. The 5-inch made for ¼-inch, and the 6-inch for ⅜-inch belting.

Size, inches.....	5	6
Dozen.....	\$12.00	14.00

Size, Inches.....	5	6
Knife Screws, dozen pairs.....	.25	.30
Piercing Pins, dozen pairs.....	.50	.60
Handles, dozen pairs.....	4.00	5.00

Entrekin



No. 1 Nickel-plated, 4½ inches. Will cut and pierce round leather belting up to ¼-inch diameter, each.....	\$1.70
No. 2 Each.....	2.30
Extra Tubes, dozen.....	3.00
Extra Cutters, dozen.....	3.00

Belt Groover

H. S. & Co.



For grooving belt to sink lacing.

No. 135 6 inches long; sizes, inch, ⅛ and ⅜. Dozen.....	\$6.00
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Belt Marker

H. S. & Co.



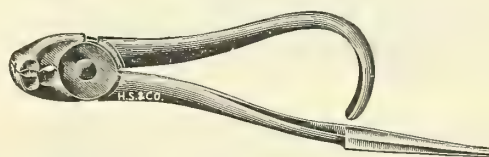
No. 214

For gauging distances of holes. Made of brass with rosewood handle.

Dozen.....	\$3.00
------------	--------

Belt Awl and Pliers

Blake

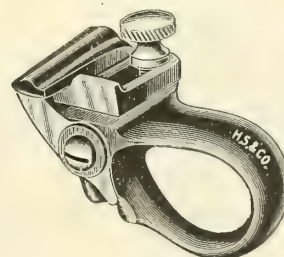


The awl at one end is to spread the slit, and the pliers at the other end are convenient for inserting the stud.

Each.....	\$.40
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Belt Lace Leather Cutters

H. S. & Co.

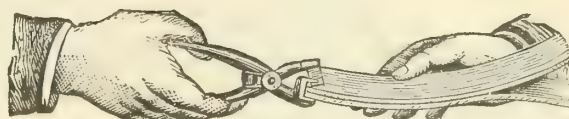


No. 17 Adjustable

Cuts from ⅜ to ¾ inch, each.....	\$.70
----------------------------------	--------

Belt Stud Cutters

Blake



Small (for leather belts), Japanned, 8 inches overall, each.....	\$.90
--	--------

Large (for rubber belts), Japanned, 10 inches overall, each.....	1.25
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SINCE
1848

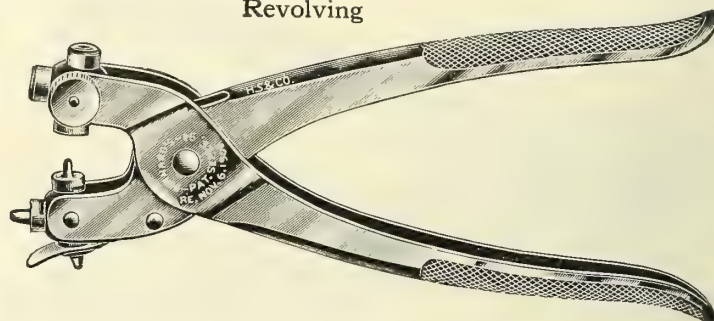
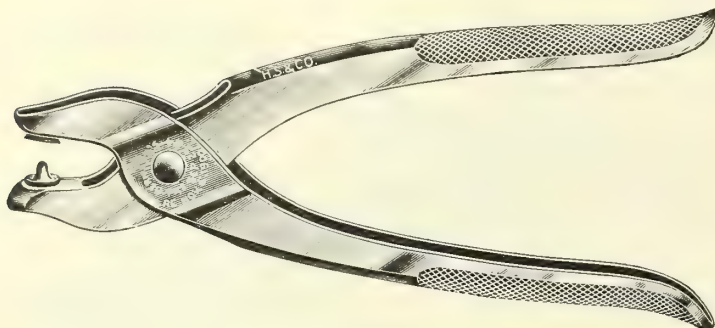
HAMMACHER SCHLEMMER & Co. NEW YORK

Eyelet Sets

Paragon

With spring in handle, full nickel-plated. 8 inches long

Revolving



No. 240

No. 230 For setting shoe eyelets, A. A. F. C.

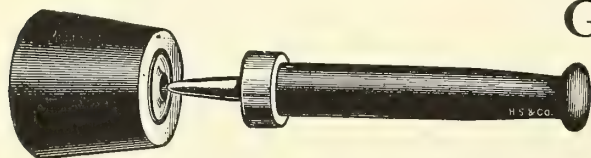
No. 231 For setting shoe eyelets, No. 11.

Dozen..... \$7.00

Four sets in one tool.

For setting shoe eyelets, Nos. 1 F. C., 2 F.C., 9 and 11.

Dozen..... \$21.00



Grommet Sets

H. S. & Co.

For grommets, numbers

Use round punch, inch

Each

1	2	3
$\frac{17}{64}$	$\frac{23}{64}$	$\frac{3}{8}$
\$1.60	\$1.70	\$1.80

Rivet Sets

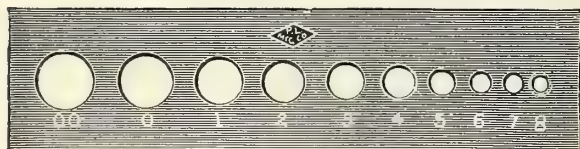
H. S. & Co.—Solid Forged Steel



Numbers.....	00	0	1	2	3
Dozen.....	\$9.00	\$9.00	\$7.60	\$7.60	\$6.00
Weight of one dozen.....	9 lb. 2 oz.	9 lb. 3 oz.	4 lb. 12 oz.	4 lb. 11 oz.	4 lb.
Numbers.....	4	5	6	7	8
Dozen.....	\$6.00	\$4.50	\$4.50	\$3.85	\$3.85
Weight of one dozen.....	3 lb. 6 oz.	2 lb. 11 oz.	2 lb. 9 oz.	1 lb. 14 oz.	1 lb. 13 oz.

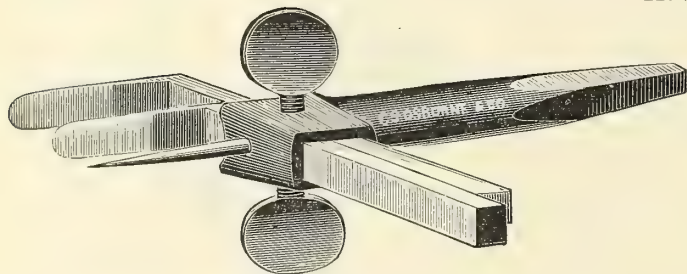
Showing sizes of rivet sets

Numbers.....	00	0	1	2	3	4
For Iron Rivets, pounds....	14	12 and 10	8	6	5 and 4	3 and 2½
For Copper Rivets Numbers	..	5	6	7	8	9
Numbers.....	5	6	7	8	9	10
For Iron Rivets, pounds....	2	1½	1¼	oz. 12 and 10	14	
For Copper Rivets Numbers	10 and 11	12	13			

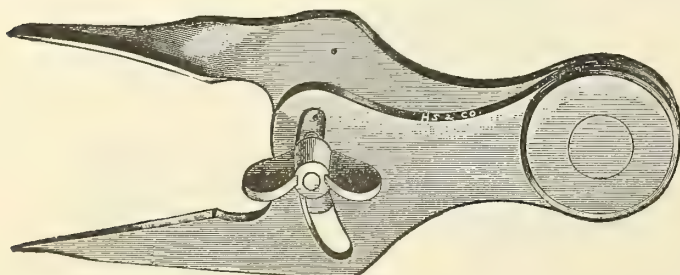


Washer Cutters

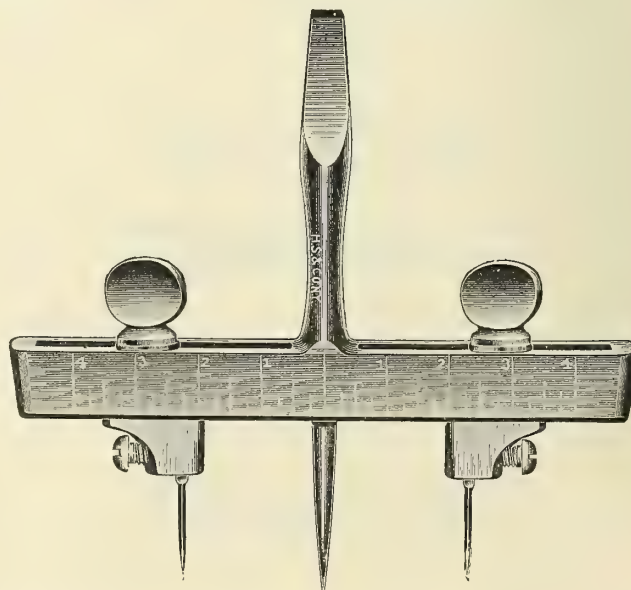
H. S. & Co.



No. 350 Plain, cuts up to 6 inches, dozen..... \$10.00



No. 422 Nickel-plated, cuts up to 3¾ inches, dozen..... \$14.00

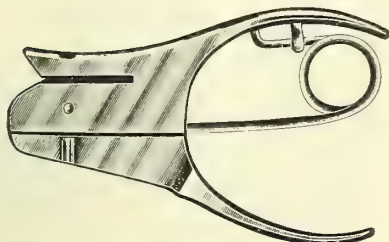


No. 122 Polished steel, cuts from ½ to 4½ inches, each..... \$1.50

For Washer Punches, see page 620

Ticket Punches

H. S. & Co.

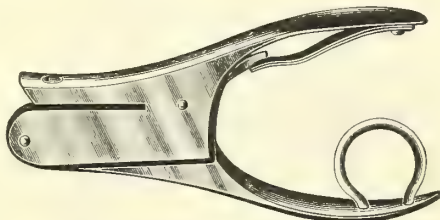


No. 2 1/2. Conductors, Nickel-Plated

Length of frame 4 inches. With coiled steel wire springs.

Single dies furnished in any design in classes A, B and C. See next page.

Single dies, dozen \$24.00
Double dies, B C 1/2, dozen 35.00
Double dies, special, each 5.50



No. 12 Conductors, Nickel-Plated

Length of frame 4 1/4 inches.

Punches card 1 inch from edge.

Made with any design in classes A or B. See next page.

Single dies, dozen \$25.00
Double dies, B C or 1/2, dozen 35.00
Double dies, special, each 5.50



No. 34 Conductors

One of the best punches made for punching street car transfers and other tickets, as the numbers to be punched can be plainly seen through the punch.

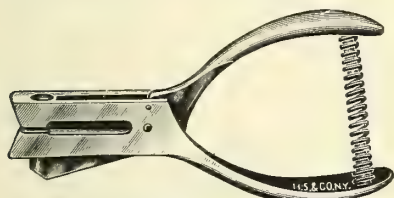
No. 33 Conductors Punch. Made same as No. 34, but with flat spring.

Length of frame 4 1/2 inches.

Punches card 1 inch from edge.

See next page for designs.

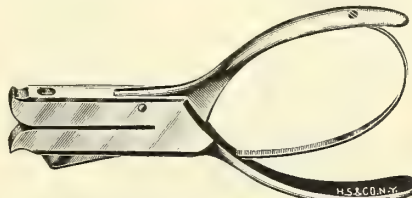
Single dies, dozen \$24.00
Double dies, B C or 1/2, dozen 35.00
Double dies, special, each 5.50



No. 11 1/2

Length of frame 4 1/4 inches. Punches card 7/8 inch from edge. With spiral spring. Made only with the designs shown in class C. See next page.

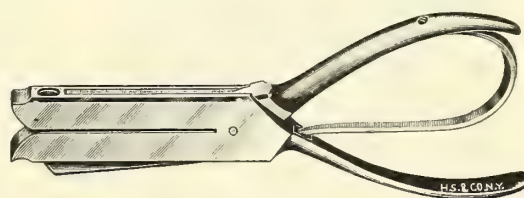
Nickel-plated, dozen \$9.00
Polished, dozen 8.00



No. 14

Length of frame 5 1/4 inches. Punches card 1 1/8 inches from edge. Made with any design in class A. See next page. A strong punch with extra deep slot.

Dozen \$18.00



No. 23 Nickel-Plated

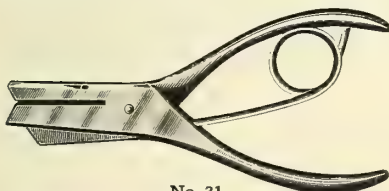
Length of frame 6 1/2 inches.

Punches card 2 1/8 inches from edge.

An extra large punch. Used where a deep slot is required.

Made only with designs in class A. See next page.

Dozen \$19.00

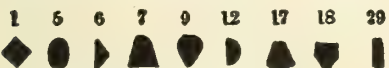


No. 31

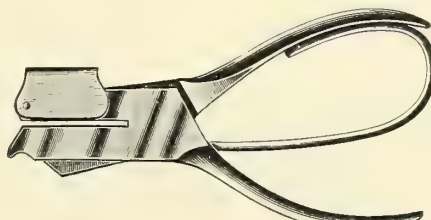
Length of frame 4 1/4 inches. Punches card 3/4 inch from edge.

A very low-priced punch.

Made only with the following assorted dies:



Nickel-plated, dozen \$6.00
Polished, dozen 5.00



No. 28 Reservoir, Nickel-Plated

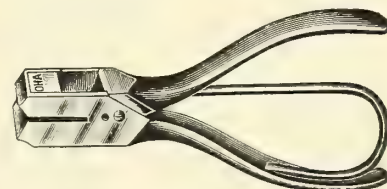
Length of frame 4 1/2 inches.

Punches card 1 inch from edge.

The reservoir or receptacle on this punch retains the punched pieces. Can be opened and closed in an instant.

Furnished with any design in class A. See next page.

Dozen \$20.00

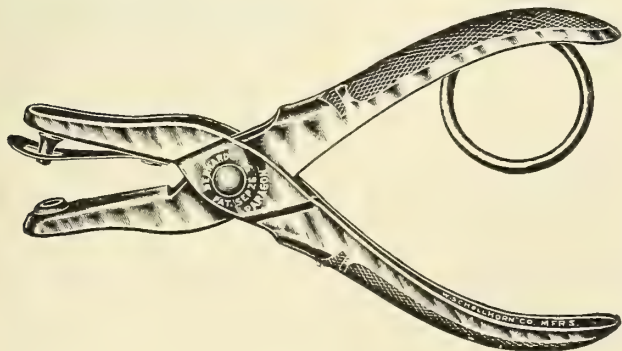


No. 17 Nickel-Plated

Length of frame 5 inches.

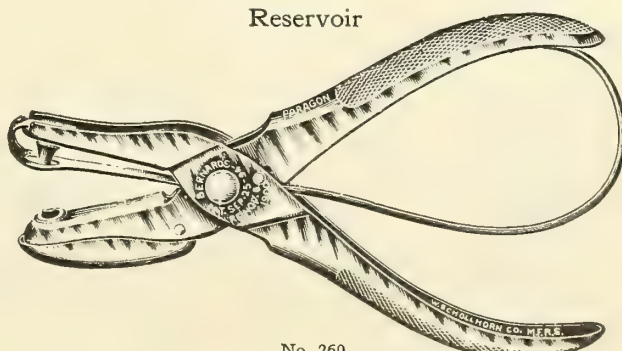
This is a special heavy pattern, and can be made with from two to eight letters or figures. No other pattern will punch this many letters or figures.

Prices on application, depending on size and number of letters or figures.



No. 250

Simple, low-priced and durable, full nickel-plated, 5 inches long, dozen \$3.75



No. 260

Simple, low-priced and durable, full nickel-plated. Especially useful for card parties, as clippings are retained in spring-actuated reservoir, 5 inches long, dozen \$4.25

Designs For Ticket Punches

Nos. 2½, 11½, 12, 14, 23, 28, 33 and 34—Illustrations on Preceding Page

CLASS A



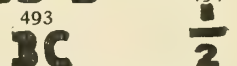
CLASS B



CLASS C

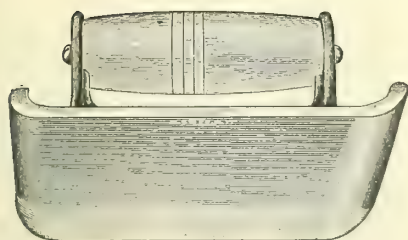


CLASS D



Cement or Sidewalk Tools

H. S. & Co.



Edger No. 1

6 inches long, 3 inches wide, $\frac{3}{8}$ -inch radius.

Iron, nickel-plated, each \$.60
Bronze, each 1.20

Edger No. 3

6 inches long, 3 inches wide, $\frac{3}{4}$ -inch radius.

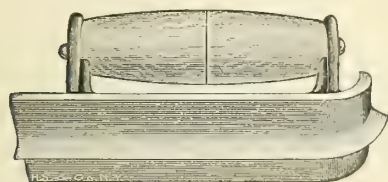
Iron, nickel-plated, each \$.65
Bronze, each 1.30



Step Edger No. 10

With straight-edge for a guide, 7 inches long, $2\frac{1}{4}$ inches wide.

Iron, nickel-plated, each \$1.00
Bronze, each 2.00



Jointer No. 20

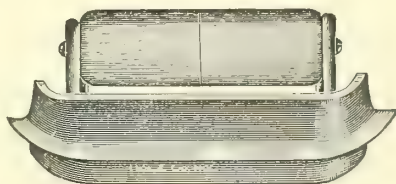
One end straight to cut into sharp corners. Cuts thin grooves. 6 inches long, 3 inches wide.

Iron, nickel-plated, each \$.60
Bronze, each 1.20

Jointer No. 21

Cuts heavy grooves for carriage ways. One end straight to cut into sharp corners. 6 inches long, 3 inches wide.

Iron, nickel-plated, each \$.65
Bronze, each 1.30



Jointer No. 22

Cuts thin grooves $\frac{1}{2}$ inch deep for side walks. 6 inches long, 3 inches wide.

Iron, nickel-plated, each \$.60
Bronze, each 1.20

Jointer No. 23

Cuts heavy grooves $\frac{1}{2}$ inch deep for carriage ways. 6 inches long, 3 inches wide.

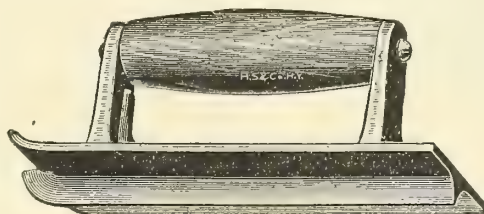
Iron, nickel-plated, each \$.65
Bronze, each 1.30



Jointer No. 25

Cuts thin grooves $\frac{1}{2}$ inch deep for sidewalk. 9 inches long, 3 inches wide.

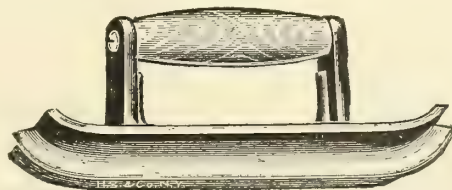
Iron, nickel-plated, each \$.85
Bronze, each 1.75



Jointer No. 26

Cuts thin groove $\frac{1}{2}$ inch deep. 9 inches long, 3 inches wide.

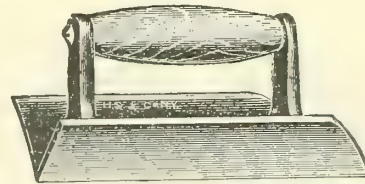
Iron, nickel-plated, each \$.85
Bronze, each 1.75



Driveway Groover No. 27

Cuts heavy groove $\frac{3}{4}$ inch deep. 9 inches long, 3 inches wide.

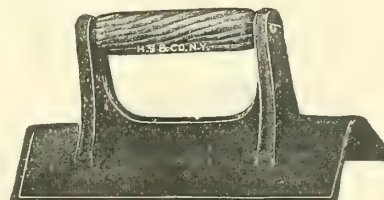
Iron, nickel-plated, each \$.85
Bronze, each 1.75



Outside Square Angle Tool No. 31

8 inches long, $2\frac{1}{4}$ inches wide.

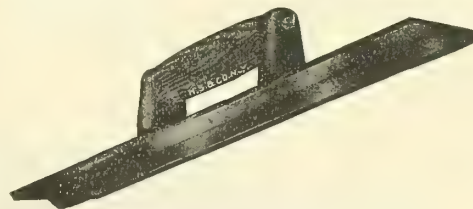
Iron, nickel-plated, each \$1.00
Bronze, each 2.00



Inside Round Angle Tool No. 32

8 inches long, $2\frac{1}{4}$ inches sides, $\frac{3}{4}$ -inch radius.

Iron, nickel-plated, each \$1.00
Bronze, each 2.00



Wall Jointer No. 39

For giving a block finish to cement walls. 11 inches long, 2 inches wide.

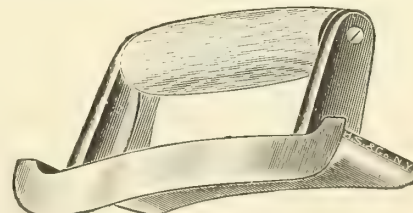
Iron, nickel-plated, each \$1.00
Bronze, each 2.00



Gutter Tool No. 41

6 inches long, 4 inches wide, 1 inch deep.

Iron, nickel-plated, each \$1.00
Bronze, each 2.00

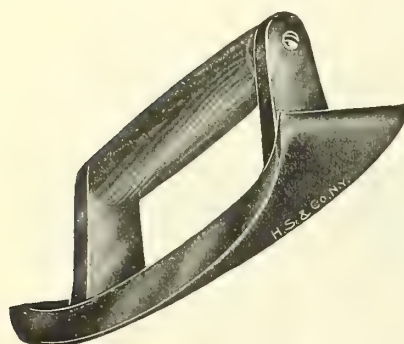


Out-Curve Edger No. 43

5 inches long, 2 inches wide, $\frac{5}{8}$ -inch turned edge with a radius of $\frac{1}{2}$ inch.

Iron, nickel-plated, each \$.50
Bronze, each 1.00

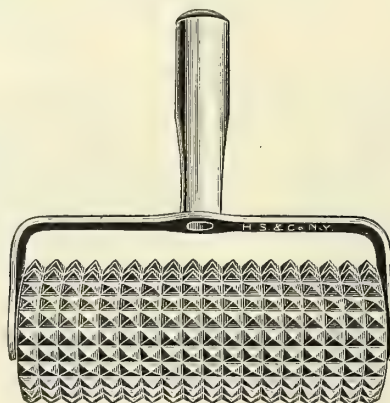
Cement or Sidewalk Tools



In-Curve Edger No. 44

4½ inches long, 2 inches wide, ⅝-inch turned edge, with a radius of ½ inch.

Iron, nickel-plated, each. \$.50
Bronze, each. 1.00

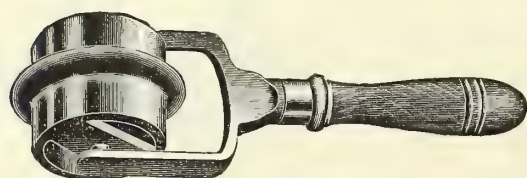


Solid Imprint Roller
No. 60½

Roller 4 inches diameter, 9 inches wide, handle 5¼ inches long.

Iron, nickel-plated, each. \$7.00
Bronze, each. 14.00

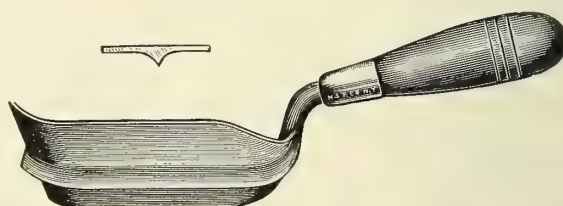
Gem Rotary Jointer No. 58



Can be used where other Jointers fail.

Iron, nickel-plated, each. \$1.50
Bronze, polished, each. 3.00

Creasers

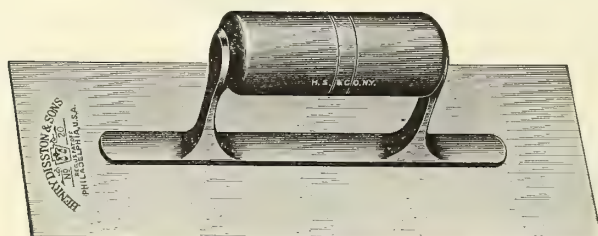


5½x1½ inches, for ⅛-inch crease, dozen. \$9.00
5½x2 inches, for ¼-inch crease, dozen. 9.60
5½x2 inches, for ⅜-inch crease, dozen. 10.80
6 x2½ inches, for ½-inch crease, dozen. 13.20

Trowels

Disston
Cementers

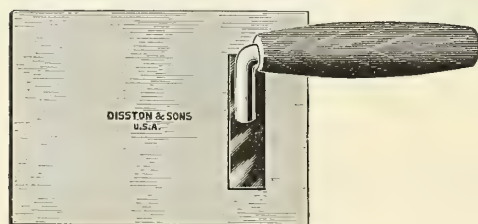
No. 20



Extra heavy blade. Made of 16-gauge high-grade crucible steel, tempered and accurately ground. Handle mounting is ⅞-inch wide and extends within 2 inches of the ends.

Length, inches.	11	11½	12
Width, inches.	4⅝	4⅞	5
Dozen.	\$17.00	18.25	19.75

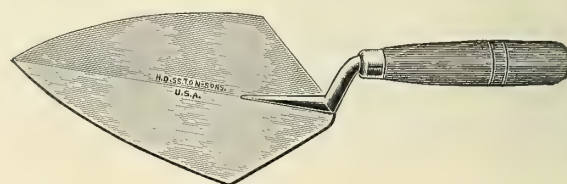
Painters Cement



Used by ironworkers and ship painters in cementing the bilge keel of vessels, etc.

Crucible steel blade, riveted tang, 5½-inch x 4½-inch.
Dozen. \$8.00

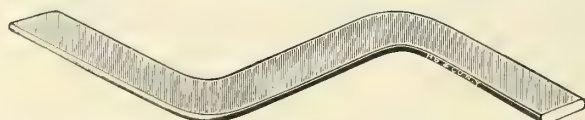
Tile Setters



Crucible steel blade, 6½-inch x 3⅜-inch, dozen. \$9.50

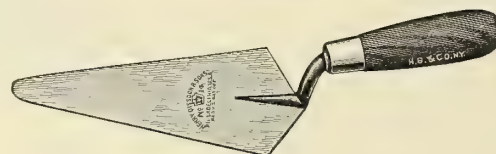
Brick Jointing Steels

H. S. & Co.



Width and thickness of steel, inch.	1/8x3/16	3/16x1/4	1/4x5/16
Concave, each.	\$1.60	1.60	1.60
Convex each.	\$.50	.60	.70

Cross Joint



Crucible steel blade, 3½-inch, dozen. \$4.35
Crucible steel blade, 4 -inch, dozen. 4.35

Brick Trowels

Genuine Billings

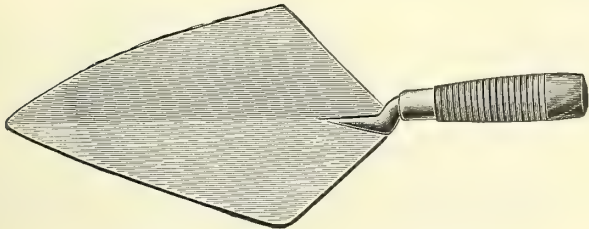


Illustration shows THE LIMIT, with leather handle
THE LIMIT

Length, inches	10	10½	11
Width, inches	6¼	6½	6¾
Button handles, dozen	\$18.30	18.90	19.50
Leather handles, dozen	21.00	21.60	22.20

	X. X.		
Length, inches	10	10½	11
Width, inches	5¾	6	6¼
Button handles, dozen	\$16.50	17.10	17.70
Leather handles, dozen	19.20	19.80	20.40

The leather handles as well as those of the solid button type are non-detachable, and there is no metal to mar the brick when handle is used to place them

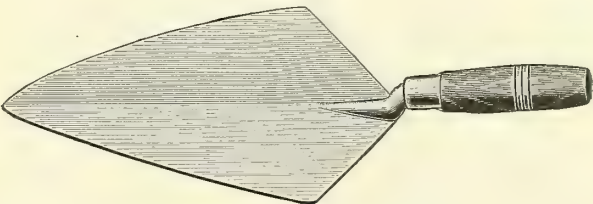
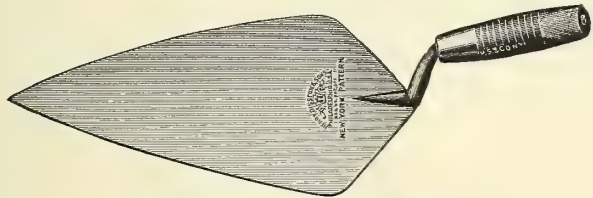


Illustration shows button handle

	SPECIAL			
Length, inches	9½	10	10½	11
Width, inches	5	5¼	5½	5¾
Button handles, dozen	\$14.10	14.70	15.30	15.90
Leather handles, dozen	16.80	17.40	18.00	18.60

Disston

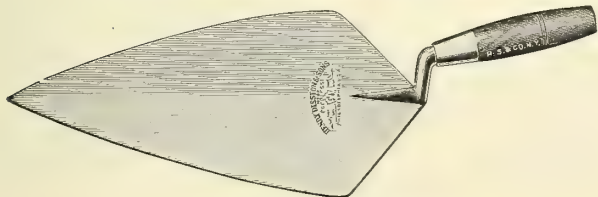
Extra quality crucible steel blade, carefully hardened and tempered, ground to a true and correct taper



No. 111, with leather grip handle

Peerless

Tang Does Not Extend Through Handle



New York Pattern No. 42

These Trowels are each made from a single diamond-shaped piece of highly tempered steel, are taper ground and have the correct spring to secure greatest efficiency. Handles are polished hickory, reinforced with a long, heavy nickel-plated steel ferrule.

Length, inches	10½	11	11½	12
Dozen	\$18.75	19.25	19.75	20.25

New York Special Heavy Pattern

Tang Extends Through Handle and is Riveted

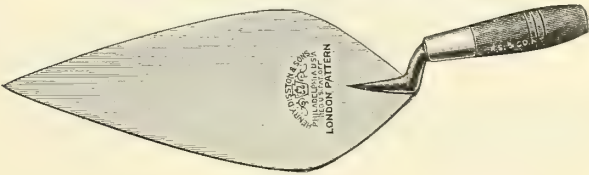
	No. 11, with wooden handle and metal end			
Length, inches	9½	10	10½	11
Dozen	\$11.50	\$12.00	\$12.50	\$13.00
	No. 111, with leather grip and metal end			
Length, inches	9½	10	10½	11
Dozen	\$14.00	14.50	15.00	15.50

Tang Does Not Extend Through Handle

	No. 11½, with wooden handle and wooden end			
Length, inches	9½	10	10½	11
Dozen	\$11.50	12.00	12.50	13.00
	No. 111½, with leather grip and wooden end			
Length, inches	9½	10	10½	11
Dozen	\$14.00	14.50	15.00	15.50

London Pattern

Tang Does Not Extend Through Handle

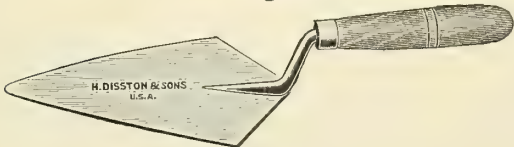


No. 5

Length, inches	9½	10	10½	11
Dozen	\$9.50	10.00	10.50	11.00

Pointing

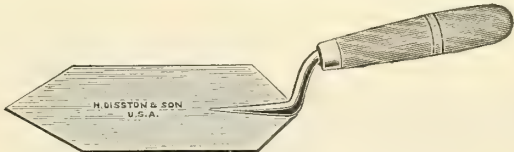
Regular



No. 15 Solid Shank

Length, inches	4	5	6	7
Dozen	\$4.25	4.75	5.25	5.75

Bricklayers



No. 17 Solid Shank

Length, inches	5	6
Dozen	\$5.25	5.75

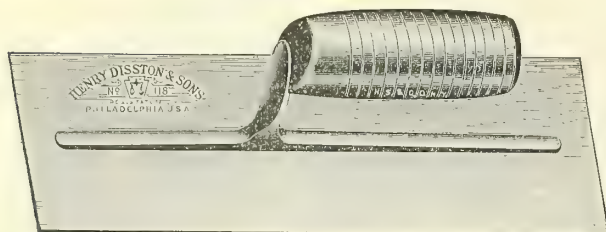
SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

Plasterers Tools

Trowels
Disston

Western Pattern

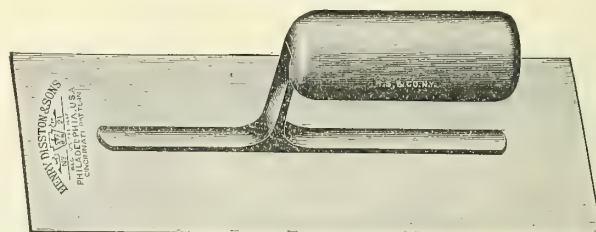


No. 118

Made of highest grade crucible steel, tempered accurately, with thin blades. Blades are securely attached to the extra long handle mountings with ten rivets. Handle has beveled end for thumb rest.

Length, inches	11	11½	12
Width, inches	4⅝	4⅜	5
No. 18 Spun polished handle, dozen	\$16.50	17.00	17.50
No. 118 Leather grip handle, dozen	20.50	21.00	21.50

Cincinnati Pattern



No. 21

Same general style as Western Pattern, but handle is fastened to blade with only five rivets.

Length, inches	10 & 10½	11	11½	12
Width, inches	4½	4⅝	4⅜	5
Dozen	\$12.50	13.00	13.50	14.00

Disston Gauging

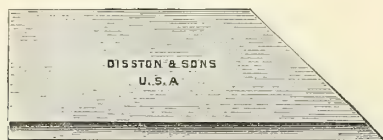


No. 14

Length, inches	7	7½	8
Dozen	\$8.75	9.00	9.25

Miter Rods

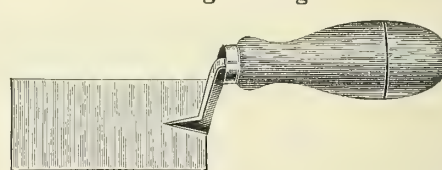
Disston



Beveled or Long Edge

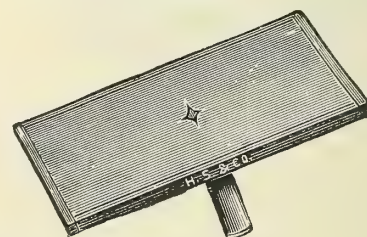
Inches	4	6	8	10	12
Dozen	\$2.50	2.95	3.75	4.80	5.80
Inches	14	16	18	20	
Dozen	\$6.70	7.50	8.75	9.15	

Billings Margin



Dimensions, inches	3x4	3½x5
Dozen	\$8.00	10.00

Hocks



No. 1	13x13 inches, each	\$1.00
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Mitering Tools
H. S. & Co.



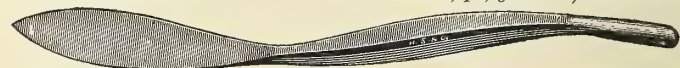
Leaf and Square

No. 61	1½x¼ inch	Each \$.75
No. 62	5⁄8x¼ inch	
No. 63	¾x¾ inch	
No. 64	7⁄8x½ inch	
No. 65	1 x 5⁄8 inch	Each \$1.00
No. 66	1½x¾ inch	
No. 67	1½x¾ inch	Each \$1.05



Double Leaf

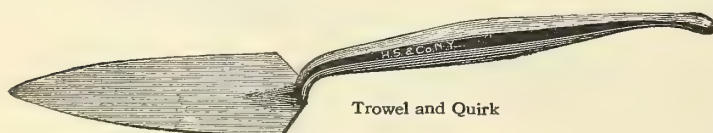
No. 71	1½x¼ inch	Each \$.75	No. 74	7⁄8x½ inch	Each \$1.00
No. 72	5⁄8x¼ inch		No. 75	1 x 5⁄8 inch	
No. 73	¾x¾ inch		No. 76	1½x¾ inch	
			No. 77	1½x¾ inch	Each \$1.00



Leaf and Quirk

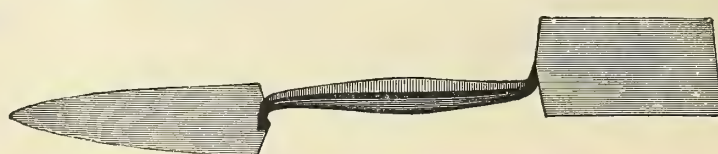
No. 98	¾-inch leaf, each	\$.75
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Trowel Tools
H. S. & Co.



Trowel and Quirk

No. 91	Trowel and Quirk, 1 -inch trowel, each	\$1.50
No. 92	Trowel and Quirk, 1½-inch trowel, each	1.50
No. 94	Trowel and Quirk, 1¾-inch trowel, each	1.50
No. 95	Double Trowel, ¾ and 1¾-inch ends, each	1.80



Trowel and Square

No. 96	Trowel and Square, 1½-inch trowel end, 2-inch square end, each	\$1.80
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Plasterers Knives

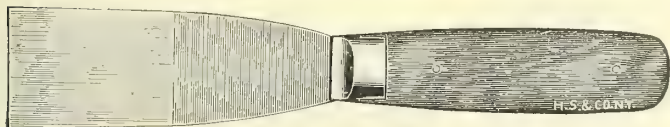
H. S. & Co.



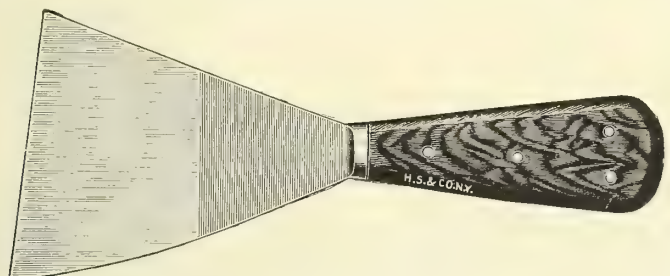
- | | | |
|-------|--|--------|
| No. 1 | 4½-inch blade, Maple handle, dozen | \$8.00 |
| No. 2 | 5 -inch blade, Maple handle, dozen | 9.00 |
| No. 3 | 5½-inch blade, Maple handle, dozen | 10.00 |

Putty Knives

H. S. & Co.



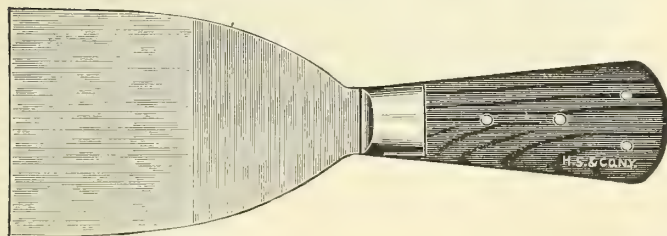
- | | | |
|---|--------|--------|
| Width of blade, inches | 1 7⁄8 | 2 |
| Length of blade, inches | 3 5⁄8 | 3 3⁄4 |
| No. 1540 Cocobolo handle, stiff blade | \$4.20 | \$6.70 |
| No. 1540E Cocobolo handle, elastic blades | 4.20 | 6.70 |



- | | | |
|---------|--|---------|
| No. 515 | Cocobolo handle, stiff blade, 3¼ inches wide, dozen .. | \$12.00 |
|---------|--|---------|

Scraping Knives

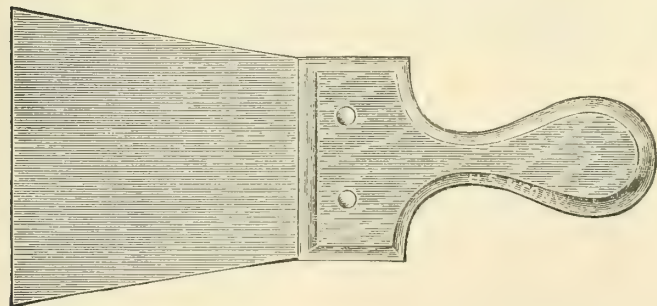
H. S. & Co.



- | | | |
|--|---------|---------|
| Width of blade, inches | 3 | 3 1⁄2 |
| No. 530 Cocobolo handle, stiff blade, dozen | \$11.30 | \$12.70 |
| No. 530E Cocobolo handle, elastic blade, dozen | 11.30 | |

Wall Scrapers

H. S. & Co.



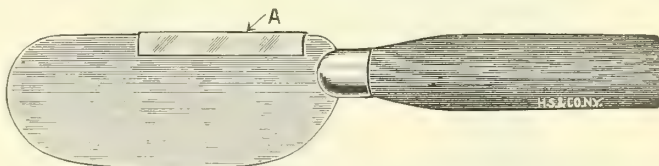
- | | | |
|-------|--|--------|
| No. 1 | Cast steel, 3 inches wide, dozen | \$1.50 |
|-------|--|--------|

Paper Hangers Knives

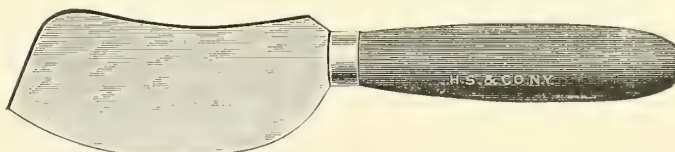
H. S. & Co.



- | | | |
|--------|--|--------|
| No. 55 | Square point blades, 3 3⁄8x1 1⁄8 inches, dozen | \$4.50 |
| No. 5 | Round point blades, 3 3⁄8x1 1⁄8 inches, dozen | 4.50 |

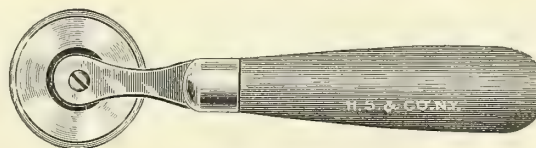


- | | | |
|--------|---|--------|
| No. 01 | Round point with removable protection clip "A."
Blade is 3 3⁄8x1 1⁄8 inches; Maple, friction polish handle,
dozen | \$3.80 |
|--------|---|--------|

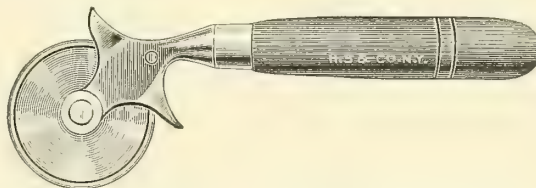


- | | | |
|-------|--|--------|
| No. 4 | Square point blade, 3 3⁄8x1 1⁄8 inches, taper rolled, best
steel, white Maple handle, dozen | \$5.00 |
|-------|--|--------|

Casing and Corner Knives



- | | | |
|--------|--|--------|
| No. 06 | 2-inch wheel, smooth edge, nickeled frame, large pol-
ished Maple handle, dozen | \$5.60 |
| No. 02 | 1½-inch serrated wheel, nickeled frame, large polished
Maple handle, dozen | 4.50 |



- | | | |
|-------|--|--------|
| No. 8 | 2-inch wheel with protection thumb and finger guard to
prevent cutting the hand. Nickel-plated frame, large pol-
ished Maple handle, dozen | \$7.50 |
|-------|--|--------|



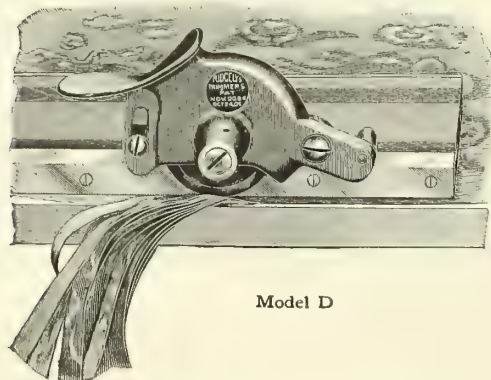
- | | | |
|---------|--|--------|
| No. 010 | 1½-inch milled wheel, double bevel nickeled frame,
large polished Maple handle, dozen | \$5.90 |
|---------|--|--------|



- | | | |
|--------|---|--------|
| No. 1½ | Serrated wheel and knife, large polished Maple handle,
dozen | \$6.30 |
|--------|---|--------|

Wall Paper Trimmers

Ridgely



Model D

This Trimmer is made of steel, nickel-plated, is 5 inches long and weighs 5 ounces. It is designed for use with a straight edge and is not suitable for use without one.

Trimmer only..... \$4.00

Paper Hangers Outfits

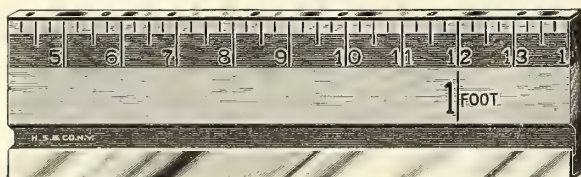
The following outfits include a Trimmer, a Straight-edge of the number mentioned (described on this page) and a Zinc Strip, 3 inches wide, which insures clear-cut edges and prevents marring the board.

Outfit with No. 4 6-foot ruled edge, each..... \$7.50

Outfit with No. 16 6-foot sectional edge, each..... 9.60

Zinc Strips only, each..... .30

Straight Edges for Trimmers



No. 4 Bound with heavy flat brass, set with screws. Average weight 3 pounds.

Length, feet..... 6 7 8
Each..... \$3.30 \$3.60 \$3.75

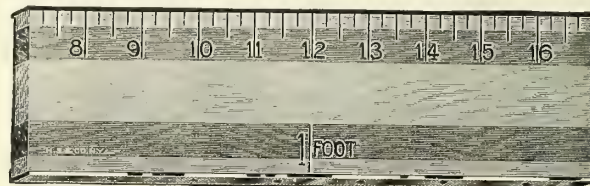
No. 16 Sectional, bound with heavy flat brass, set with screws. For convenience is in two pieces, fastened with device, same style as No. 19 shown on this page, making it as solid as though in one piece. Average weight 3½ pounds.

Length, feet..... 6 7 8
Each..... \$5.35 5.50 5.70

All the Straight Edges on this page are built up from the very best grade of White Pine and Redwood, with the grain reversed and have three coats of Shellac

Straight Edges

Ruled Knife Edge



No. 5 Bound with heavy flat brass, set with screws; average weight 2½ pounds.

Length, feet..... 5 6 7 8
Each..... \$2.80 2.85 3.00 3.20

No. 21 Bound with heavy square-edge steel, set with screws; average weight 3 pounds.

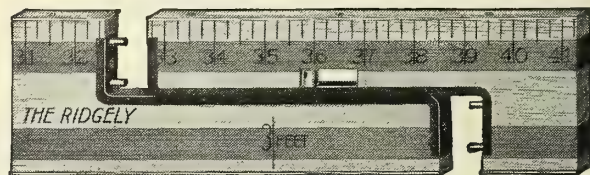
Length, feet..... 6 7 8
Each..... \$2.15 2.30 2.50

Plain

No. 3 Without binding or graduations, hard Maple on outer edges with Red Wood and White Pine centers. 6 feet long, 3 inches wide.

Each..... \$.70

Sectional

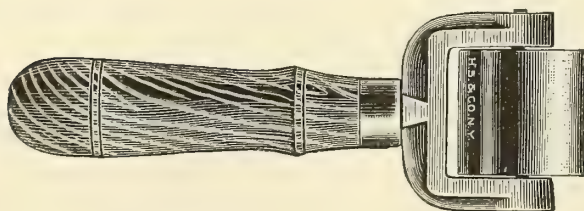


No. 19 Bound with heavy flat brass, set with screws. Has connecting device, as shown. Average weight 2¾ pounds.

Length, feet..... 6 7 8
Each..... \$5.00 5.20 5.35

Seam Rollers

Cravanette

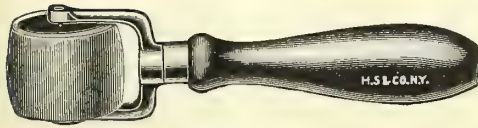


Suitable for work on cravanette. Solid-steel roller, 1½ inches wide by 1¼ inches diameter. Steel frame, hardwood handle, substantially made, weighs 28 ounces.

Each..... \$1.25

Paper Hangers Seam Rollers

H. S. & Co.



No. 1

1-inch oval face, Rosewood or Lignum Vitae friction polished roller, nickel-plated steel frame, large natural polished Maple handle.

Dozen..... \$4.50

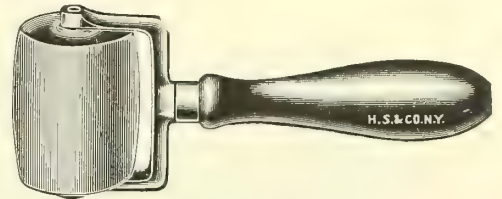


No. 3

1-inch oval face, celluloid tire over Rosewood core, nickel-plated steel frame, large natural polished Maple handle.

Flat face roller may be had if specially ordered.

Dozen..... \$7.20



No. 14

2-inch oval face, Rosewood or Lignum Vitae roller, nickel-plated steel frame, Maple handle.

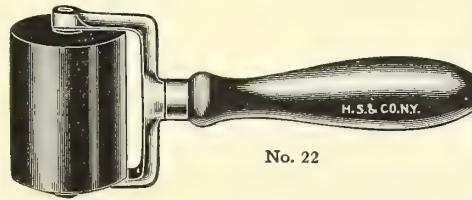
Dozen..... \$5.40



No. 20

1/2-inch oval or flat face, polished hard rubber roller, nickel-plated steel frame, Maple handle.

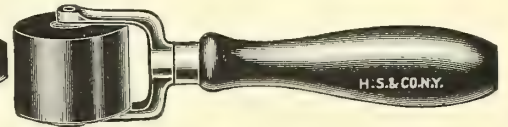
Dozen..... \$6.30



No. 22

2-inch flat face, polished hard rubber roller, nickel-plated steel frame, Maple handle.

Dozen..... \$8.10



No. 26

1-inch flat face, rubber roller not vulcanized, nickel-plated steel frame, Maple handle.

Dozen..... \$6.30

Paper Hangers Smoothing Rollers

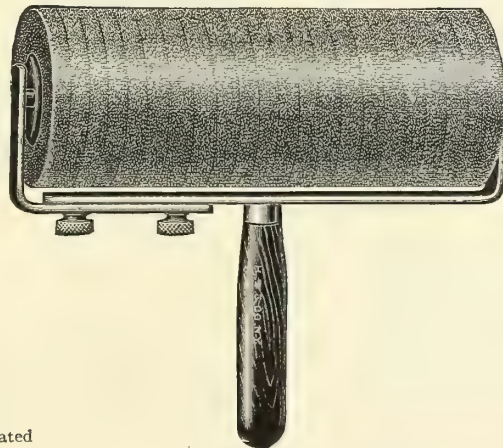
H. S. & Co.



No. 3

No. 3 9-inch hard Maple roller, nickel-plated steel frame, Maple handle, weight 10 ounces.

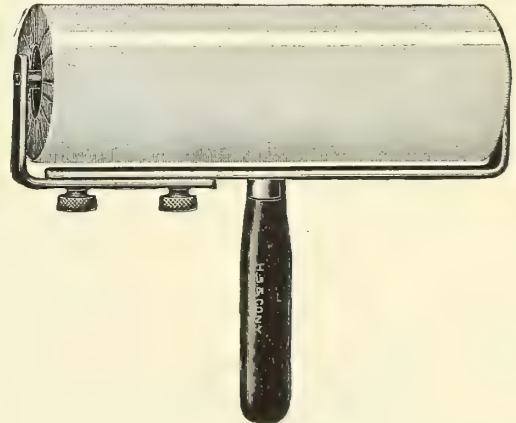
Dozen..... \$7.20



No. 7

No. 7 9-inch roller, 2 1/2 inches in diameter, built up of Mexican felt discs; adjustment for tightening or loosening to give solid or resilient roller; easily cleaned and never needs recovering.

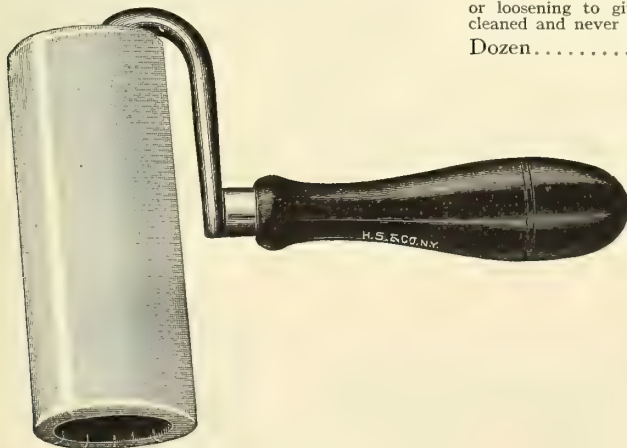
Dozen..... \$31.50



No. 2

No. 2 9-inch roller, covered with six-ply flannel, nickel-plated steel frame, constructed so roller may be removed for recovering. Heavy nickel-plated steel frame for rolling ingrains, burlap, etc.

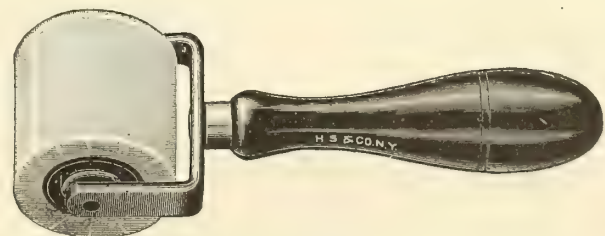
Dozen..... \$9.00



No. 5

No. 5 4 1/2-inch roller covered with six-ply flannel, nickel-plated steel side arm, detachable Maple handle, for work in corners and other inaccessible places.

Dozen..... \$13.50



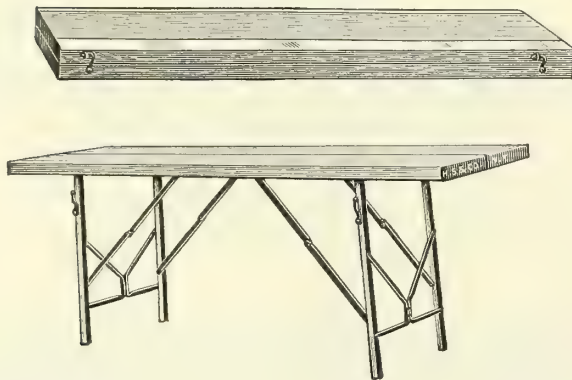
No. 4

No. 4 2-inch roller covered with six-ply flannel, nickel-plated steel frame, Maple handle.

Dozen..... \$7.20

Paste Tables, Boards and Trestles

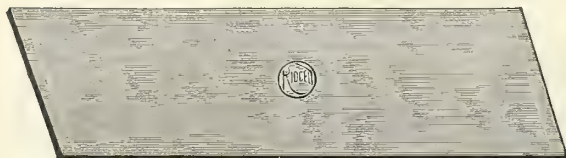
Folding Tables



No. 301 Made of clear air-cured lumber. Top made of two or more pieces, tongued and grooved and glued to prevent warping. Has space inside (when folded) for straight edges and tools. Price includes hooks for straight-edge. Is 33 inches high, 22 inches wide, average weight 17 pounds.

Without Extension Boards, Rods or Bucket Holder, 6 feet long, each \$4.30

Plain Boards

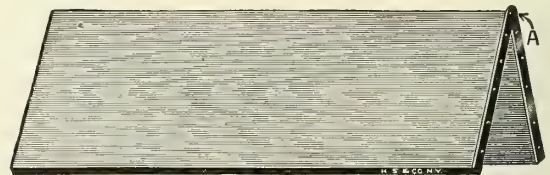


No. 307 8 inches wide by 1/2-inch thick, battled and sanded, with or without dowels, in sets, three boards per set, 6 feet long.. \$2.10

No. 320 7 inches wide by 1/2-inch thick, battled and sanded, with or without dowels, three boards in a set, 6 feet long.... 1.90

H. S. & Co.

Folding Boards

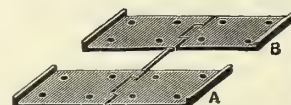
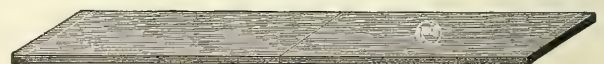


No. 322

Is 1/2 inch thick, 20 inches wide when open and 10 inches closed, made of air dried, clear Bass wood. Steel end battings (marked "A") are run the entire width of the board as a protection against warping and damage.

No. 322 6 feet long, each..... \$2.25

Sectional



No. 324

The improved hinge is a hinge and a brace at the same time, and when it is acting as a brace there is no strain on the screws.

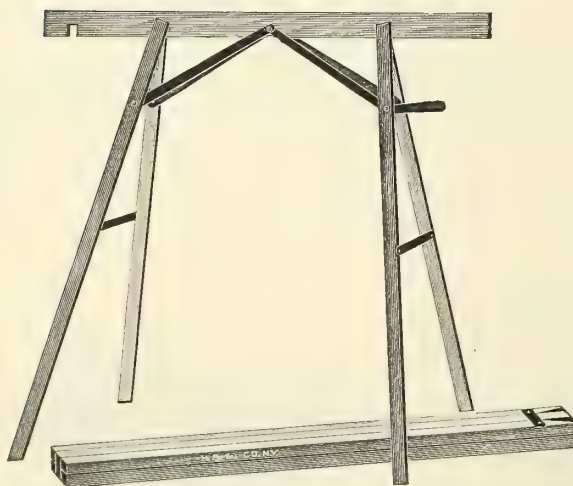
Makes the board as stiff, rigid and strong as though solid.

The ideal board for use in cities, on account of the small size when folded.

6 feet long, each..... \$3.60

Folding Trestles

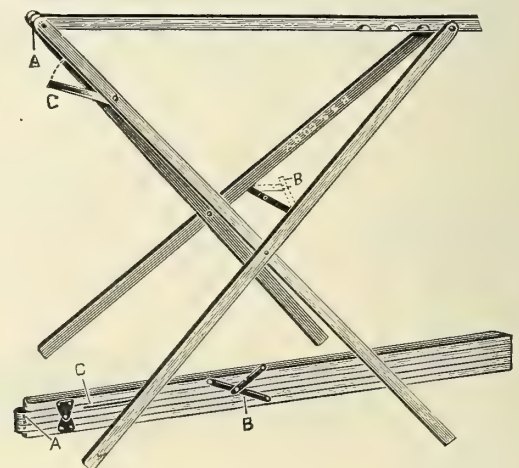
Weight 4 1/2 pounds per pair. Nickel-plated Trimmings



No. 01

Select hard Maple, 32 inches high, 33 inches wide. Stands rigidly on uneven floor. Is strong enough for scaffolding purposes, if necessary. Hook included for holding straight-edge.

Dozen pairs..... \$15.00



No. 2

Select hard Maple, adjustable to various heights, from 30 to 34 1/2 inches.

At "A" are steel clips between each piece of wood to prevent rotting from paste.

"B" is a break-joint spreader for convenience and extra strength; push up or down to tighten or loosen.

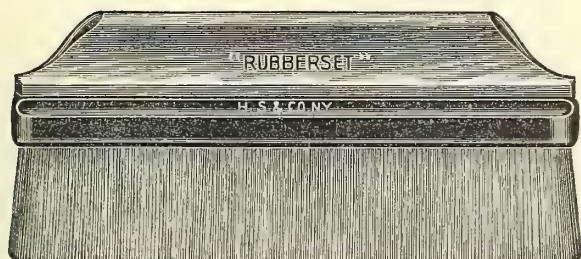
"C" is hook for holding straight-edge, which slides into recess when not in use, as shown in folded cut, and is never in the way in carrying.

Dozen pairs..... \$16.00

Paper Hangers Brushes

RUBBERSET

Smoothing

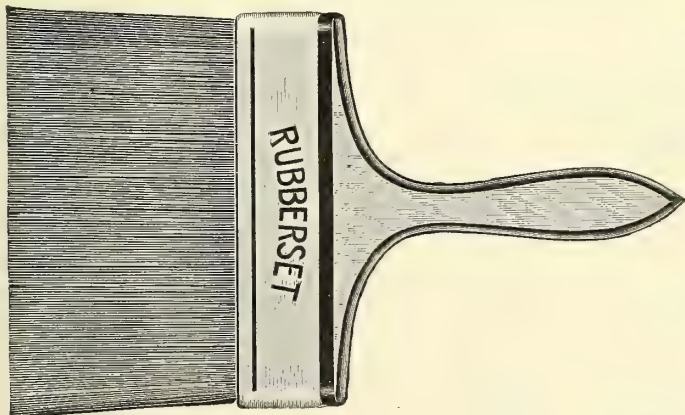


No. 153 All yellow bristle, thick.

Length 10 inches, dozen \$22.80
Length 12 inches, dozen 28.20

No. 159 Black Chinese bristle, thick.

Length 10 inches, dozen \$18.60
Length 12 inches, dozen 21.50



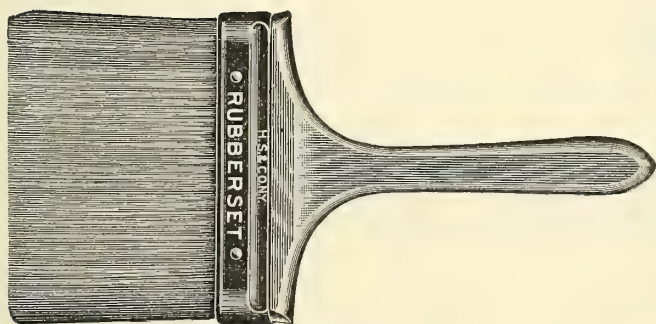
Paste

No. 95 All grey Russian bristles, brass bound; an exceptionally fine working brush. 7 inches wide, bristle 4¼ inches out of ferrule.

Dozen \$33.30

Kalsomine Brushes

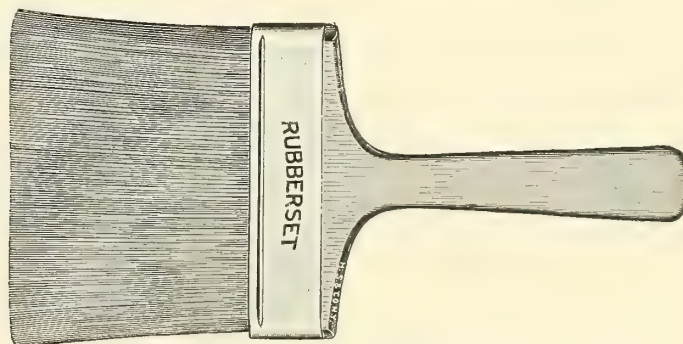
RUBBERSET



No. 20 X X X

Russian bristle, grey center, 7 inches wide, bristle 4¾ inches out of ferrule.

Dozen \$48.41



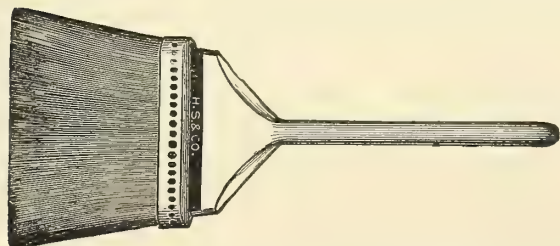
No. 66 Ex. Ex. New York

Grey center, white outside, galvanized-iron bands, 7 inches wide bristle 5½ inches out of ferrule.

Dozen \$60.00

Whitewash Brushes

H. S. & Co.



"Russia." Made of long stock, cased with unbleached Russian bristle, 7 inches wide, leather bound.

Dozen \$16.00

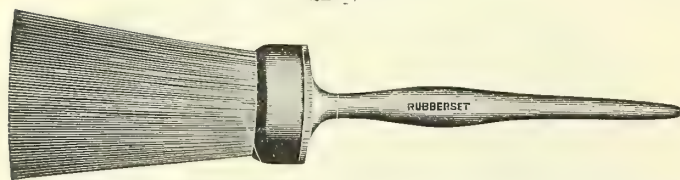
Whitewash Brush Clamps. Used for attaching the brush to long rod so high walls can be easily reached.

Dozen \$3.00

For complete line of Rubberset Brushes, ask for our special catalog

Painters Dusters

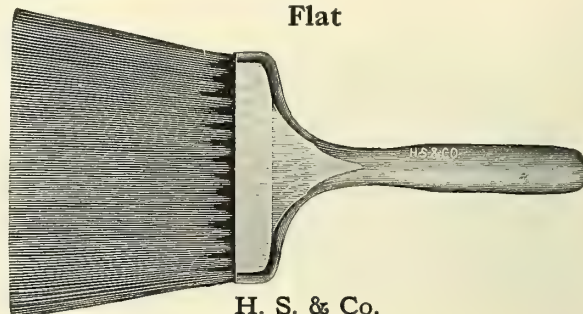
Round
RUBBERSET



No. 4 Black bristle casing, gray bristle center, dozen..... \$20.00

H. S. & Co.

Flat



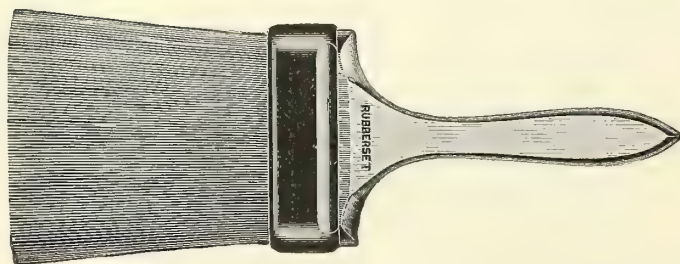
H. S. & Co.

No. 3 Black casing, gray middle; a very serviceable brush,
dozen..... \$8.20

No. 14 Star. Black casing, gray middle; a very serviceable
brush, dozen..... \$15.00

Flat Wall Brushes

RUBBERSET



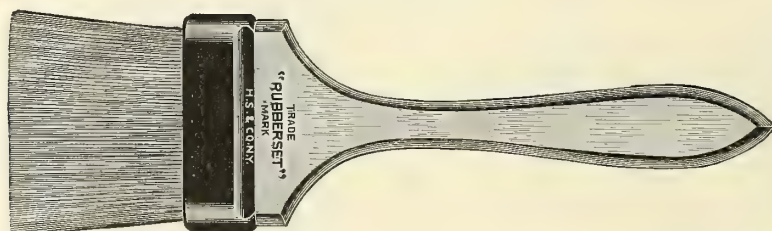
No. 133 Ex.

All white Russian bristle.

2½ inches wide, dozen.....	\$15.70
3 inches wide, dozen.....	17.20
3½ inches wide, dozen.....	20.00
4 inches wide, dozen.....	23.50
4½ inches wide, dozen.....	26.80
5 inches wide, dozen.....	32.00
5½ inches wide, dozen.....	38.00

Bristle Flat Varnish

RUBBERSET



No. 123 Ex. Ex. Chisel Flat

Made of the best quality white boiled French bristles. The best
chisel flowing brush.

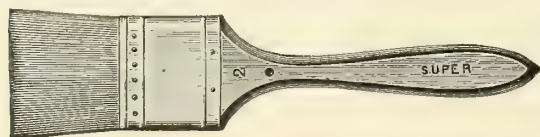
1 -inch, per dozen.....	\$ 3.80
1½-inch, per dozen.....	5.20
2 -inch, per dozen.....	7.00
2½-inch, per dozen.....	9.40
3 -inch, per dozen.....	12.00
3½-inch, per dozen.....	16.00
4 -inch, per dozen.....	19.50

No. 54 Extra Chisel

Made of the best quality boiled French bristles.

1 -inch, per dozen.....	\$3.30
1½-inch, per dozen.....	4.90
2 -inch, per dozen.....	6.50
2½-inch, per dozen.....	8.00
3 -inch, per dozen.....	10.00
3½-inch, per dozen.....	13.70
4 -inch, per dozen.....	16.80

H. S. & Co.



Chisel point, double thick, pure unbleached bristle.

Width, inches.....	1	1½	2	2½	3
No. EE, dozen.....	\$1.20	1.74	2.40	3.30	4.60

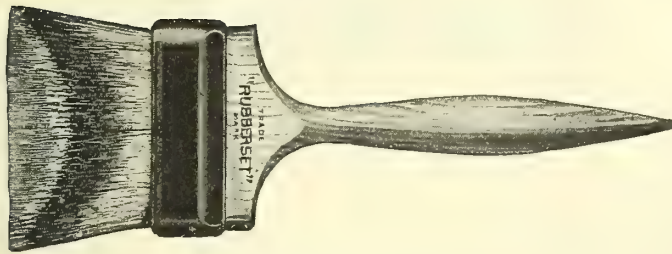
For complete line of Rubberset Brushes, ask for our special catalog.

Brushes

Flowing

RUBBERSET

Badger



No. 56 Single Thick Chisel

1 -inch, dozen	\$5.76
1½-inch, dozen	7.92
2 -inch, dozen	9.60
2½-inch, dozen	12.00
3 -inch, dozen	15.00
3½-inch, dozen	22.80
4 -inch, dozen	26.40

No. 57 Double Thick Chisel

1 -inch, dozen	\$6.60
1½-inch, dozen	9.48
2 -inch, dozen	10.98
2½-inch, dozen	13.44
3 -inch, dozen	16.96
3½-inch, dozen	25.24
4 -inch, dozen	28.80

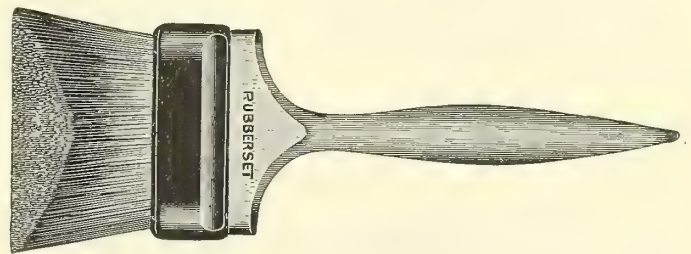
No. 59 Extra Quality Pure. Double Thick Chisel

1 -inch, dozen	\$12.50
1½-inch, dozen	18.20
2 -inch, dozen	24.20
2½-inch, dozen	30.50
3 -inch, dozen	36.50
3½-inch, dozen	48.50
4 -inch, dozen	61.20

No. 59A Extra Quality Pure. Triple Thick Chisel. Piano Flowing

1 -inch, dozen	\$20.50
1½-inch, dozen	28.10
2 -inch, dozen	37.00
2½-inch, dozen	48.10
3 -inch, dozen	63.00
3½-inch, dozen	73.50
4 -inch, dozen	84.40

Fitch



No. 60 Single Thick Square

1 -inch, dozen	\$4.20
1½-inch, dozen	5.20
2 -inch, dozen	7.20
2½-inch, dozen	8.80
3 -inch, dozen	10.30

No. 61 Single Thick Chisel

½-inch, dozen	\$4.00
1 -inch, dozen	4.50
1½-inch, dozen	5.90
2 -inch, dozen	7.50
2½-inch, dozen	9.10
3 -inch, dozen	10.50
3½-inch, dozen	15.84

No. 62 Double Thick Square

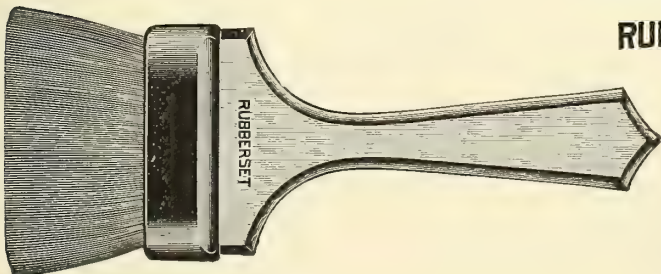
1 -inch, dozen	\$4.62
1½-inch, dozen	6.18
2 -inch, dozen	7.68
2½-inch, dozen	10.50
3 -inch, dozen	12.20

No. 63 Double Thick Chisel (as illustrated)

½-inch, dozen	\$3.80
1 -inch, dozen	5.00
1½-inch, dozen	6.80
2 -inch, dozen	8.70
2½-inch, dozen	11.00
3 -inch, dozen	12.70
3½-inch, dozen	18.48
4 -inch, dozen	23.00
5 -inch, dozen	28.00

Camel Hair Color

RUBBERSET



No. 68 Single Thick. Make Excellent Photographers Dusters

½-inch, dozen	\$4.75
1 -inch, dozen	5.40
1½-inch, dozen	8.50
2 -inch, dozen	12.30
2½-inch, dozen	16.00
3 -inch, dozen	19.44
3½-inch, dozen	25.40
4 -inch, dozen	30.00
5 -inch, dozen	45.00

No. 69 Extra. Double Thick

1 -inch, dozen	\$7.10
1½-inch, dozen	11.50
2 -inch, dozen	14.50
2½-inch, dozen	17.80
3 -inch, dozen	22.60
3½-inch, dozen	32.00
4 -inch, dozen	39.00
5 -inch, dozen	64.00

No. 69A Extra. Triple Thick

1 -inch, dozen	\$10.50
1½-inch, dozen	16.50
2 -inch, dozen	22.00
2½-inch, dozen	26.50
3 -inch, dozen	34.50
3½-inch, dozen	42.50
4 -inch, dozen	50.00
5 -inch, dozen	84.00

For complete line of Rubberset Brushes, ask for our special catalog

Brushes

Sash Tools RUBBERSET



No. 42

Hard rubber bound. Best all white bristle

Number.....	1	2	3	4	5	6	7
Diameter, inches.....	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4
Dozen.....	\$2.35	3.00	3.30	4.20	5.20	7.40	8.70

H. S. & Co.



No. 142

Wire ferrules. French bristle

Number.....	1	2	3	4	5	6	7	8	9	10
Dozen.....	\$.40	.44	.50	.56	.70	.80	.90	1.20	1.40	1.50

Marking H. S. & Co.



Round, extra quality French bristles, red polished handle

Number.....	1	2	3	4	5	6
Gross.....	\$12.00	13.00	14.00	15.00	16.00	17.00

H. S. & Co.



No. 146

All gray bristles, iron ferrule pinned to handle

Number.....	0	1	2	3	4	5	6
Diameter, inches.....	1 7/8	1 3/4	1 9/16	1 7/16	1 5/16	1 3/16	1 1/16
Regular, dozen.....	\$14.00	13.00	11.50	8.50	7.00	6.00	5.00

RUBBERSET



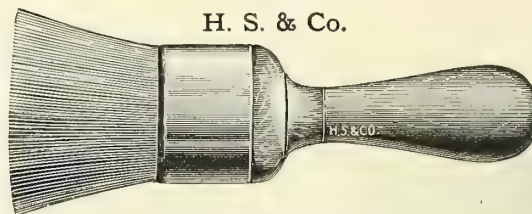
Style No. 96

An excellent brush for small glue or paste work. All gray bristles.

Size Number	Diameter Inches	Dozen
0	1/4	\$2.10
1	1/2	2.40
2	5/8	2.80
3	3/4	3.20
4	7/8	3.80
5	1	5.10
6	1 1/8	6.00
7	1 1/4	7.90

Stencil

H. S. & Co.



No. 200

All gray bristle, seamless steel ferrules. An excellent brush for all stencil uses.

Number.....	4	6	8	10	12
Diameter, inches.....	3/4	1	1 1/4	1 1/2	1 3/4
Length of bristle, inches..	1	1 1/4	1 3/8	1 3/8	1 1/2
Dozen.....	\$1.40	1.90	2.50	3.30	4.10

No. 300

Pure Fitch Hair. Bound in zinc. Soft, elastic hair, suitable for all lacquer stencil work.

Number.....	1	2	3
Dozen.....	\$3.00	4.50	6.00

RUBBERSET

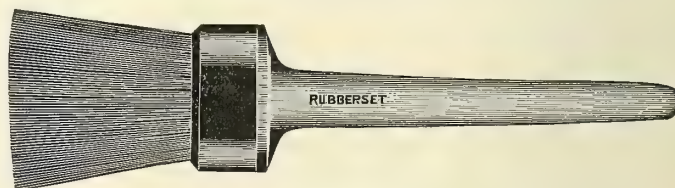
No. 102

Hard rubber bound; all black bristles.

Number.....	0	1	2	3	4
Diameter, inches.....	7/8	1	1 1/8	1 1/4	1 1/2
Dozen.....	\$4.10	4.80	5.64	6.90	8.50

Round Glue

RUBBERSET



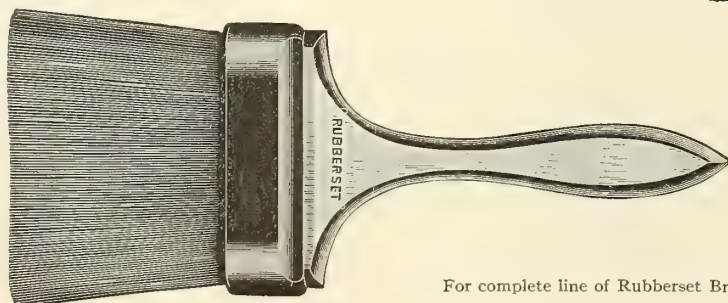
Style No. 46

Gray Russian bristles. For bookbinders, paper box, furniture, piano and casket manufacturers and cabinet makers.

Size Number	Diameter Inches	Bristles out of Ferrule Inches	Dozen
1	1 1/4	2 1/2	\$6.90
2	1 1/2	2 5/8	9.50
3	1 3/4	2 3/4	10.80
4	2	2 7/8	16.50
5	2 1/4	3	19.20
6	2 1/2	3 3/8	28.50
7	2 3/4	3 3/4	33.00
8	3	4 1/4	47.00
9	3 3/8	4 3/8	82.50
10	4	4 1/2	120.00

Flat Glue or Paste

RUBBERSET



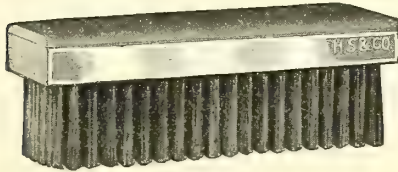
No. 45 Gray Russian Bristles

Inches	Bristles Out of Ferrule Inches	Dozen
2 1/2	2 5/8	\$10.80
3	2 7/8	12.00
3 1/2	3 1/8	14.18
4	3 1/4	16.32
4 1/2	3 3/8	18.36
5	3 1/2	20.40
5 1/2	3 5/8	23.94

For complete line of Rubber Set Brushes, ask for our special catalog

Steel Wire Brushes

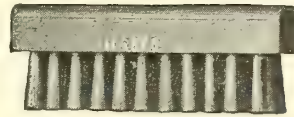
H. S. & Co.



No. 1780

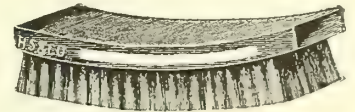
Made from fine drawn steel wire for removing paint and varnish from surfaces to be refinished.

Number	Block Inches	Rows of Wire	Length of Wire Inches	Dozen
1780	7 1/4 x 2 1/4	6x19	1 3/4	\$6.00
2816 1/2	7 x 2 1/4	6x14	2 1/4	8.00



No. 177

A heavy, full brush made from specially tempered round steel wire; suitable for cleaning metal surfaces of all kinds; also extensively used for cleaning exterior work on stone, brick, terra cotta and rough painted surfaces. The heaviest and most serviceable brush made.



"Painters Friend"—No. 1779

Short trimmed, very full and stiff; made of round tempered steel wire. Particularly recommended in connection with paint and varnish remover for removing varnish and wax from hardwood floors and for cleaning and preparing flat varnished or painted surfaces for refinishing. It leaves the cleaned surface in a smooth condition without roughing the wood; it takes the place of sandpaper, mineral wool and all other abrasives—works faster and lasts longer.



No. 1777

Nos. 1781, 1781

Adapted for cleaning architectural iron work, figured brass and bronze castings. Extensively used for pattern and braziers work; also as a file cleaning brush.

Especially adapted for metal and painted surfaces where a narrow faced brush is required.

Number	Style Handle	Rows of Wire	Length of Wire	Dozen
1777	Bent	3	1 1/4	\$4.00
1781	Shoe	4	1 1/8	5.85
1784	Shoe	2	1 1/8	3.75



No. 1778

No. 1778

For cleaning mouldings and in applying preparation for removing paints, varnish, etc. They will also be found a handy house brush for removal of dirt and grease from stoves, etc.

Block is 2 3/8 x 1 1/8 inches, 6 rows of wire, 2 1/2 inches long, dozen \$4.50



Platers

Made of extra fine scratch brush wire (.0055) and designed for fine cabinet and furniture work; and for hand scratch brushing metal finishes. May be used freely on either wood or metal without fear of scratching.

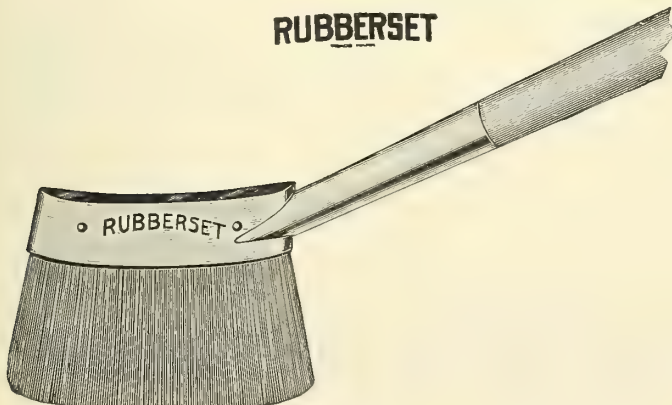
Bent handle, wire drawn.

Total length 12 inches. Length of brush part 5 1/2 inches. Wire 1 inch long.

Number	Rows	Width Inches	Dozen
0250	2	5/8	\$5.00
0251	3	7/8	6.50
0252	4	1 1/8	8.50
0253	5	1 3/8	10.50
0254	6	1 5/8	13.00
0256	8	1 7/8	16.00

Automobile Cleaning Brushes

RUBBERSET



Hatchet shape with long handles. Made of extra stiff Russian bristles held in a nickel ferrule by hard rubber.

Invaluable for removing oils, greases and dirt from gasoline engines of automobiles, boats or aeroplanes.

Excellent for washing and cleaning chassis and remote parts of vehicles that cannot be reached with an ordinary brush.

Can be used in gasoline, kerosene oil or water.

No. 116 Dozen \$11.58

Sash Tool Style

Made with very stiff, harsh bristle. Excellent for cleaning grease and dirt from all metal parts.

No. 100 Dozen \$5.20

Spark Plug



A combination wire and bristle brush for cleaning spark plugs.

The stiff fine wire for cleaning off soot, carbon, grease, etc.

The bristle tuft at end of brush for the finer parts.

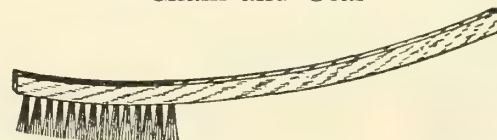
Two stiff flat steels are furnished with every brush for cleaning out those parts of the plug ordinarily inaccessible.

Indispensable to the auto.

Put up in individual boxes.

No. 999S Dozen \$3.00

Chain and Gear



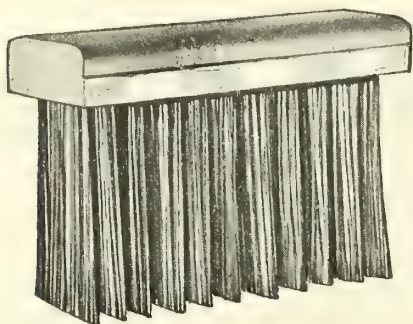
These brushes are made from fine tempered steel brush wire especially for cleaning gears and dirt from the different parts of automobiles. Well finished and handy to carry with the automobile kit to which they are indispensable.

Number	Rows	Trim Inch	Dozen
285	1	Black Chinese bristle 7/8	\$1.10
286	2	Black Chinese bristle 7/8	1.45
287	3	Black Chinese bristle 7/8	1.85

Steel Wire Casting Brushes

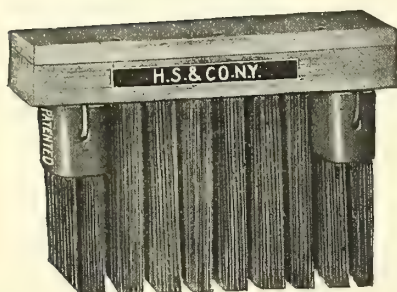
Solid Block

For Brushing and Cleaning Castings



Made of flat tempered steel wire with solid backs; that is, without the separate cover or veneer which sometimes breaks or works loose.

Number	Rows	Wire, Inches	Block, Inches	Dozen
91	4x10	2	7 $\frac{3}{4}$ x2 $\frac{1}{4}$	\$3.00
92	4x10	3	7 $\frac{3}{4}$ x2 $\frac{1}{4}$	3.40
93	4x10	4	7 $\frac{3}{4}$ x2 $\frac{1}{4}$	3.60
94	4x10	5	7 $\frac{3}{4}$ x2 $\frac{1}{4}$	3.50
95	5x10	2	7 $\frac{3}{4}$ x2 $\frac{5}{8}$	4.25
95 $\frac{1}{2}$	5x10	2 $\frac{1}{2}$	7 $\frac{3}{4}$ x2 $\frac{5}{8}$	3.50
96	5x10	3	7 $\frac{3}{4}$ x2 $\frac{5}{8}$	3.75
97	5x10	4	7 $\frac{3}{4}$ x2 $\frac{5}{8}$	4.20
98	5x10	5	7 $\frac{3}{4}$ x2 $\frac{5}{8}$	5.00
99	5x10	6	7 $\frac{3}{4}$ x2 $\frac{5}{8}$	6.00



Rice Patent Bridled

Made of flat tempered steel wire

This brush contains more wire than is used in any plain casting brush. The end rows are protected by patent bridles attached to the block by reciprocal holders, which permit the bands to move, conforming to the action of the wire when the brush is in use. These bands prevent the breaking of the wires by minimizing the vibration.

Number	Row	Wire, Inches	Block, Inches	Dozen
23	4	4	7 $\frac{1}{2}$ x2 $\frac{3}{8}$	\$4.50
24	4	5	7 $\frac{1}{2}$ x2 $\frac{3}{8}$	5.00
27	5	4	7 $\frac{1}{2}$ x2 $\frac{5}{8}$	5.00
28	5	5	7 $\frac{1}{2}$ x2 $\frac{5}{8}$	5.50
29	5	6	7 $\frac{1}{2}$ x2 $\frac{5}{8}$	6.25

Round

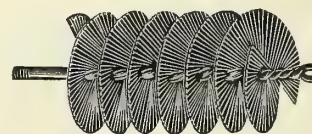


Made of flat tempered steel wire.

Round wire casting brushes adapted for cleaning cast-iron car wheels, etc.

- No. 10 Block 3-inch diameter, length of wire 5 inches, dozen... \$4.75
No. 11 Block 3-inch diameter, length of wire 6 inches, dozen... 5.00

Wire Flue Brushes

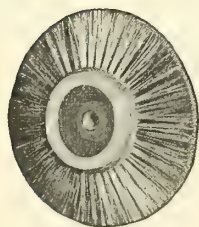


No. 192

- No. 192 Flat wire, single spiral, 1 to 6 inches long, per inch... \$.40

Bristle Wheel Brushes

List Per Dozen Brushes



Converging
Shape



Upright
Shape

Number	Diameter Inches	Rows	Block Diameter Inches	White Bristle			Black Bristle			White Mane Hair	Soft White Goat Hair
				Extra Stiff	Stiff	Medium Stiff	Extra Stiff	Stiff	Medium Stiff		
1152	1 $\frac{1}{2}$	2	$\frac{5}{8}$	\$3.00	\$2.65	\$1.75	\$2.55	\$2.20	\$1.60	\$2.60	\$2.80
1153	1 $\frac{1}{2}$	3	$\frac{5}{8}$	4.45	3.40	2.70	3.50	2.80	2.40	3.50	3.85
1154	1 $\frac{1}{2}$	4	$\frac{5}{8}$	5.60	4.90	3.50	4.40	4.00	3.15	5.00	5.50
1155	1 $\frac{1}{2}$	5	$\frac{5}{8}$	7.00	6.25	4.40	5.60	4.90	4.00	6.45	6.80
1156	1 $\frac{1}{2}$	6	$\frac{5}{8}$	8.45	7.50	5.30	6.80	6.10	4.70	7.75	8.20
1202	2	2	$\frac{7}{8}$	3.30	2.80	2.10	2.90	2.50	1.90	2.80	3.05
1203	2	3	$\frac{7}{8}$	4.90	4.50	3.05	4.00	3.40	2.70	4.35	4.70
1204	2	4	$\frac{7}{8}$	6.55	5.60	4.00	5.30	4.40	3.60	5.85	6.35
1205	2	5	$\frac{7}{8}$	8.20	7.00	4.70	6.55	5.60	4.20	7.50	8.00
1206	2	6	$\frac{7}{8}$	10.00	8.45	5.65	8.00	6.80	5.00	8.90	9.65
1252	2 $\frac{1}{2}$	2	1	4.70	3.50	2.35	3.90	2.95	2.25	3.75	4.10
1253	2 $\frac{1}{2}$	3	1	6.20	5.30	3.25	5.30	4.20	3.15	5.60	6.20
1254	2 $\frac{1}{2}$	4	1	7.20	5.85	4.10	6.00	4.70	3.80	6.40	6.80
1255	2 $\frac{1}{2}$	5	1	8.80	7.25	4.90	7.00	5.85	4.40	8.20	8.55
1256	2 $\frac{1}{2}$	6	1	10.50	8.90	5.85	8.45	7.15	5.30	9.40	10.00
1302	3	2	1 $\frac{1}{2}$	5.85	4.10	3.30	4.90	3.50	2.95	4.25	4.70
1303	3	3	1 $\frac{1}{2}$	8.75	6.10	4.70	7.00	5.30	4.20	7.00	7.70
1304	3	4	1 $\frac{1}{2}$	11.75	8.20	6.45	9.40	6.55	5.60	9.40	10.50
1305	3	5	1 $\frac{1}{2}$	14.65	10.50	8.20	11.70	8.75	7.00	11.70	12.85
1306	3	6	1 $\frac{1}{2}$	17.55	12.90	7.00	14.10	10.55	8.20	14.10	15.85
1352	3 $\frac{1}{2}$	2	2	7.00	4.70	4.25	5.60	4.30	3.75	5.20	5.85
1353	3 $\frac{1}{2}$	3	2	10.50	7.00	6.10	8.45	6.30	5.30	8.20	9.00
1354	3 $\frac{1}{2}$	4	2	14.10	9.40	7.00	11.25	8.20	6.40	10.50	11.75
1355	3 $\frac{1}{2}$	5	2	18.75	14.05	9.40	15.00	11.70	8.45	14.65	16.05
1356	3 $\frac{1}{2}$	6	2	22.25	17.00	11.70	17.80	14.10	9.40	18.05	19.90

State size arbor hole required.

Manual Training Knives

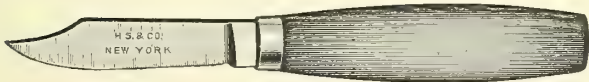
H. S. & Co.

All Knives on this page are made of finest crucible tool steel, are accurately ground and finely finished. They are carefully and thoroughly tempered and handles are shaped to give a firm yet easy grip. Fully warranted. We have carefully studied every detail of these goods and have embodied all points of value gained in our experience since 1848 in supplying tools and equipment to schools, colleges and institutions.

Sloyd



Nos. 6 and 7



No. 7A



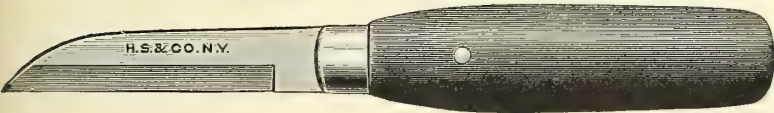
Swedish "A"



No. 8

These Knives have shank running through handle and riveted on end.

No. 6	2¾-inch blade, dozen.....	\$5.00
No. 7	2½-inch blade, dozen.....	4.35
No. 7A	2½-inch blade, dozen.....	4.35
Swedish "A"	2½-inch blade, dozen.....	2.40
No. 8	2⅝-inch blade, dozen.....	3.65



Style C

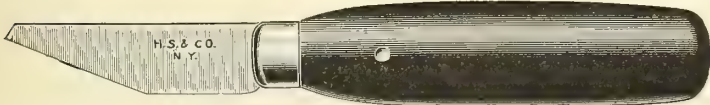
Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

1⅝-inch blade, dozen.....	\$4.50
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(Specially adapted for kindergarten use.)

2½-inch blade, dozen.....	\$5.40
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Stencil



Style D

Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

2-inch blade, dozen.....	\$4.20
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Style G

Carvers



No. 1



No. 2



No. 3

Particular attention is called to the No. 3 Knife, as it is the proper "shape" and size best adapted for chip carving.

No. 1	Extra quality, 2½-inch blade, dozen.....	\$3.00
No. 2	Extra quality, 1¾-inch blade, dozen.....	2.40
No. 3	Extra quality, 2¼-inch blade, dozen.....	4.20



Style E

Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

1⅝-inch blade, dozen.....	\$4.00
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(Specially adapted for kindergarten work)

2-inch blade, dozen.....	\$4.50
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Style F

Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

2-inch blade, dozen.....	\$3.45
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Style E-1

Blade is 1 inch long by ¼ inch wide.

Dozen.....	\$2.85
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Handle is stained wood, 6¼ inches long. Blade is 4¾ inches long by ¼ inch wide.

Dozen.....	\$4.50
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Knives

H. S. & Co.

These Knives are made of the best crucible tool steel, correctly shaped, tempered and ground for the purpose. Handles are shaped to give a firm grip and each knife is finely finished.

Wood or Leather



Square Point

No. 1	2 $\frac{5}{8}$ -inch blade, dozen	\$2.00
No. 2	3 -inch blade, dozen	2.00
No. 3	3 $\frac{1}{2}$ -inch blade, dozen	2.20
No. 4	4 -inch blade, dozen	2.40
No. 5	5 -inch blade, dozen	3.00
No. 76	3 $\frac{3}{4}$ -inch blade, dozen	3.00
No. 78	5 -inch blade, dozen	4.50



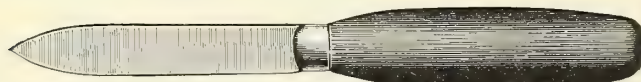
Paring

No. 2	3-inch blade, dozen	\$2.00
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Sharp Point

No. 2	3-inch blade, dozen	\$2.00
No. 79	3 $\frac{5}{8}$ -inch blade, heavy, dozen	3.00



Gothic Point

No. 3	3 $\frac{1}{2}$ -inch blade, dozen	\$2.00
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Felt



Hollow Ground

No. 63	Hollow ground 6-inch blade, dozen	\$14.40
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No. 63A	5 $\frac{1}{2}$ -inch blade, especially adapted for cutting large pieces of felt and cloth of any thickness, rare tropical wood handle, dozen	\$18.00
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No. 66	5-inch blade, dozen	\$19.20
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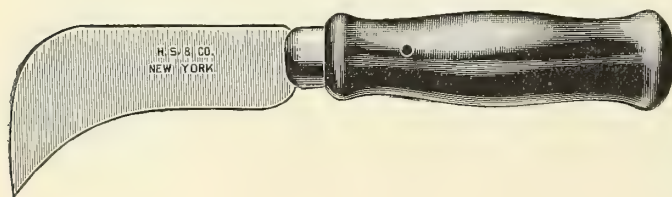
No. 66A	Hollow ground, 6 $\frac{1}{2}$ -inch blade, especially adapted for fine, accurate cuttings, such as damper wedges, etc., rare tropical wood handle, dozen	\$15.60
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No. 67C	Tuners, 2 -inch blade, dozen	\$5.28
No. 67D	Tuners, 2 $\frac{1}{2}$ -inch blade, dozen	6.24

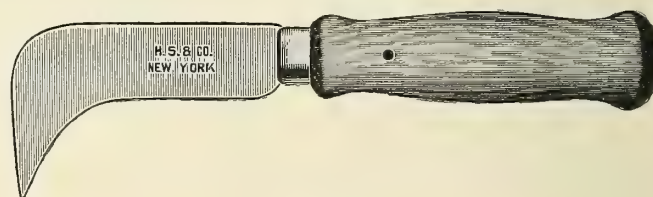
Linoleum or Oilcloth

These knives are all made of the best quality of crucible steel, finely and correctly tempered, polished and ground



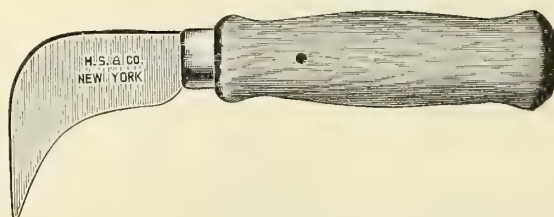
No. X 740

With round rubberoid finish handle, extra fine quality steel blade, 3 $\frac{1}{2}$ inches long, round, closed end, nicked ferrule, dozen	\$6.75
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No. 752B

With burnt wood handle, nickel ferrule, 3 $\frac{1}{2}$ -inch blade, dozen	\$4.50
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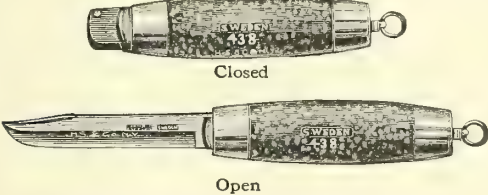


No. 752 $\frac{1}{2}$ B

With burnt wood handle, nickel ferrule, 2 $\frac{1}{2}$ -inch blade, dozen	\$4.50
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Folding or Hunting Knives

Swedish



Blades are made of finest quality crucible tool steel, heavily designed so as to give good service. Opened and closed quickly by spring, operated by ring in end of handle. Handles are selected mottled Swedish birchwood.

- No. 2 2¾-inch blade, dozen..... \$11.25
- No. 3 2½-inch blade, dozen..... 10.50

Bench Knives and Blades

Dexter



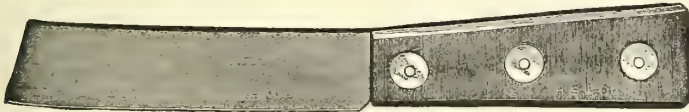
Made of highest grade steel, polished, correctly shaped. Parallel jaws. All parts interchangeable.

Styles of Points



- No. 2 Complete with blade, dozen..... \$7.00
- Extra blades, 4¾ inches long, 23⁄64 inch wide, dozen..... 2.00
- Always supplied with bevel blade unless otherwise specified

Chipping or Hacking Knives



- No. 321 Blades are 4½, 5 or 6 inches in length, dozen..... \$5.00

Knife Blades

All Blades are fully warranted against any imperfections. Made of the finest quality English steel, hand-forged and carefully tempered

Shirt or Cloth



No. 102 Tapered

- Full length, inches..... 9 11
- Width, inch..... 9⁄16 9⁄16
- Dozen..... \$3.00 3.00

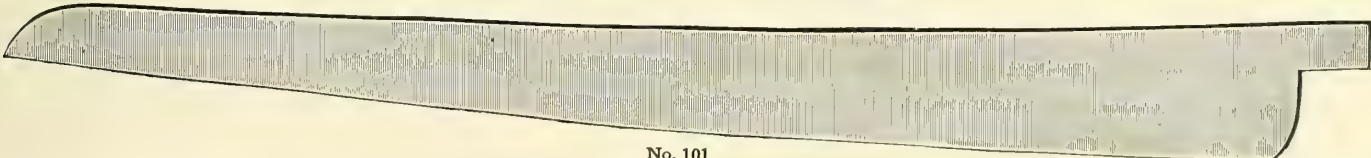
Mat



No. 103 Square Point

- Full length, inches..... 9 11
- Width, inch..... 9⁄16 9⁄16
- Dozen..... \$3.50 3.50

New York Pattern, Cloth or Slot



No. 101

- In lengths 20, 22, 24, 26 and 28 inches, dozen..... \$24.50

Knife Handles

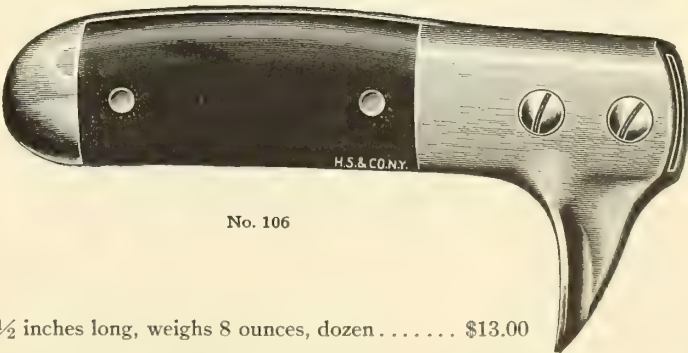
These Handles are made of composition metal, warranted not to corrode, and will not discolor the hands of operators. They are highly finished, full nickel-plated; double screw black ebony trimmings

Shirt or Mat



No. 104

Cloth or Slot



No. 106

- 4½ inches long, weighs 5½ ounces. Made with 5⁄8-inch slot to take a 9⁄16-inch blade, dozen..... \$9.00
- 4½ inches long, weighs 8 ounces, dozen..... \$13.00

Feather Knives



6½ inches overall, 2¾-inch blade, rubberoid finish handle, dozen \$4.50

Feather Curlers



6½ inches overall, 2½-inch blade, rubberoid finish handle, dozen \$4.50

Furriers Combs

Steel



6½ inches long overall, 1⅛ inches wide.

Number.....	½	1	2	3	3½
Teeth to the inch.....	12	14	16	18	20
Depth of teeth, inch.....	⅜	⅝	¾	⅞	7⁄8
Dozen.....	\$6.00	6.00	6.00	6.00	6.00

No. 6 Steel Handle

8 inches long overall, 1¼ inches wide.

Toothed 4¼ inches, handle 3¾ inches, 9 teeth to the inch, ⅝-inch deep, dozen..... \$7.80

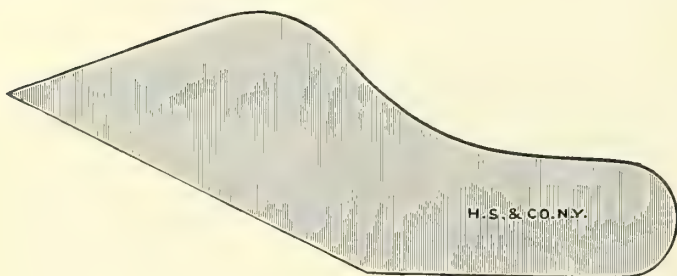
No. 5 Combination

6¾ inches long overall, 1¼ inches wide; ½ has 11 teeth to the inch, ⅞ inch deep; ½ has 14 teeth to the inch, ½ inch deep.

Can also be furnished with all coarse or all fine teeth, if desired.

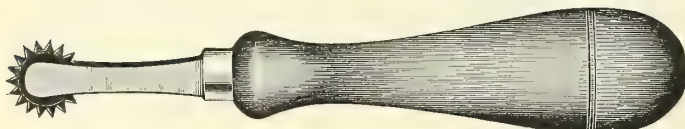
Dozen..... \$7.80

Furriers Knives



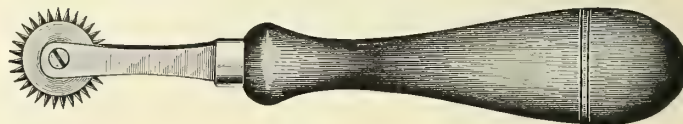
Overall, inches.....	5	5½	6	6½
Cutting edge, inches.....	3	3	3⅜	3½
Dozen.....	\$7.00	7.00	7.00	7.00

Tracing Wheels



No. 1 With White Handles

The wheel is ¾ inch in diameter and has 18 teeth, making them rather coarse. 6¾ inches in length overall, dozen \$2.50

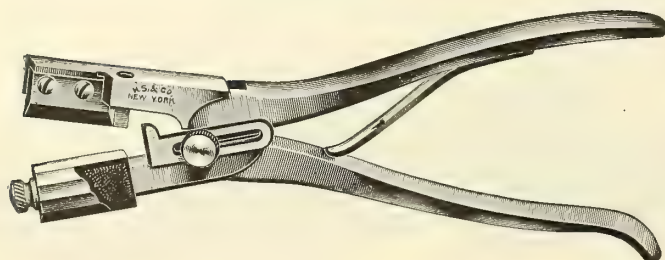


No. 2 With Rosewood Handle

The wheel is 1 inch in diameter and has 32 teeth, making them very fine and pointed. 6¾ inches in length overall, dozen .. \$4.50

Button Hole Cutters

Bauer Pattern

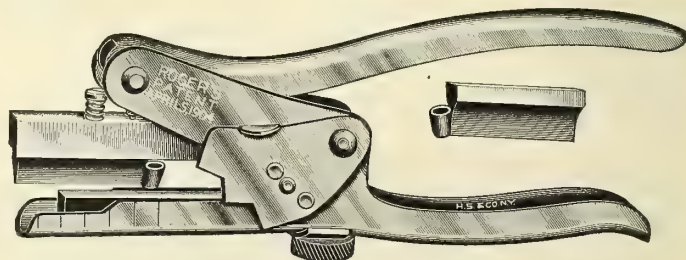


No. 100 Revolving

9⅝ inches in length overall, polished handles, dozen \$24.00

Extra knives, cylinders, thumb-screws, tubes, gauges or springs, dozen..... 3.00

Rogers



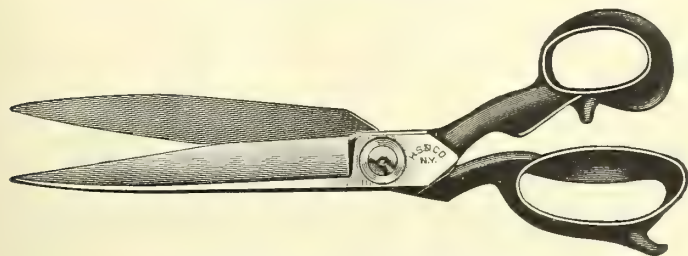
7 inches in length overall.

Has a reversible blade which can be adjusted without the aid of any tools. This allows the tailor to cut button holes with perfect oblong-shaped eyelet or the hole in lapel of the coat with absolute assurance that it will not cut the edge or any part not desired.

Nickel-plated, dozen..... \$30.00

Tailors Shears

Genuine Heinisch



Japanned Handles with Brass Bolt and Nut
Right-hand

Number	3	3½	4	4½	*5	6
Length overall, inches	12	12¼	12¾	13	13	13¾
Pair	\$3.50	4.00	5.00	6.00	8.00	9.00
Number	7	8	9	10	11	12
Length overall, inches	14	14¼	14¾	15¼	15¾	16¼
Pair	\$10.00	11.00	12.00	13.00	14.00	15.00

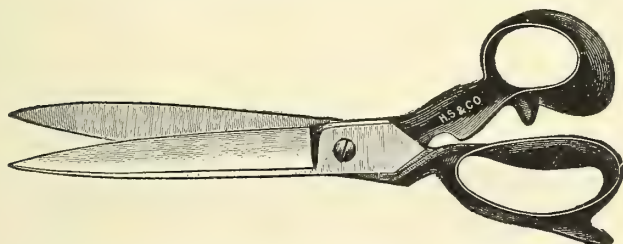
*Heavy.

Left-hand

Number	3	5	8
Length overall, inches	12	13	14¼
Pair	\$4.50	8.00	12.00

Tailors or Carpet Shears

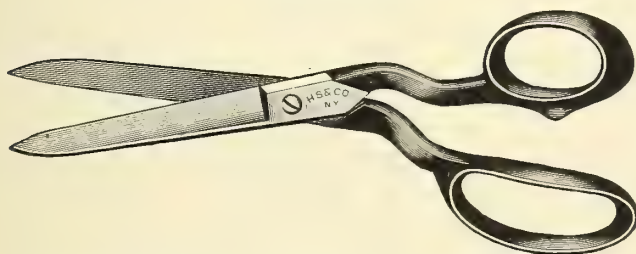
H. S. & Co.



- No. 4P Japanned handles. Steel screw and nut. Entire length 12½ inches, pair \$3.00
- No. 4P Ball Bearing. Japanned. Entire length 12½ inches, pair 4.00

Hatters Shears

Trimming or Edging
H. S. & Co.



No. 117 Japanned Handles, Nickeled Blades

These Shears are used extensively in hatting shops, also in hatters' finishing rooms, to clean the brim of both soft and stiff hats.
When specially ordered, handle and blade are reversed, for use by rug makers
Lengths overall, 9 inches, dozen \$36.00

Paper Shears

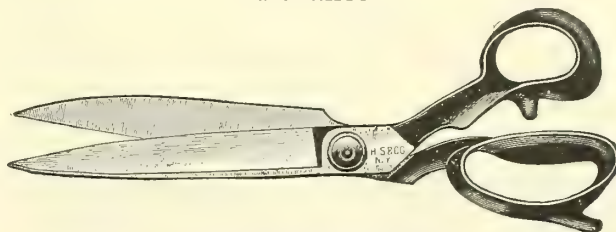
With Ring Handles
H. S. & Co.



No. 860

Ring handles, full nickel-plated, length over all 10 inches, dozen, \$27.00

Reliance

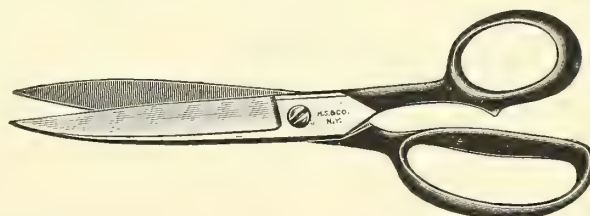


Japanned Handles, Right Hand

Number	1R	2R	3R	3½R	4R	4½R
Length overall, inches	10¾	11¾	12	12½	12¾	13
Pair	\$2.75	3.00	3.50	4.00	5.00	6.00

Rubber Shears

H. S. & Co.



Japanned Handles, Nickel Blades. No. 43

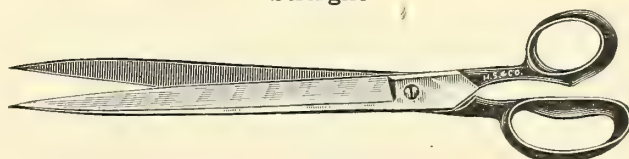
A strong tool for heavy work, shaped to the hand of operator to allow continual use without tiring the wrist.

Length overall, inches	8½	9½
Dozen, plain screw	\$19.00	25.00
Dozen, screw and nut	23.00	27.00

Bankers or Paper Shears

H. S. & Co.

Straight



No. 88

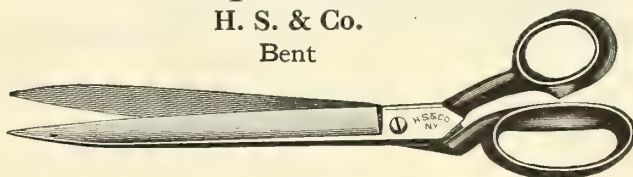
Straight japanned handles, nickel blades.

Length overall, inches	10	11	12	13	14
Dozen	\$27.00	31.00	34.00	38.00	44.00

Paper Shears

H. S. & Co.

Bent

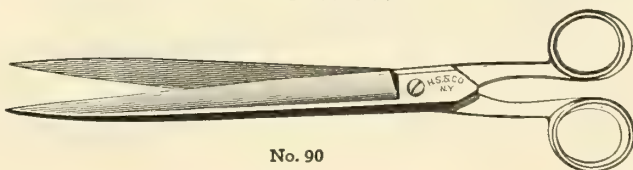


No. 85.

Bent japanned handles, nickel blades, length overall 12 inches, dozen \$36.00

Coupon or Desk Shears

H. S. & Co.



No. 90

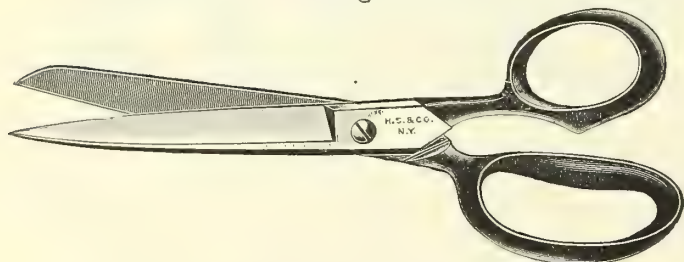
Ring handles, full nickel-plated.

Length overall, inches	8	9
Dozen	\$17.00	21.00

Trimmers

H. S. & Co.

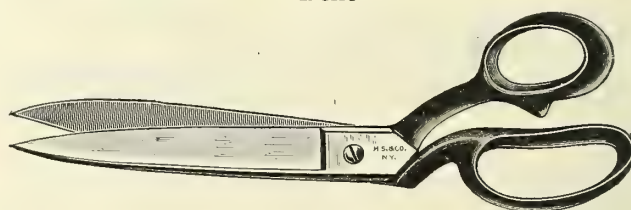
Straight



No. 3 Japanned Handles. Nickel-Plated Blades

Length overall, inches .	5	5½	6	6½	7	7½	8
Dozen.....	\$13.00	13.00	13.00	14.00	15.00	16.00	17.00
Length overall, inches .	8½	9	10	11	12	13	
Dozen.....	\$18.00	21.00	27.00	31.00	34.00	38.00	
Full nickel-plated, No. 13.							
Length overall, inches .				7½	8		
Dozen.....				\$16.00	17.00		

Bent



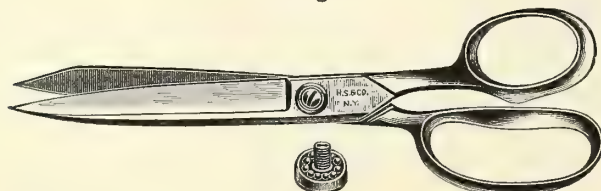
No. 2 Japanned Handles. Nickel-Plated Blades

Length overall, inches .	9	10	11	12	13
Dozen.....	\$24.00	30.00	33.00	36.00	40.00
Full nickel-plated, No. 112.					
Length overall, inches .		9	10		
Dozen .		\$24.00	\$30.00		

Ball Bearing

These Trimmers have no complicated devices to get out of order, being a practical cutting tool, with a frictionless ball bearing correctly applied. The screw acts simply as a lock, not as a tension support, and is so arranged that the blades are held firmly in their relative positions and there is no possibility of any loosening of the screw except by adjustment of operator.

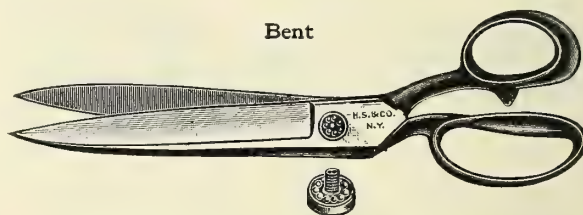
Straight



No. 61 Japanned Handles. Nickel-Plated Blades

Length overall, 8 inches, dozen .	\$16.00
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Bent

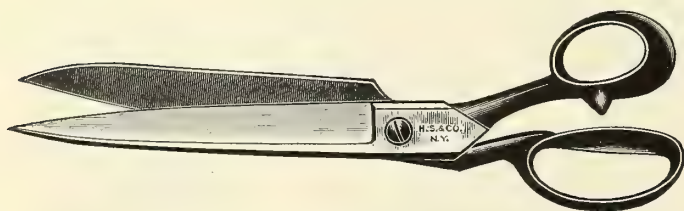


No. 51 Japanned Handles. Nickel-Plated Blades

Length overall, 8½ inches, dozen .	\$20.00
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Raised Blade

Bent



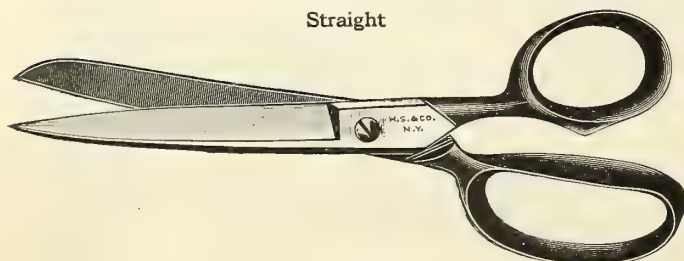
No. 20R

Extra heavy pattern, fitted with strong, durable steel screw and nut.

Length over all, inches .	10	11	12	13	14
Dozen.....	\$32.00	35.00	40.00	48.00	54.00

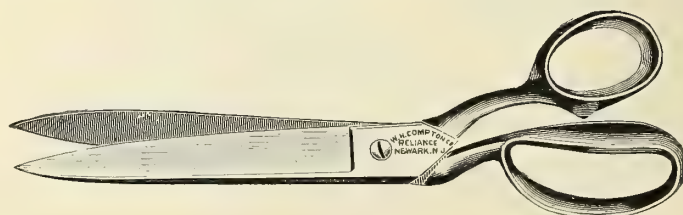
Left-Hand Handles with Right Blades. Japanned Handles, Nickel Blades

Straight



No. 3L

Bent



No. 2L

Length overall, inches .	7	8	9	10
Dozen.....	\$20.00	22.00	26.00	32.00

Length over all, inches .	9	10	11	12	13
Dozen .	\$30.00	36.00	39.00	42.00	46.00

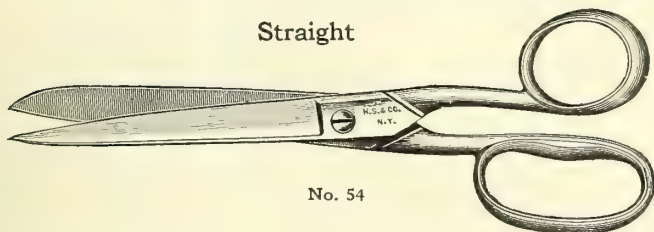
Trimmers

H. S. & Co.

Hand Forged. Solid Steel

Unquestionably, the finest finished and best adjusted Shears made

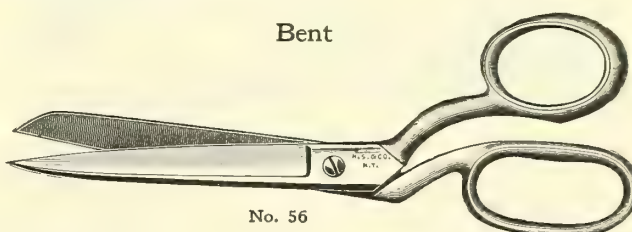
Straight



No. 54

Length overall, inches	6	6½	7	7½	8
Dozen	\$12.00	13.00	14.00	15.00	16.00

Bent



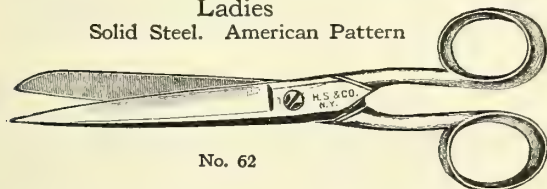
No. 56

Length overall, inches	6	7	8	9
Dozen	\$13.00	15.00	17.00	19.00

Hand Forged Scissors

H. S. & Co.

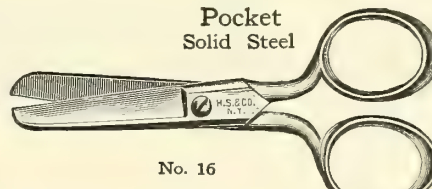
Ladies
Solid Steel. American Pattern



No. 62

Length overall, inches	4	4½	5	5½	6	6½	7
Dozen	\$11.00	11.50	12.00	12.50	13.00	14.00	15.00

Pocket
Solid Steel



No. 16

Length overall, inches	3	3½	4	4½	5	6
Dozen	\$10.00	10.50	11.00	11.50	12.00	13.00

Imported

Ladies No. 1212

Length overall, inches	3½	4	4½	5	5½	6	6½	7
Dozen	\$3.20	3.20	3.45	3.75	4.05	4.30	4.85	5.70

Imported

Pocket No. 1216

Length overall, inches	3½	4	4½
Dozen	\$3.50	3.75	4.00

Ladies Double Pointed

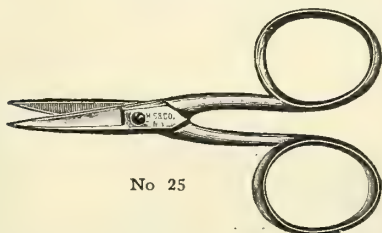
Solid Steel. American Pattern

Same style as No. 25 shown below

No. 26

Length overall, inches	4½	5	5½	6
Dozen	\$11.50	12.00	12.50	13.00

Embroidery
Solid Steel
Full Nickel-Plated

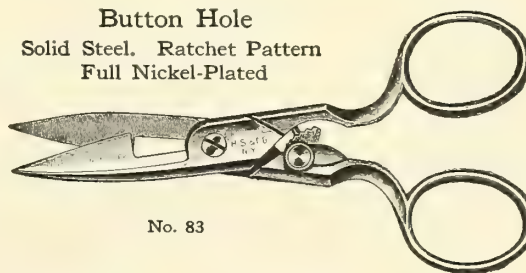


No. 25

Length overall, inches	3	3½	4
Dozen	\$10.00	10.50	11.00

Button Hole

Solid Steel. Ratchet Pattern
Full Nickel-Plated



No. 83

One of the most practical Scissors manufactured. The size of hole to be cut can be gauged accurately and quickly.

Length overall, inches	4¼	4¾
Dozen	\$16.00	17.00

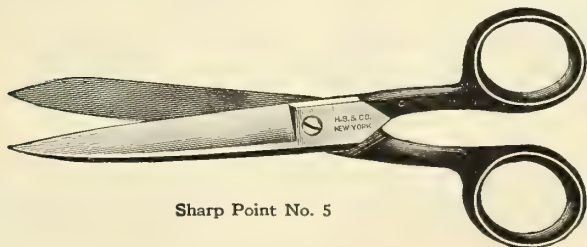
Imported

Button Hole No. 1750½

Length overall, inches	4¼
Dozen	\$8.00

Manual Training Scissors

Japanned Handles. Nickel Blades



Sharp Point No. 5

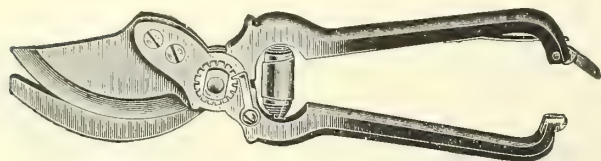
Length overall, inches	5	5½	6
Dozen	\$11.50	12.00	13.00



Blunt Point No. 5B

Length overall, inches	5	5½	6
Dozen	\$12.00	13.00	14.00

Pruning Shears



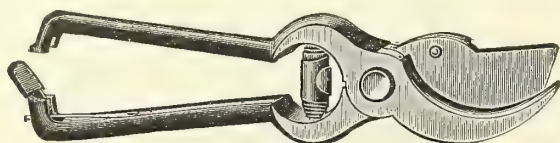
No. R70

Has ratchet nut which may be tightened whenever wear is evident, and the pawl slipped a notch or two ahead, thus always holding blades in firm adjustment. Straw-colored tool-steel blades of extra quality, correctly tempered. Volute spring. Removable blades.

9 inches overall, dozen \$15.00

No. 50—Same style as No. R70, but is lighter in construction, has narrower blade and is without ratchet nut and removable blade features.

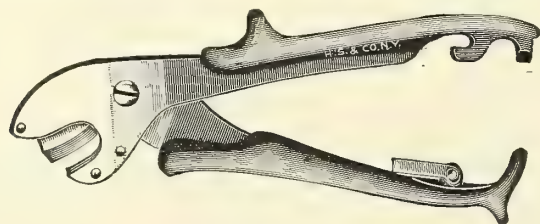
9 inches overall, dozen \$6.75



No. 99

"The Buckeye," polished steel blades, tempered. Finely finished. Volute spring.

9 inches overall, dozen \$15.00

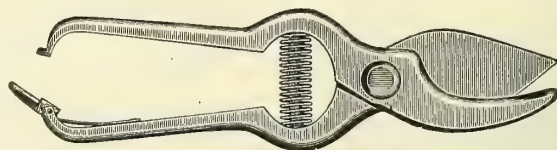


The Levin

No. 23 7 inches overall. Cuts $\frac{1}{2}$ -inch dry oak. Weighs $7\frac{1}{2}$ ounces, dozen \$5.50

No. 24 9 inches overall. Cuts $\frac{3}{4}$ -inch dry oak. Weighs 13 ounces, dozen 7.50

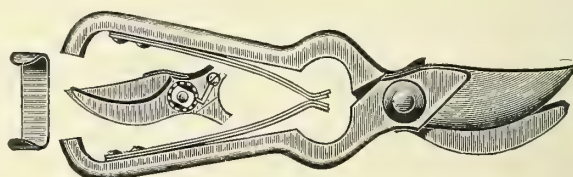
In addition to being first-class Pruning Shears, above Shears are used extensively by manufacturers of baskets and willowware.



No. 9

French pattern. Also known as California pattern. Full polished steel blades extra tempered. Spiral steel spring.

9 inches overall, dozen \$12.00



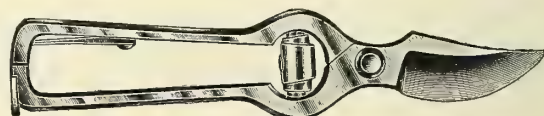
No. R85

Swiss pattern. Full polished, best quality crucible steel blades, tempered, ground convex; adjusting nut and regulating ratchet, longitudinal double brass spring removable handle-clip.

Made in three lengths: 8, $8\frac{1}{2}$ and 9 inches. Specify size wanted.

Each shear individually boxed, with an extra blade, which practically doubles the life of the shear.

Dozen..... \$21.00



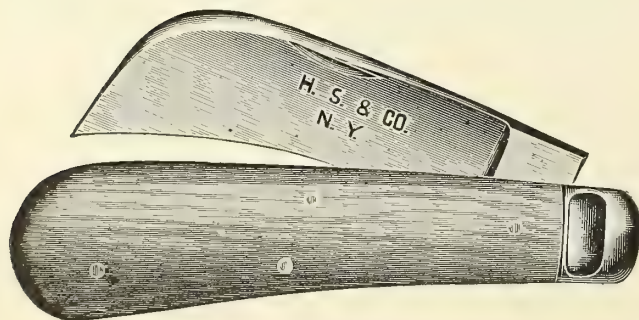
No. 1011

Drop-forged steel, full nickel-plated.

Length overall, inches	$4\frac{3}{4}$	$5\frac{1}{2}$	$6\frac{1}{2}$
Dozen.....	\$9.00	10.50	12.00

Pruning Knives and Shears

Knife

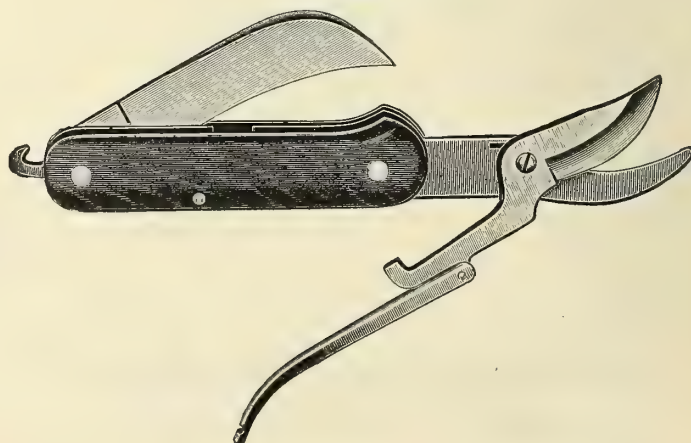


No. 43

7 inches overall when open. 3-inch blade. Rosewood handle, dozen \$11.00

Genuine IXL, No. 256. $7\frac{1}{2}$ inches overall when open. 3-inch blade. Horn handles, dozen 16.00

Combination



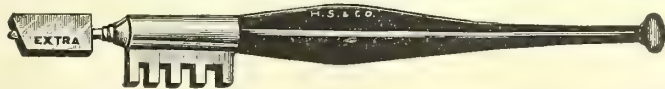
No. 6794

Shears and blades are of best quality shear steel and handles are cocobolo wood. Shears are guaranteed to be durable and practical.

Dozen..... \$42.00

Glaziers Diamonds

All Glaziers Diamonds listed on this page have been carefully selected and tested and are of the best quality. The diamonds can be reset at least three times. To obtain the proper cut, hold the diamond as slanting as possible, raising it gradually until a smooth, sound and clear cut is made. Do not hold it perpendicularly—any diamond can be spoiled in one attempt to cut glass by being held this way. Never try to cut twice in the same place.



- No. 1 Extra tulip key. For general use on ordinary glass, each \$4.20
 No. 2 Extra rosewood key. A very good diamond for general use, each 5.00
 No. 3 Superior boxwood. Specially adapted to single and double-thick glass and where a diamond for heavy work is constantly required, each 10.00
 No. 4 Plate-glass diamond. Specially adapted for general use. It is of best quality of diamond and large spark. For all kinds of work where an extra heavy diamond is required. Can be used when needed on single thick glass 13.35



Anyone can cut with this style, however inexperienced in glass-cutting, as it merely requires to be set on the glass and drawn over it to make a perfect cut.

- No. 5 Sure-cut, each \$4.20

Glass Cutters

Genuine "Red Devil"



Finest in the World. Hand-Honed Wheels.

- No. 024 Dozen \$1.20



H. S. & Co.

The turret contains six high-grade steel wheels, hardened and tempered and carefully tested.

The turret may be revolved on or clamped to the frame by the screw, the head of which appears on the reverse side of the tool from that shown in the cut.

This screw is slotted so that it may be operated by a screwdriver, thus enabling any of the cutters to be placed in position for use instantly.

The turret is held within a circular recess, which protects all of the cutters not in a position for use. When desired, the turret may be removed, and new cutters inserted instantly and with ease. The axles are permanently secured to prevent their falling out while new wheels are being inserted.

- No. 10 Rosewood finish handle, nicked ferrule. Cutter head and revolving turret of steel, highly polished and nicked, dozen \$3.50

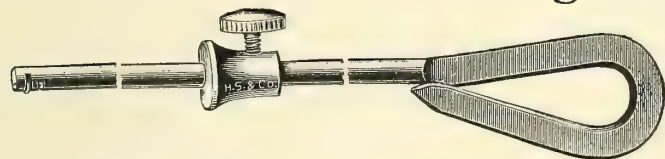


- No. 2 Enameled wood handle. Metal parts nickel-plated, gross \$12.00

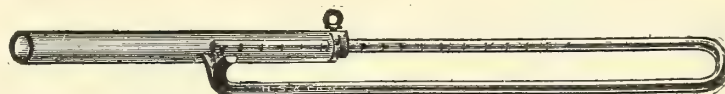


- No. 30 Enameled wood handle. Metal parts nickel-plated. 2 cutters, dozen \$2.00

Gauge Glass Cutters



- No. 7 Nickel-plated, dozen \$2.00

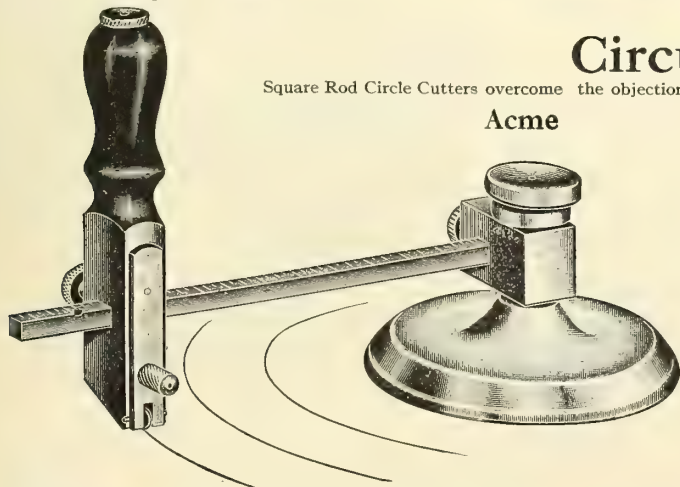


- Chicago. Nickel-plated, each \$.75

Circular Glass Cutters

Square Rod Circle Cutters overcome the objections to round rod cutters since the cutter head cannot turn on the rod

Acme



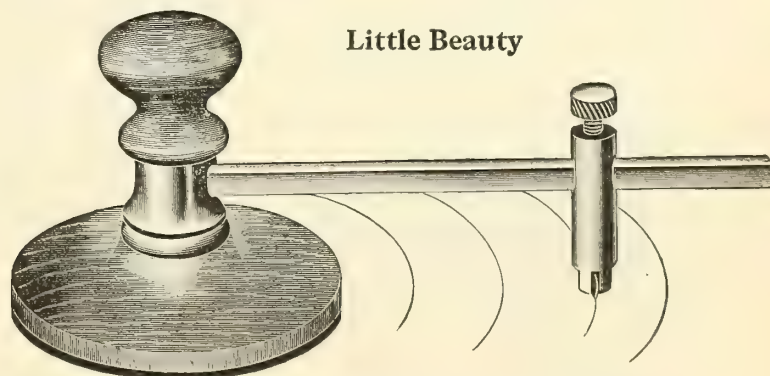
Nickel-plated. Thumb piece does not revolve. Interchangeable head for renewing cutters, secured firmly to 12-inch graduated rod marked with $\frac{1}{8}$ inch. Movable base, instantly adjusted to measurements on rod from side of post. Rubber bottom. Cuts circles from 3 to 23 inches.

Complete with 12 extra wheels and axles.

Cutters with longer rods furnished at additional cost.

- Each \$5.50

Little Beauty



Parts nickel-plated. Hardwood base and thumb piece.

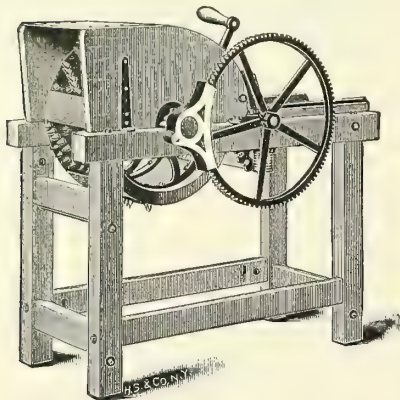
- 20-inch circle, dozen \$3.50

- 40-inch circle, dozen 4.00

Hair Pickers

Champion

Hand Power Machine



These Pickers have been on the market since 1884, and having met with a favorable reception throughout the trade, have gained a reputation that place them far in advance of other machines.

They are strongly built, great care being taken to make all working parts as simple and durable as possible.

The frames are hardwood, securely put together with joint bolts. The journal boxes are lined with babbit metal. The teeth are held in place by iron plates attached to the wooden cylinder. The lags are bolted to iron flange wheels, adding additional strength and security to the cylinder.

The Hand Power Machines are operated by a handle placed at the side opposite the gearing, thus protecting the operator from accident from the revolving wheels. In addition to this precaution an iron guard covers the gearing of all machines, thus minimizing the danger of accident.

The Foot Power Machine is exactly the same as the hand power type except that handle is removed from right-hand side and a treadle action attached to each end of the wheel shaft.

The Belt Power Machines are built on the same general lines as the hand and foot machines, but somewhat heavier. Has steel shafts, endless feed bolts and tight and loose pulleys 3½x8 inches. The cylinder can make 400 revolutions per minute with absolute safety.

They are made to meet the demands of car builders, upholsterers, mattress makers, carriage makers, etc., where large quantities of moss, tow, curled hair, etc., are handled.

The "Special" Machines have two hackles instead of one, as in the "Regular," containing a greater number of teeth and are especially arranged for picking cotton and other materials extra fine.

Hand Power

Length, feet	4
Width, inches	19
Height, feet	3½
Circumference of cylinder, feet	5¾
Width of cylinder, inches	12
Weight crated for shipment, pounds	240
Regular Machine, 140 teeth, each	\$30.00
Special Machine, 698 teeth, each	37.50

Foot Power

Length, feet	4
Width, inches	19
Height, feet	3½
Circumference of cylinder, feet	5¾
Width of cylinder, inches	12
Weight crated for shipment, pounds	240
Regular Machine, 140 teeth, each	\$40.00
Special Machine, 698 teeth, each	47.50

Belt Power

Length, feet	4
Width, feet	3
Height, feet	3½
Circumference of cylinder, feet	5¾
Width of cylinder, inches	16
Weight crated for shipment, pounds	350
Regular Machine, 240 teeth, each	\$65.00
Special Machine, 1000 teeth each	75.00
Regular, with Dust Blower Attachment, each	115.00
Special, with Dust Blower Attachment, each	125.00

Boston

Belt Power

This Picker, with the exception of the feed table, is made entirely of iron and steel. A Solid Iron Cylinder, machine turned and accurately balanced, is used instead of the wood cylinder of the "Champion" Picker.

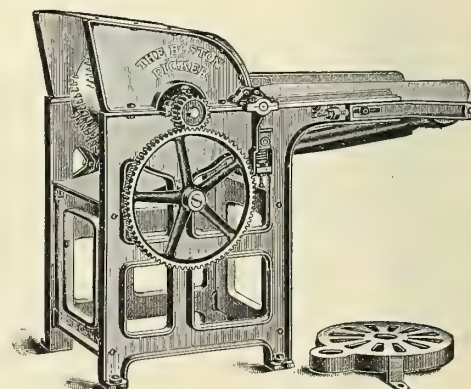
Crucible Steel Teeth, tempered and ground especially for this work, are also used.

The several gears are extra wide and heavy and are "cut" from solid blanks.

Guards are provided as a part of the machine to protect the operator against accident from the gearing or moving parts.

The machine is most solidly constructed and is mechanically perfect. It is capable of doing all the work for which much larger and more expensive pickers are ordinarily required.

Power, Regular Size, 16-inch width cylinder, each	\$145.00
Power, Large Size, 20-inch width cylinder, each	185.00
Power, Regular Size, with Dust Blower Attachment, each	195.00
Power, Large Size, with Dust Blower Attachment, each	235.00



Circumference of cylinder, inches	46
Width of cylinder, inches	16
Width of picker, overall, inches	35
Length of picker, overall, inches	54
Height of picker, overall, inches	54
Weight of picker, crated, pounds	675
Number of teeth in cylinder and hackle	236
Power required, horse	2

The Boston Power Picker can also be built to order in larger sizes. Estimates furnished upon receipt of required dimensions and capacity

Carpet Stretchers

H. S. & Co.—Special—Extra Heavy



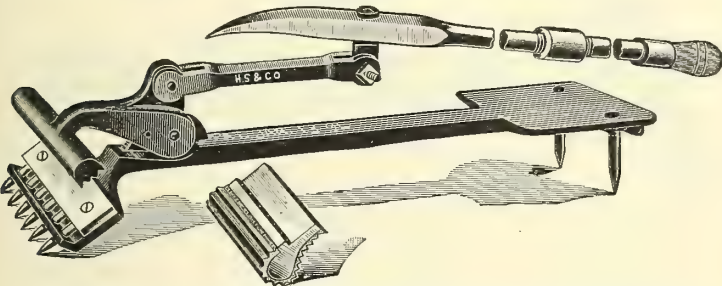
We call particular attention to this Stretcher, which we designed to meet the demand for a strictly first-class tool. It is made of forged steel, with extra strong teeth, has jointed hickory handle with lignum vitae head, 8-inch heavy brass tube ferrule and throughout is finished in the best possible manner. Length overall 32½ inches, length of longest joint 20½ inches.

Complete, as shown, each \$6.00

Blades Only		Handles Only	
For H. S. & Co. Special, each	\$4.20	For H. S. & Co. Special.	
The following are smaller, lighter stretchers, for amateur use.		No. 4 Polished hickory, 1½x23 inches, 8-inch ferrule, each ...	\$1.80
No. 90 Straight, dozen	7.60	For lightweight blades.	
No. 90A Bent, dozen	7.60	No. 1 Polished maple, plain, 1¼x21 inches, per dozen	3.00
		No. 3 Polished maple, jointed, 1⅜x21 inches, 6-inch ferrule.	
		each	1.50

Carpet Vise and Stretcher

Anderson

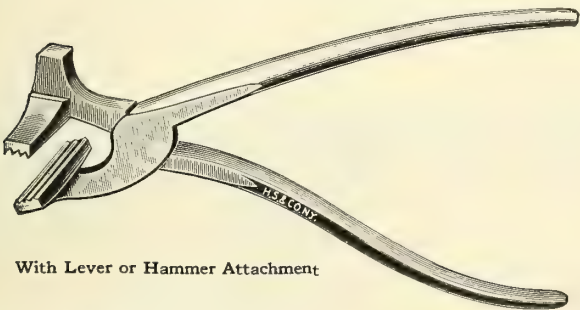


In addition to stretching carpets this Stretcher can also be used on oilcloth, linoleum, matting, etc., by placing the attachment shown in smaller illustration over the tooth-plate. This attachment is covered with corrugated rubber, which prevents slipping, and also prevents the teeth from leaving any marks upon the floor covering.

Complete, as shown, each \$6.00
Toothed Blades only, each 1.20

Webbing Pliers

H. S. & Co.

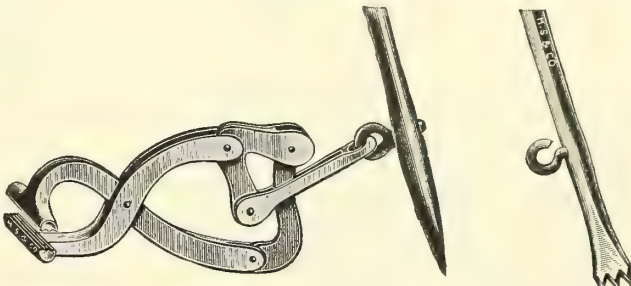


With Lever or Hammer Attachment

3-inch face, polished steel, each \$1.50
3½-inch face, polished steel, each 1.50

Carpet Vises

Kelly Pattern



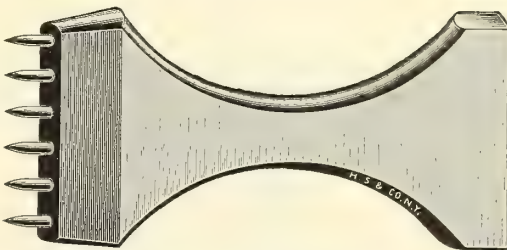
No. 2

Showing Lever
for No. 1

No. 1 Polished steel, with three-prong lever, each \$4.80
No. 2 Polished steel, with single point lever, each 4.20

Webbing Stretchers

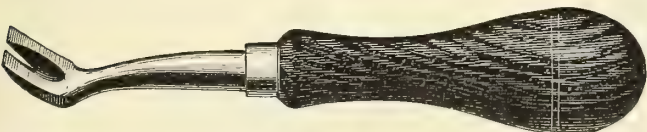
H. S. & Co.



Finely finished maple handle, steel pins, dozen \$5.00

Tack Claws

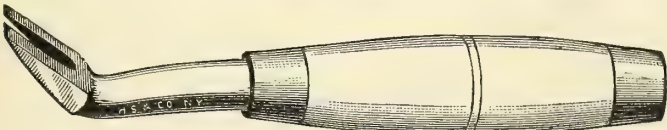
H. S. & Co.



No. 122 Claw Tools, black handle, dozen \$3.00



No. 124½ Rosewood handle, riveted. For heavy work, dozen . \$6.00



No. 123½ Maple handle, iron bound ends, extra heavy and strong, dozen \$9.00



No. 352 Cherry handle, best quality, dozen \$3.75

Nail Pullers

Morrill



The jaws and shank are drop-forged, of high-grade steel specially finished to prevent rust. The ram is best quality cast iron, finely japanned. The handle and hand guard on shank make it impossible to bruise or pinch the hand. The shank is centrally mounted within the foot instead of the usual lap or lay joint. This keeps the jaws from spreading sidewise and gives the tool long life.

Dozen..... \$20.00

Cyclops



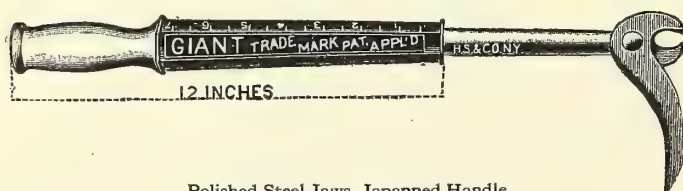
The handle forming part of the pressure foot saves the hand from cut or injury by the blow of the ram. Gives control of both jaws. Guides the jaws directly and quickly to the nail. Holds the jaws steadily and firmly where placed.

The pivot cannot become loose by strain or wear.

The steel parts are fire finished to prevent rust. The ram is finely japanned.

Length 18 inches, weight 4½ pounds, dozen..... \$18.00

Giant



Polished Steel Jaws, Japanned Handle

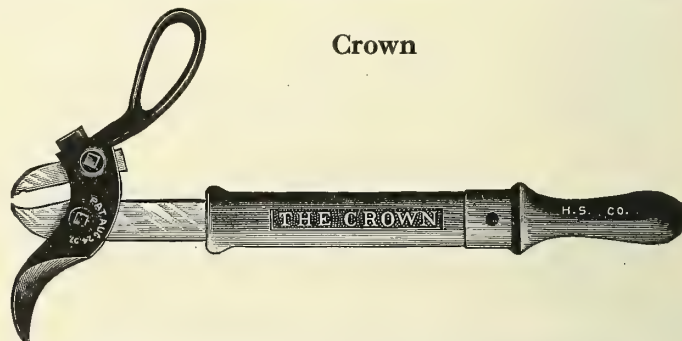
No. 1 18 inches overall closed, 23 inches overall extended; weight about 5 pounds.

Dozen..... \$18.00

No. 1½ 17 inches overall closed, 22 inches overall extended; weight about 4 pounds.

Dozen..... 16.50

Crown



Steel polished jaws, japanned handle. Length 18 inches; when extended 24 inches. Will pull nails without noise. Easily operated; dozen..... \$18.00

Box Opener

Morrill



Will open the largest cases and pull out the longest nails. It may be used as a claw bar, box chisel, strap cutter, nail puller or hammer and will perform all these operations quicker and easier than any other single device without injuring nails or damaging cases.

Length overall 14 inches, weight 1¾ pounds, dozen..... \$18.00

Box Chisels

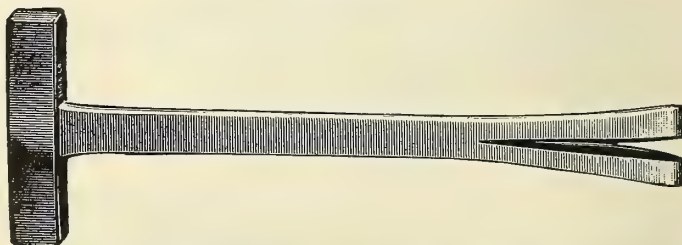
H. S. & Co.



Flat, 10-inch, polished steel, dozen..... \$8.00

Length, inches.....	10	12	15	18	21
Diameter, inch.....	¾	¾	¾	¾	¾
Octagon, dozen.....	\$7.25	7.75	9.00	10.00	11.00

Noxtox



Round. 16-inch, japanned steel, dozen..... \$13.00

Hatter's No. 7. 6-inch, japanned steel, dozen..... 10.00

Forged solid, all in one piece, from high-grade steel. Carefully hardened and oil tempered. Fully guaranteed. One hammer head, plain; one scored. Weight 14 ounces. Length overall 9 inches.

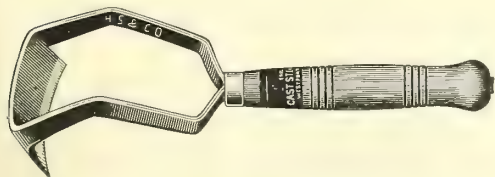
No. 70 Black finish, polished claw, dozen..... \$8.00

Packing Needles



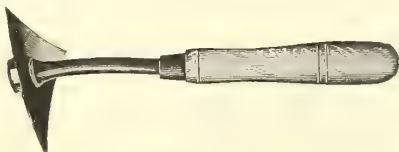
Length, inches.....	4	5	6	7	8
Common heavy, best cast steel, tempered, gross.....	\$1.85	3.05	4.40	6.10	8.00
Collier pattern, forged spring steel, gross.....	\$13.20	16.80	20.40	24.00	28.80

Box Scrapers



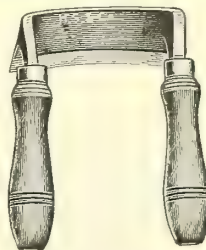
Single Handle

A high-grade scraper of extra quality.
Each \$1.95
Lowentraut No. 22
Cast steel; blades screwed on.
Dozen 9.00



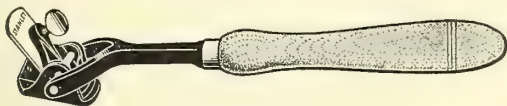
Triangular No. 21

Extra strong. Length overall 11½ inches.
Dozen \$5.00
Extra blades, dozen 3.00



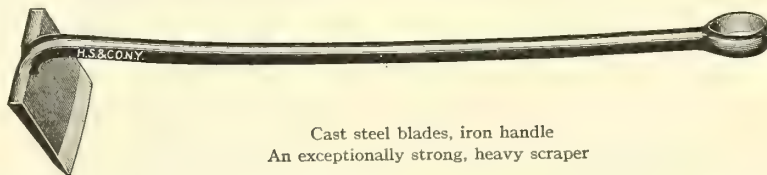
Double Handle

A high grade scraper of extra quality.
Dozen \$2.20
Lowentraut No. 18
Solid forged-steel, dozen 7.70



No. 70 Adjustable

For removing stencils and other markings from the surfaces of boxes, floors, etc. It has a large maple handle, 13 inches in length, hinged to the malleable iron bottom, making it possible to work the tool from any position above the surface. The face of the bottom and the edge of the cutter are slightly curved away from the center, allowing the user to scrape clean any uneven surface.
With 2-inch cutter, japanned finish, dozen \$6.00
Extra blades, dozen 1.50
Extra set screws, dozen50



Cast steel blades, iron handle
An exceptionally strong, heavy scraper

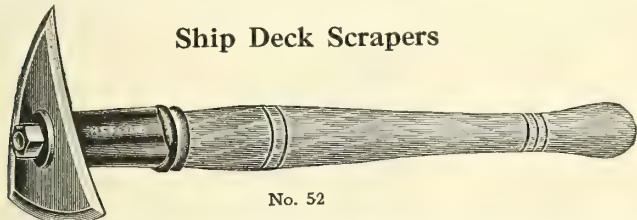
No. 1 Dozen \$11.20
No. 2 Extra heavy, dozen 12.80

Butcher Block Scrapers



Plain beech handle, 6-inch blade, 5 inches wide, dozen \$3.75

Ship Deck Scrapers

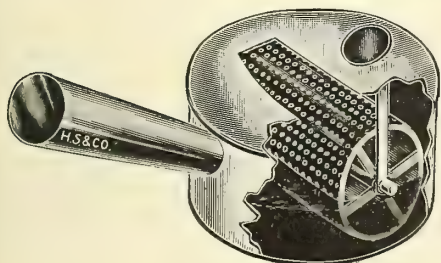


No. 52

Superior quality, highly tempered, with sockets made to strengthen the blade and prevent cracking.
Length overall 17 inches. Makes 5-inch cut. Complete, dozen \$12.00
Extra handles and sockets, dozen 7.50
Extra blades, dozen 4.50

Marking or Stencil Pots

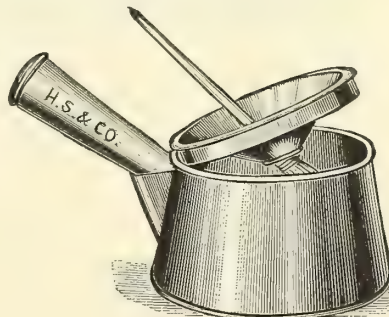
Cylindo



A quick daub of the stencil brush across the cylinder churns the ink, carrying sufficient full bodied ink right to the surface to properly load and prime the brush. Strongest construction. Solid brass cylinder. Other partsterne plate, thus resisting all corrosive action of the liquid ink.

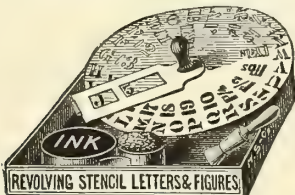
Based on the principle of the paddle-wheel.

Dozen \$12.00



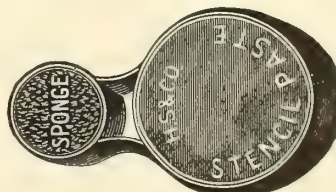
No. 1 Tin, 5½ inches diameter, without brush, dozen \$3.00

Stencil Plates



Revolving Alphabet and Figures (with box of ink and stencil brush)
Size of letters, inches.....
Per set \$1.25 1.25 1.25 1.25 1.50 1.50 2.00 2.00 2.50
Revolving Alphabet only, with box of ink and stencil brush.
Size of letters, inches.....
Per set \$2.00 2.50
Revolving Figures only, in box, without ink or brush.
Per set \$.60 .60 .60 .70 .70 .80 .80 1.00 1.00 1.20
Special Stencils for all purposes made to order from sketch

Stencil Ink



In dry cake form in cans, with sponge cup attached. It will not evaporate or lose color. It works freely and does not gum the brush or stencil.

	0	1	4
Number	5¼	4¼	3¼
Diameter, inches.....	\$.45	.30	.15
Per can.....	.32	.20	.08
Extra cakes.....			

Box Hooks

H. S. & Co.



No. 340

Showing Fibre
Handle on
No. 350

No. 340. Heavy round tool steel, polished. Long tapered points, hickory handles, steel ferrules held by rivet running through handle and hook making it impossible for hook to get loose or pull out. The heavy steel ferrules prevent handles from splitting and can be used as a hammer to drive nails without injury to the handles.

10 inches long under handle, dozen..... \$12.00

12 inches long under handle, dozen..... 14.00

No. 350 As No. 340, but with a fibre tube or covering encircling the handle, leaving heavy ferrules on ends exposed. 12 inches under handle, dozen..... 18.00



Butler Improved

No. 330. Similar to illustration but made of heavy black finish octagon steel $\frac{3}{16}$ -inch thick. The hook runs through the handle and is firmly riveted.

10 inches long under handle, dozen..... \$8.00

12 inches long under handle, dozen..... 10.00

Butler Improved. Made from $\frac{1}{2}$ -inch octagon steel, finely tempered. The shank of the hook is threaded and forced firmly into the handle and has a steel pin riveted in the center, making it impossible to loosen or pull out the hook.

9 inches long overall, dozen..... \$5.00

12 inches long overall, dozen..... 6.50

Box Strapping

Improved



In 3,000 Foot Coils

In 300 Foot Coils

This is the most economical method of packing the embossed box strapping for users who have the space to give to it. It makes a very convenient package, and is furnished with wooden reel and stand complete with first order, but no allowance is made if stand is not taken.

Each reel contains 3,000 measured feet, except in the 1-inch width, which is wound in reels of 1,500 feet each to reduce the bulk.

Width, inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per 3,000 feet.....	\$10.00	12.50	15.00	17.50	20.00

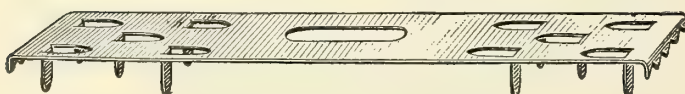
Each coil contains a single continuous strip 300 feet long. Individual hangers on each coil. The stock is soft and ductile, easily penetrated by a nail at any point.

Attention is called to the manner of embossing, which is the only form that really prevents the nail from slipping.

Width, inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per coil of 300 feet.....	\$1.00	1.25	1.50	1.75	2.00

Slotted Clutch Nails

De Haven



These Nails are slotted at the point where they bend, which overcomes the "spring back" feature, which was the fault of the old style.

The slot is located so that it comes directly over the corner, allowing the nails to lie close to the wood, and securing full value of the tensile strength of the iron. Can be driven either in the centers or on the ends of cases, and bend easily over the corners.

Size, inches.....	$3\frac{1}{2} \times \frac{3}{4}$	$4 \times \frac{3}{4}$	$6 \times \frac{7}{8}$
Per 1,000.....	\$3.25	3.50	5.00

Packed in boxes of 1,000 and 2,500, and barrels of 5,000 each.

Self Drawing



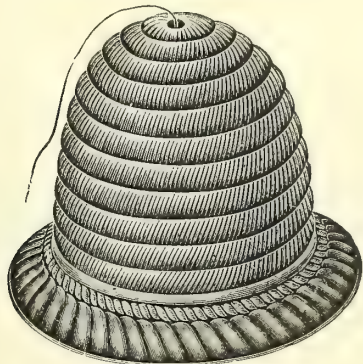
Put up in coils of 1,500 feet and reels of 5,000 to 6,000 feet, on wooden reel frames ready for use.

The strap is manufactured from soft annealed, flat Bessemer stock, bright finish, having nail holes every three inches. The holes are split and spread, and the nail being driven opens the walls of the holes, thus contracting the length of the strap and automatically tightening it about the case to a high degree. The only strap that allows the nail to be driven flush with the wood.

Number.....	1	2	3
Width, inch.....	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$
Per 100 feet.....	\$.25	.27 $\frac{1}{2}$	.30

Cast Iron Twine Boxes

Bee Hive Pattern



Nos. 31, 33 and 51

- Size of twine chamber 4x4½ inches.

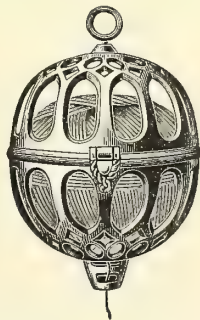
No. 31 Japanned, dozen..... \$6.80

No. 33 Copper bronzed, dozen..... 7.90

Size of twine chamber 5x5½ inches.

No. 51 Japanned, dozen..... \$12.00

Hanging Type



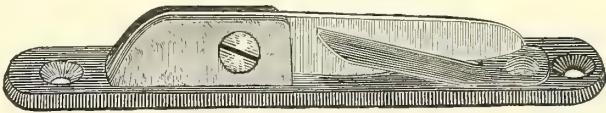
Drop Catch, Hinged Nos. 21 and 23

- Size of twine chamber 4x4½ inches.

No. 21 Japanned, dozen..... \$3.40

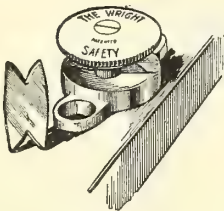
No. 23 Copper bronzed, dozen..... 3.40

Twine Cutters



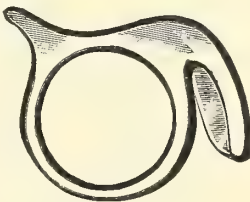
For counter use. The blades are of an extra quality and are made to stand heavy work, dozen..... \$3.00

Safety



For bench or counter use. Screws down solid. Cuts two ways. Blades are removable, dozen.. \$3.00

Magic



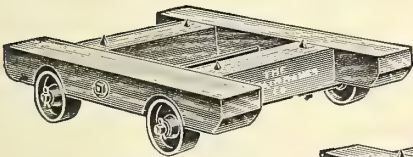
Pat. Sept. 3, 1901.

Wear it on the little finger

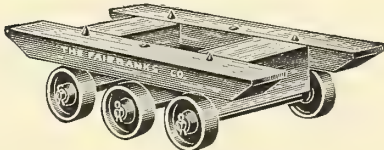
Nickel-plated with hand ground steel blade of proper temper. Ring is made in seven sizes.

Sizes.....	3	4	5	6	7	8	9	10
Diameter, inch.....	17/32	9/16	19/32	5/8	11/16	23/32	3/4	25/32
Dozen.....	\$2.75							

Box or Case Trucks



No. 223 Four Wheels

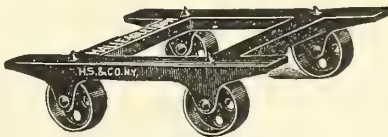


No. 224 Six Wheels

Designed for handling heavy, bulky cases and bales of goods. Low and strong construction. Wheels are set flush with sides of truck and in No. 223 are set into routings in the side rails. This materially reduces the over-all height. Tops of frames are equipped with spurs to prevent load from slipping. No. 224 balance on center wheels.

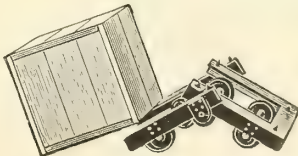
Number	Length Inches	Width Inches	Height Inches	Approximate Weight Pounds	Each
223-1	18	18	5	30	\$4.50
2	26	18	5	35	5.50
224-3	24	16	6½	35	7.50
4	36	22	6½	45	10.00

Iron



No. L1191 Malleable

Weight.....	26 pounds
Capacity.....	1 ton
Dimensions.....	22x15½ inches
Each.....	\$5.00

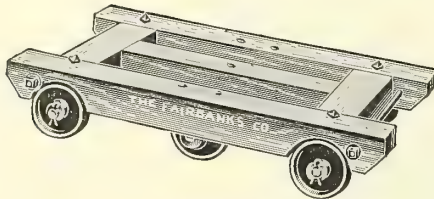


No. 178 Folding

This truck cannot run away when box is being loaded. It is easy to carry from place to place. The wheels are locked when truck is being loaded and automatically release themselves when box is on the truck. Frame made of 1½x2-inch angle iron. Weight 35 pounds.

Each.....	\$6.00
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Piano or Machinery Trucks



No. Y1112

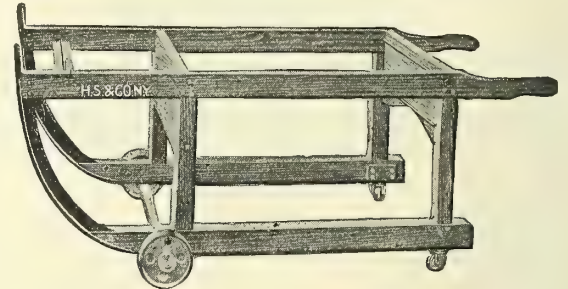
Designed for handling heavy machinery, engines, pumps, pianos, etc.; in fact anything of a heavy, bulky nature can be handled on this truck with the greatest facility.

Construction is extremely strong and compact. Framing is securely mortised together, and reinforced by one-inch tie-rods at either end. Truck balances on the two center wheels, which are of larger diameter and broader face than the outside wheels, and operates easily in any direction under load.

Made specially in sizes up to six tons capacity. Prices quoted on receipt of specifications.

No. Y1112 Length 36 inches, width 22 inches, height 7¼ inches.
Approximate weight 100 pounds, each. \$15.75

Piano Repair Truck



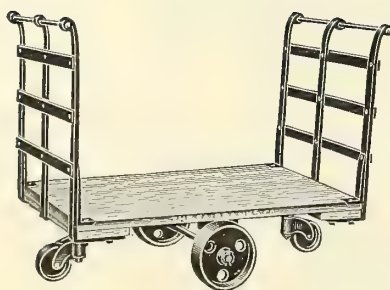
This truck was designed for the quick and convenient handling of pianos.

It is made of selected kiln-dried heavy oak in skeleton form and is extremely light, while powerful braces and cross-braces insure the fullest measure of strength.

The rocker and all metal parts are of Bessemer steel. Wide-tired stationary front wheels make it possible to truck a piano from place to place without tilting or swinging out of line. Casters are used on the rear and the truck may be swung around by the handles in any direction desired and in a very small space. The capacity is 1,200 pounds.

No. 5081 Knocked down and crated. Shipping weight 75 pounds, each. \$12.00

Dry Goods or Leather Trucks



No. 244

Designed for handling all kinds of dry goods, leather, etc. Very popular as a "piece goods" truck. Platform of good, clear-grained wood. Racks well riveted together, and are reinforced by iron angles, set flush into top of platform and securely bolted into place.

Trucks balance on center wheels, and turn readily in their own length. Are furnished with swivel casters.

Number	Length Over All Inches	Platform			Wheels		Height of Racks	Approximate Weight Pounds	Each
		Length Inches	Width Inches	Height Inches	Center Inches	Ends Inches			
244-1	49	42	24	9½	7½x2	4¾x1¼	27	175	\$22.50
244-2	52	45	27	11½	9 x2½	4¾x1¼	27	210	35.50

Hand Trucks

Single Handle



No. 227

Designed for handling light boxes and packages in narrow aisles.

No. 227 Length of handles 56 inches, width at nose 10¼ inches, width overall 13¼ inches, approximate weight 10 pounds, each \$3.00

Of light, strong construction for quick and careful handling of barrels and kegs.

Hook slides down and catches on chine of barrel—load cannot roll off.

No. C1321 Length of handles 60 inches, width inside wheels 16½ inches, width over all 23 inches, approximate weight 45 pounds, each \$8.75



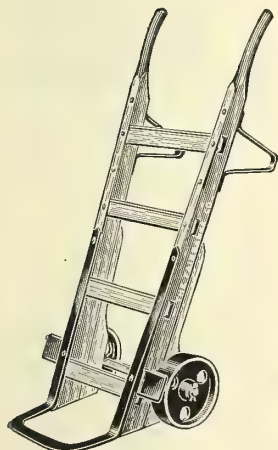
No. C1321

**Warehouse
New York Pattern**

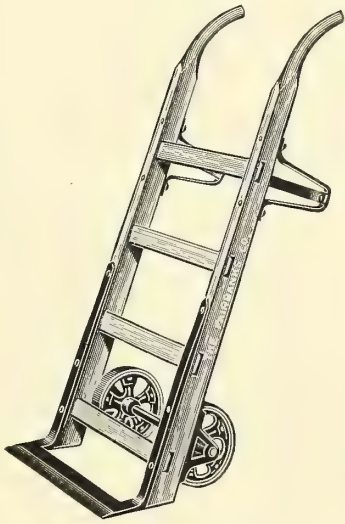
Hotel or Carpet

**Barrel
New York Pattern**

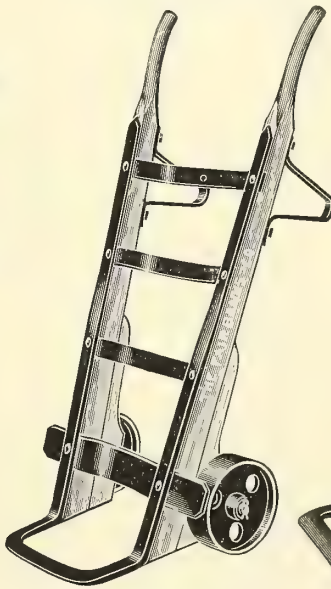
Dry Goods



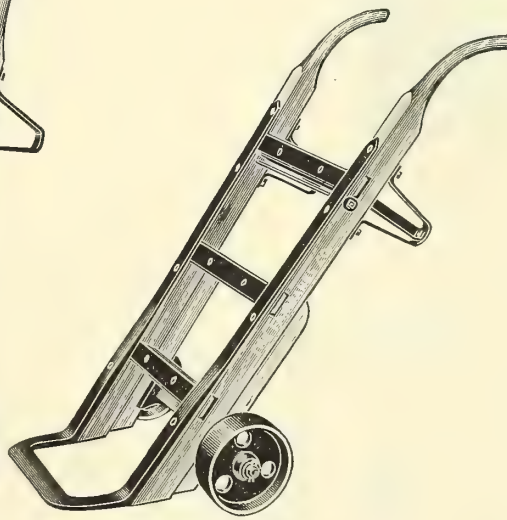
No. 272 Half Strapped



No. 209 Half Strapped



No. 301A Full Strapped All Iron Cross Bars



No. A1304 Full Ironed

**Warehouse
New York Pattern
No. 272**

Designed for general store and warehouse use, with handles and bolsters constructed of two pieces of wood.

Size	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
1	48	18	13	5½	40	\$5.00
2	51	19½	14	6½	58	7.50
3	54	21	15	7¼	72	8.75
4	60	22¾	16	7¼	91	12.25
5	66	24¼	17	7½	109	15.50

**Barrel
New York Pattern
No. 301A**

Designed for general store and warehouse use, having handles made with bolsters separate.

Size	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
1	48	18	13	5½	44	\$8.50
2	51	19½	14	6½	65	11.50
3	54	21	15	7¼	78	13.50
4	60	22¾	16	7¼	98	16.50
5	66	24¼	17	7½	122	20.00

**Hotel or Carpet
No. 209**

The most popular hotel truck on the market. Constructed of the best materials, and combines strength with light weight. Steam-bent handles. Reinforced legs. Rubber tired wheels.

Size	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
1	48	19	19	4¾	42	\$12.00
2	50	21	21	4¾	66	16.60

**Dry Goods
No. A1304**

Designed for handling dry goods cases. Very popular with the wholesale trade. Constructed on long, sloping lines to admit of "breaking" load easily, and on that account this truck will not stand alone.

Materials are carefully selected. Handles are steam-bent. Axles are equipped with cast iron axle boxes or bolsters. Legs reinforced. All wood parts iron strapped.

No. A1305 is the same as No. A1304, except equipped with attachment on axle which prevents wheels coming off until removed by operator.

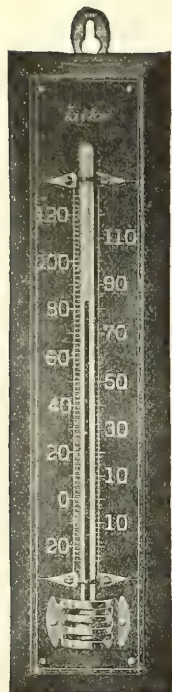
Number	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
A1304	52	19¼	15⅞	6⅜	70	\$14.25
A1305	52	19¼	15⅞	6⅜	75	15.50

Thermometers

Tycos

Cabinet

Porcelain Scale, Wood Back



No. 5120

Medium Grade

Magnifying Mercury or Spirit Tubes, black oxidized brass scales, white filled figures and graduations, brass screw clasps and guards, wood back in weathered oak finish. Range 10° to 40° below zero to 120° F. above.

Size, inches	6	8
No. 5120 Mercury, dozen	\$6.00	6.50
No. 5120S Spirit, dozen	6.00	6.50

Common Grade

Same general style as above, except not so well finished and wood back is finished in birch.

Size, inches	8
No. 5140 Mercury, dozen	\$3.25

Standard Grade

Magnifying tubes, porcelain bevel edge scales, annealed black figures, gold-plated screw clasps, special hand rub piano finish, thin square walnut back. Approximate scale range, 20° to 100° F.

Spiral bulb.

Size, inches	6	8
No. 5224S Dozen	\$20.00	24.00

Medium Grade

Magnifying mercury or spirit tubes, porcelain bevel edge scales, annealed black figures, oak back, rounded top, polished all sides. Approximate scale range, 10° to 40° below zero to 120° F. above.

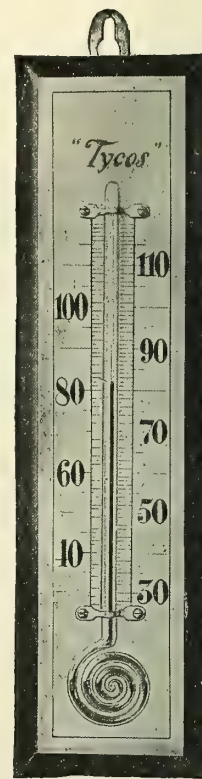
Round bulb.

Size, inches	6	8	10
No. 5232 Mercury, dozen	\$8.00	12.00	16.00
No. 5232S Spirit, dozen	8.00	12.00	16.00

Common Grade

Same general style as No. 5232, except porcelain square edge scale, square cornered wood back, polished one side. Scale range, 20° to 40° below zero to 120° F. above.

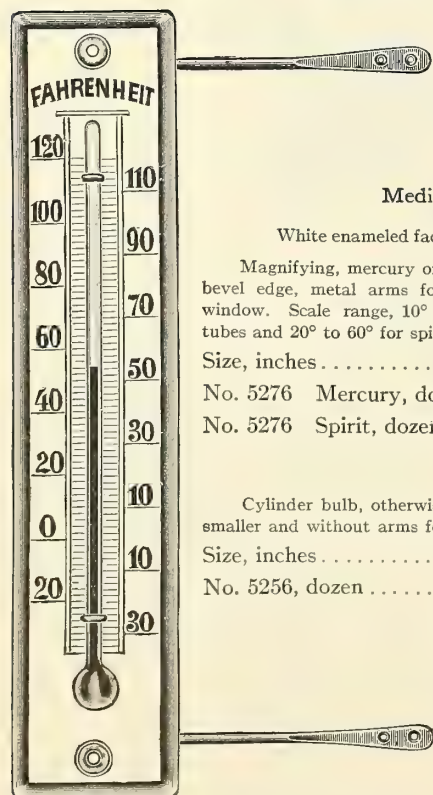
Length, inches	6	8
No. 5244 Mercury, dozen	\$5.00	8.00
No. 5244S Spirit, dozen	5.00	8.00



No. 5224S

Glass Window

Distance Reading



No. 5276

Medium Grade

White enameled face, annealed black figures.

Magnifying, mercury or spirit tubes, plate glass, polished bevel edge, metal arms for attaching to outside frame of window. Scale range, 10° to 40° below zero for mercury tubes and 20° to 60° for spirit tubes to 120° F. above.

Size, inches	6	8
No. 5276 Mercury, dozen	\$9.00	10.00
No. 5276 Spirit, dozen	9.00	10.00

Cylinder bulb, otherwise same general style as 5276, but smaller and without arms for attaching to window.

Size, inches	4
No. 5256, dozen	\$6.00

Selected Common Grade

Magnifying Mercury or Spirit Tubes.

Coppered metal case, black oxidized brass scales, white filled figures and graduations. Scale range, 10° to 40° below zero for mercury tubes and 20° to 60° below for spirit tubes to 120° F. above.

Size, inches	8
No. 5154 Mercury, dozen	\$5.00
No. 5154S Spirit, dozen	5.00

Japanned Tin

Selected Common Grade

("Air" Temperatures)

Magnifying mercury or spirit tubes, black oxidized brass scales, white filled figures.

Scale range, 10° to 40° below zero for mercury tubes and 20° to 60° below for spirit tubes to 120° F. above.

Size, inches	8
No. 5420 Mercury	\$3.25
No. 5420S Spirit	3.25

("Water-Boil" Temperatures)

Approximate scale range, 0° to 220° F. (mercury tubes), silvered brass scales, black filled figures.

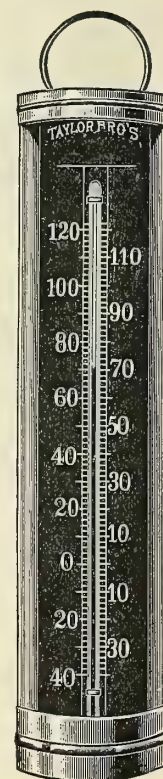
Size, inches	8
No. 5421 Mercury	\$3.25

Brewers or Mash Tub

Standard Grade

Selected large magnifying seasoned mercury tubes. Silvered heavy brass scales. Black filled figures and graduations. Approximate scale range 0° to 220° F. and R.

Size, inches	12
No. 5800 Japanned tin case, dozen	\$16.00
No. 5804 Copper case, dozen	19.50



No. 5154

Illustrations of Wood Screws

The diameter of cut thread wood screws is measured by a screw gauge (see Index). The length of flat-head screws is measured overall; length of round-head screws includes about one-half the head; fillister-head screws are measured from the rim of the head, and the length of the oval-head screw includes the countersink.



Flat Head



Round Head



Oval Head



Fillister Head



Pinched Head



Headless



Bung Head



Winged



Dowel
In the larger sizes a blank space is left in the center



Rogers Flat Head Drive



Diamond Point Flat Head Drive



Diamond Point Oval Head Drive

For listings and weights, see next three pages

Iron Wood Screws

The diameter of wood screws is measured with a screw gauge (see index). Length of flat-head screws is measured overall; length of round-head screws includes about one-half the head; fillister-head screws are measured from the rim of the head, and the length of the oval-head screws includes the countersink.

List of July 22, 1903.

List Per Gross

$\frac{1}{4}$ -Inch No.	$\frac{3}{8}$ -Inch No.	$\frac{1}{2}$ -Inch No.	$\frac{5}{8}$ -Inch No.	$\frac{3}{4}$ -Inch No.	$\frac{7}{8}$ -Inch No.	1-Inch No.
0 at \$.72	0 at \$.72	1 at \$.72	1 at \$.72	2 at \$.72	2 at \$.74	3 at \$.80
1 at .72	1 at .72	2 at .72	2 at .72	3 at .75	3 at .78	4 at .84
$\frac{1}{2}$ 2 at .72	2 at .72	3 at .72	3 at .72	4 at .78	4 at .82	5 at .87
3 at .72	3 at .72	4 at .75	4 at .75	5 at .82	5 at .85	6 at .92
4 at .72	4 at .72	5 at .78	5 at .78	6 at .85	6 at .90	7 at .98
	$\frac{1}{2}$ 5 at .75	6 at .80	6 at .82	7 at .90	7 at .94	8 at 1.05
	6 at .78	$\frac{1}{2}$ 7 at .84	7 at .86	$\frac{1}{2}$ 8 at .95	8 at 1.00	9 at 1.10
	7 at .82	8 at .90	$\frac{1}{2}$ 8 at .92	9 at 1.00	9 at 1.05	$\frac{1}{2}$ 9 at 1.10
	8 at .88	9 at .96	9 at .98	10 at 1.10	$\frac{1}{2}$ 10 at 1.15	10 at 1.20
	9 at .94	10 at 1.05	10 at 1.07	11 at 1.15	11 at 1.25	11 at 1.30
$\frac{1}{4}$ -Inch No.		11 at 1.10	11 at 1.12	12 at 1.25	12 at 1.35	12 at 1.40
3 at \$.88		12 at 1.20	12 at 1.20	13 at 1.35	13 at 1.45	13 at 1.60
4 at .92			13 at 1.25	14 at 1.50	14 at 1.55	14 at 1.70
5 at .98			14 at 1.30	15 at 1.65	15 at 1.75	15 at 2.00
6 at 1.05	$\frac{1}{2}$ -Inch No.	$\frac{1}{4}$ -Inch No.		16 at 1.80	16 at 2.00	16 at 2.50
7 at 1.10	3 at \$.98	5 at \$1.30	2-Inch No.			* 17 at 2.70
8 at 1.15	4 at 1.05	$\frac{1}{2}$ 6 at 1.35	5 at \$1.45	$\frac{1}{4}$ -Inch No.	$\frac{1}{2}$ -Inch No.	$\frac{1}{2}$ 18 at 2.80
$\frac{1}{2}$ 9 at 1.20	5 at 1.10	7 at 1.45	6 at 1.50	5 at \$1.55	5 at \$1.90	20 at 3.50
10 at 1.30	6 at 1.15	* 8 at 1.50	7 at 1.55	6 at 1.60	6 at 2.00	
11 at 1.40	7 at 1.20	9 at 1.55	8 at 1.60	7 at 1.65	7 at 2.10	$\frac{1}{2}$ 24-Inch No.
12 at 1.55	$\frac{1}{2}$ 8 at 1.30	10 at 1.60	9 at 1.65	8 at 1.75	8 at 2.20	6 at \$2.40
* 13 at 1.70	9 at 1.35	11 at 1.70	10 at 1.75	9 at 1.85	9 at 2.30	7 at 2.60
* 14 at 1.90	* 10 at 1.40	12 at 1.80	11 at 1.85	10 at 1.95	10 at 2.40	8 at 2.70
15 at 2.15	11 at 1.50	13 at 2.00	$\frac{1}{2}$ 12 at 2.00	$\frac{1}{2}$ 11 at 2.05	$\frac{1}{2}$ 11 at 2.50	9 at 2.80
16 at 2.50	12 at 1.65	14 at 2.25	13 at 2.20	12 at 2.20	12 at 2.60	10 at 2.90
17 at 2.75	13 at 1.80	15 at 2.60	14 at 2.45	13 at 2.35	13 at 2.70	11 at 3.00
$\frac{1}{2}$ 18 at 3.30	14 at 2.00	16 at 2.90	15 at 2.75	14 at 2.65	14 at 2.90	$\frac{1}{2}$ 12 at 3.10
20 at 4.00	15 at 2.35	$\frac{1}{2}$ 17 at 3.50	16 at 3.10	15 at 3.10	15 at 3.30	13 at 3.20
22 at 4.80	16 at 2.80	18 at 4.00	17 at 3.70	* 16 at 3.50	16 at 3.65	14 at 3.30
24 at 5.40	$\frac{1}{2}$ 17 at 3.20	20 at 4.50	18 at 4.20	* 17 at 3.85	* 17 at 4.20	15 at 3.60
	18 at 3.80	22 at 5.20	* 20 at 4.80	18 at 4.55	* 18 at 4.70	* 16 at 3.90
	20 at 4.30	24 at 6.00	$\frac{1}{2}$ 22 at 5.50	$\frac{1}{2}$ 20 at 5.30	$\frac{1}{2}$ 20 at 5.80	* 17 at 4.50
	22 at 5.10		24 at 6.40	22 at 6.10	22 at 6.70	$\frac{1}{2}$ 18 at 5.00
	24 at 5.90			24 at 6.90	24 at 7.50	* 20 at 6.10
3-Inch No.		4-Inch No.				22 at 7.20
6 at \$2.95		8 at \$4.90				$\frac{1}{2}$ 24 at 8.50
7 at 3.00		9 at 5.10				
8 at 3.05	$\frac{3}{4}$ -Inch No.	10 at 5.20	$\frac{1}{2}$ -Inch No.	5-Inch No.	6-Inch No.	
9 at 3.10	8 at \$3.90	11 at 5.30	12 at \$7.00	12 at \$8.10	12 at \$10.00	
10 at 3.15	9 at 4.00	12 at 5.40	13 at 7.20	13 at 8.30	13 at 10.30	
11 at 3.20	10 at 4.10	13 at 5.60	$\frac{1}{2}$ 14 at 7.60	14 at 8.60	14 at 11.00	
$\frac{1}{2}$ 12 at 3.30	11 at 4.20	$\frac{1}{2}$ 14 at 5.90	$\frac{1}{2}$ 15 at 7.85	15 at 9.10	15 at 11.60	
13 at 3.40	12 at 4.30	15 at 6.20	16 at 8.15	16 at 9.70	16 at 12.40	
14 at 3.50	13 at 4.40	16 at 6.50	* 17 at 8.60	17 at 10.10	17 at 13.00	
15 at 3.80	14 at 4.50	17 at 7.00	18 at 9.15	* 18 at 11.00	* 18 at 14.50	
* 16 at 4.20	$\frac{1}{2}$ 15 at 4.75	* 18 at 7.60	20 at 9.85	20 at 11.50	20 at 16.00	
$\frac{1}{2}$ 17 at 4.80	16 at 4.95	20 at 8.60	$\frac{1}{2}$ 22 at 11.20	22 at 13.00	22 at 18.00	
* 18 at 5.50	17 at 5.40	22 at 9.70	24 at 13.50	24 at 15.00	24 at 20.00	
$\frac{1}{2}$ 20 at 6.50	18 at 6.15	$\frac{1}{2}$ 24 at 11.20	26 at 16.00	26 at 18.00	26 at 23.00	
22 at 7.50	* 20 at 7.30	28 at 16.00	28 at 18.50	28 at 21.00	28 at 27.00	
24 at 8.70	* 22 at 8.70	30 at 18.50	30 at 21.50	30 at 24.00	30 at 30.50	
$\frac{1}{2}$ 26 at 10.50	$\frac{1}{2}$ 24 at 10.20					
	26 at 12.00					

The number of Gross in a Bundle is indicated by small figures on the side, divided by a star ().

The following shapes of Iron Screws are invoiced from the above list at varying discounts: Flat, Round, Fillister and Oval-Head Screws, Dowel, Winged, Headless, Pinched and Bung-Head Screws. Also Drive Screws. See preceding page for illustrations of above-mentioned shapes. They can be supplied in following finishes: Bright or blued, nickel, brass or silver-plated, silver or copper oxidized, various bronzes, japanned, lacquered, coppered, tinned, galvanized, bower barfed and gun metaled.

Special attention is given to quantity orders for fancy finishes. Correspondence invited. State sizes and quantities.

Iron Wood Screws

Column No. 1 shows number of gross in full case.

Column No. 2 shows approximate weight of full case.

Column No. 3 shows approximate weight of one gross.

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See two preceding pages for illustrations and listings

Brass Wood Screws

The diameter of wood screws is measured with a screw gauge (see Index). Length of flat head screws is measured overall; length of round head screws includes about one-half the head; fillister head screws are measured from the rim of the head, and the length of the oval-head screw includes the countersink.

List of July 22, 1903

List Per Gross

1/4-Inch No. 0 at \$.84 1 at .84 2 at .88 3 at .92 4 at .97	3/8-Inch No. 0 at \$.84 1 at .87 2 at .92 3 at .97 4 at 1.04 5 at 1.12 6 at 1.20 7 at 1.35 8 at 1.50	1/2-Inch No. 1 at \$.92 2 at .96 3 at 1.02 4 at 1.08 5 at 1.20 6 at 1.30 7 at 1.45 8 at 1.65 9 at 1.90 10 at 2.15	5/8-Inch No. 1 at \$.96 2 at 1.00 3 at 1.08 4 at 1.15 5 at 1.30 6 at 1.40 7 at 1.60 8 at 1.85 9 at 2.10 10 at 2.40 11 at 2.65 12 at 3.00 13 at 3.35 14 at 3.70 15 at 4.10 16 at 4.55	3/4-Inch No. 2 at \$1.12 3 at 1.18 4 at 1.25 5 at 1.40 6 at 1.55 7 at 1.75 8 at 2.00 9 at 2.30 10 at 2.65 11 at 3.00 12 at 3.35 13 at 3.70 14 at 4.10 15 at 4.55 16 at 5.05	7/8-Inch No. 2 at \$1.40 3 at 1.50 4 at 1.55 5 at 1.60 6 at 1.65 7 at 1.90 8 at 2.20 9 at 2.50 10 at 2.90 11 at 3.35 12 at 3.70 13 at 4.10 14 at 4.55 15 at 5.05 16 at 5.60	1-Inch No. 3 at \$1.65 4 at 1.70 5 at 1.75 6 at 1.80 7 at 2.10 8 at 2.45 9 at 2.80 10 at 3.15 11 at 3.65 12 at 4.10 13 at 4.55 14 at 5.05 15 at 5.60 16 at 6.65 18 at 7.40
1 1/4-Inch No. 3 at \$2.10 4 at 2.20 5 at 2.25 6 at 2.35 7 at 2.45 8 at 2.85 9 at 3.20 10 at 3.50 11 at 4.10 12 at 4.65 13 at 5.35 14 at 5.85 15 at 6.55 16 at 7.20 17 at 7.85 18 at 9.35 20 at 10.45	1 1/2-Inch No. 4 at \$2.95 5 at 3.05 6 at 3.10 7 at 3.20 8 at 3.30 9 at 3.65 10 at 4.25 11 at 4.65 12 at 5.35 13 at 5.95 14 at 6.65 15 at 7.60 16 at 8.35 17 at 9.15 18 at 10.85 20 at 12.65 22 at 14.50	1 3/4-Inch No. 6 at \$3.95 7 at 4.00 8 at 4.10 9 at 4.20 10 at 4.70 11 at 5.35 12 at 6.05 13 at 6.70 14 at 7.35 15 at 8.65 16 at 9.50 17 at 10.45 18 at 12.40 20 at 14.50 22 at 16.85 24 at 18.90	2-Inch No. 6 at \$5.15 7 at 5.20 8 at 5.25 9 at 5.30 10 at 5.40 11 at 6.15 12 at 6.85 13 at 7.55 14 at 8.45 15 at 9.75 16 at 10.70 17 at 11.70 18 at 13.90 20 at 16.30 22 at 18.90 24 at 21.00	2 1/4-Inch No. 8 at \$6.85 9 at 6.95 10 at 7.05 11 at 7.25 12 at 7.90 13 at 8.80 14 at 9.80 15 at 10.75 16 at 11.90 17 at 13.00 18 at 15.40 20 at 18.00 22 at 20.95 24 at 23.30	2 1/2-Inch No. 9 at \$9.40 10 at 9.50 11 at 9.60 12 at 9.70 13 at 9.85 14 at 10.75 15 at 11.85 16 at 13.00 17 at 14.30 18 at 16.95 20 at 19.85 22 at 23.00 24 at 25.50	2 3/4-Inch No. 9 at \$11.50 10 at 11.65 11 at 11.80 12 at 11.95 13 at 12.10 14 at 12.25 15 at 13.00 16 at 14.20 17 at 15.65 18 at 18.40 20 at 21.60 22 at 25.00 24 at 28.00
3-Inch No. 10 at \$13.70 11 at 13.85 12 at 14.00 13 at 14.10 14 at 14.30 15 at 14.60 16 at 15.40 17 at 16.80 18 at 19.95 20 at 23.40 22 at 27.10 24 at 31.15 26 at 35.85 28 at 41.15 30 at 47.45	3 1/2-Inch No. 10 at \$15.85 11 at 16.00 12 at 16.15 13 at 16.30 14 at 16.45 15 at 16.60 16 at 17.70 17 at 19.40 18 at 22.75 20 at 26.90 22 at 31.20 24 at 35.80 26 at 41.20 28 at 47.45 30 at 54.55	4-Inch No. 12 at \$18.60 13 at 18.80 14 at 19.00 15 at 19.25 16 at 20.35 17 at 22.30 18 at 26.90 20 at 30.80 22 at 36.00 24 at 40.70 26 at 47.35 28 at 54.55 30 at 62.70	4 1/2-Inch No. 14 at \$22.60 15 at 22.80 16 at 23.40 17 at 25.75 18 at 30.90 20 at 35.40 22 at 41.40 24 at 46.80 26 at 54.40 28 at 62.70 30 at 72.15	5-Inch No. 16 at \$26.90 17 at 29.60 18 at 35.50 20 at 40.70 22 at 47.60 24 at 53.80 26 at 62.60 28 at 72.15 30 at 82.95	6-Inch No. 16 at \$31.00 17 at 34.05 18 at 40.80 20 at 46.80 22 at 54.75 24 at 61.90 26 at 72.95 28 at 82.95 30 at 93.35	*The number of Gross in a Bundle is indicated by small figures on the side, divided by a star (*).

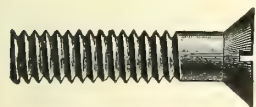
The following shapes of screws are invoiced from this list at varying discounts: Flat, Round, Oval and Fillister Head. See page 659 for illustrations of these shapes. Any of the above shapes may be secured in brass, bronze, bronzed or lacquered, nickel or silver-plated.

Special attention given to quantity orders for fancy finishes.

Correspondence invited. State sizes and quantities.

Iron Machine Screws

The diameter of Machine Screws is measured by a screw gauge (see Index). The length of flat head machine screws is measured overall; the length of round head machine screws includes about one-half the head; fillister head machine screws are measured from the rim of the head; the length of oval head machine screws includes the countersink.



Flat Head



Round Head



Oval Head



Fillister Head

List of November 18, 1912

List Per Gross

Standard Threads per Inch																	
	48	48	32, 36,	30	30	30		18				14					
	56	56	40	32	32	32	24, 30,	20	20	16, 18,	16	16	14				
	64			36	32	36	32	24	24	20	18	18	16	13			
Number	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24	30	34
Length, Inches																	
1/8	\$.30	\$.30	\$.30	\$.35	\$.35	\$.40	.40										
3/16	.30	.30	.30	.35	.35	.40	.40	\$.60	\$.60								
1/4	.30	.30	.30	.35	.35	.40	.40	.60	.60	\$.70	\$.85						
5/16	.32	.32	.32	.37	.37	.44	.44	.65	.65	.75	.90	\$1.15					
3/8	.32	.32	.32	.37	.37	.44	.44	.65	.65	.75	.90	1.15	\$1.50	\$1.90	\$2.30		
7/16	.34	.34	.34	.39	.39	.48	.48	.70	.70	.80	.95	1.20	1.60	2.00	2.40		
1/2	.34	.34	.34	.39	.39	.48	.48	.70	.70	.80	.95	1.20	1.60	2.00	2.40		
9/16	.37	.37	.37	.42	.42	.52	.52	.75	.75	.85	1.00	1.25	1.70	2.10	2.50		
5/8	.37	.37	.37	.42	.42	.52	.52	.75	.75	.85	1.00	1.25	1.70	2.10	2.50		
11/16	.41	.41	.41	.46	.46												
3/4	.41	.41	.41	.46	.46	.56	.56	.80	.80	.90	1.05	1.30	1.80	2.20	2.60	\$4.00	\$5.10
13/16	.45	.45	.45	.50	.50												
7/8	.45	.45	.45	.50	.50	.60	.60	.85	.85	.95	1.15	1.40	1.90	2.30	2.70	4.25	5.85
15/16	...	...	.50	.55	.55												
1	...	...	.50	.55	.55	.65	.65	.90	.90	1.00	1.25	1.50	2.00	2.40	2.80	4.50	6.60
1 1/8	...	...	.55	.60	.60	.70	.70	1.00	1.00	1.10	1.35	1.60	2.20	2.60	3.00	5.00	7.00
1 1/4	...	...	.60	.65	.65	.75	.75	1.10	1.10	1.20	1.45	1.75	2.40	2.80	3.20	5.25	7.35
1 3/8	...	...	.65	.70	.70	.80	.80	1.20	1.20	1.30	1.55	1.90	2.60	3.00	3.40	5.75	8.00
1 1/2	...	...	.70	.75	.75	.85	.85	1.30	1.30	1.40	1.65	2.10	2.80	3.20	3.60	6.00	8.00
1 5/8	...	...	.80	.85	.85	.95	.95	1.40	1.40	1.50	.175	2.30	3.00	3.40	3.80	6.35	
1 3/4	...	...	.90	.95	.95	1.05	1.05	1.50	1.50	1.60	1.85	2.50	3.20	3.60	4.20	6.65	8.60
1 7/8	...	...	1.00	1.05	1.05	1.15	1.15	1.60	1.60	1.70	2.00	2.70	3.40	3.80	4.40	7.00	
2	...	...	1.10	1.15	1.15	1.25	1.25	1.70	1.70	1.80	2.20	2.90	3.60	4.00	4.60	7.35	9.40
2 1/4	...	...	...	1.25	1.25	1.45	1.45	1.90	1.90	2.20	2.60	3.30	4.00	4.40	4.80	8.00	10.30
2 1/2	...	...	...	...	...	1.65	1.65	2.20	2.20	2.50	2.80	3.50	4.40	4.90	5.30	8.90	11.50
2 3/4	...	...	...	...	...	1.90	1.90	2.50	2.50	2.90	3.20	4.00	4.90	5.40	5.90	9.85	
3	...	...	...	...	...	2.30	2.30	2.90	2.90	3.50	3.80	4.50	5.60	6.00	7.40	11.00	
3 1/4	...	...	...	...	...	...	...	3.30	3.30	4.25	4.50	5.50	6.50	7.00	8.80	13.00	
3 1/2	...	...	...	...	...	...	...	3.75	3.75	5.00	5.25	6.50	7.50	8.50	10.10	15.00	
3 3/4	...	...	...	...	...	...	...	...	...	...	6.00	7.50	8.50	9.25	12.20	17.50	
4	...	...	...	...	...	...	...	...	...	...	6.75	8.50	9.60	10.25	13.50	20.50	

The various kinds and finishes of iron machine screws are all invoiced from above lists and at varying discounts. They can be supplied in the following finishes: Bright or blued, nickel, brass or silver-plated, silver or copper oxidized, various bronzes, japanned, lacquered, coppered, tinned, galvanized, bower-barfied or gun metaled.

Special attention is given to quantity orders for fancy finishes. Correspondence invited. State sizes and quantities.

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Brass Machine Screws

The diameter of machine screws is measured by a screw gauge (see index). The length of flat head machine screws is measured over all; round and fillister head from under the head to the end; the length of oval head machine screws includes the countersink.



Flat Head



Round Head



Oval Countersunk or French Head



Fillister Head

List of November 18, 1912

List Per Gross

	Standard Threads per Inch																
	48	48	32, 36,	30	30	30	24, 30,	20	18	16, 18,	16	14	14				
	56	56	40	32	32	32	32	24	20	20	18	16	16	18	16	13	
	64			36	32	36											
Number	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24	30	34
Length Inches																	
1/8	\$.32	\$.32	\$.36	\$.46	\$.46	\$.70	\$.70										
3/16	.32	.32	.36	.46	.46	.70	.70	\$1.00	\$1.00								
1/4	.32	.32	.36	.46	.46	.70	.70	1.00	1.00	\$1.25	\$1.65						
5/16	.34	.34	.38	.49	.49	.75	.75	1.05	1.05	1.35	1.75						
3/8	.36	.36	.40	.52	.52	.80	.80	1.10	1.10	1.45	1.85	\$2.90	\$3.70	\$4.60	\$5.50		
7/16	.38	.38	.42	.55	.55	.85	.85	1.15	1.15	1.55	2.00	3.05	3.90	4.80	5.60		
1/2	.40	.40	.44	.58	.58	.90	.90	1.25	1.25	1.65	2.15	3.20	4.10	5.00	5.75		
9/16	.43	.43	.47	.62	.62	.95	.95	1.35	1.35	1.75	2.30	3.35	4.30	5.25	6.30		
5/8	.46	.46	.50	.66	.66	1.00	1.00	1.45	1.45	1.85	2.45	3.50	4.50	5.50	6.50		
11/16	.49	.49	.53	.70	.70												
3/4	.52	.52	.56	.74	.74	1.10	1.10	1.65	1.65	2.05	2.75	3.80	4.90	6.00	6.70		\$15.75
13/16	.55	.55	.59	.78	.78												
7/8	.58	.58	.62	.82	.82	1.20	1.20	1.85	1.85	2.25	3.05	4.10	5.30	6.50	7.40	....	17.10
15/16	...	...	.65	.86	.86												
1	...	...	.70	.90	.90	1.30	1.30	2.05	2.05	2.45	3.35	4.40	5.70	7.00	8.50	\$15.75	18.50
1 1/8	...	...	.80	1.05	1.05	1.45	1.45	2.20	2.20	2.65	3.55	4.65	6.00	7.50	9.00		
1 1/4	...	...	.90	1.20	1.20	1.60	1.60	2.35	2.35	2.85	3.75	4.90	6.30	8.00	9.90	18.75	22.10
1 3/8	...	...	1.00	1.35	1.35	1.75	1.75	2.50	2.50	3.05	3.95	5.20	6.60	8.50	11.50		
1 1/2	...	...	1.10	1.50	1.50	1.90	1.90	2.65	2.65	3.25	4.15	5.50	6.90	9.00	12.00	22.50	26.65
1 5/8	...	...	1.25	1.70	1.70	2.10	2.10	2.85	2.85	3.50	4.40	5.85	7.30	9.50			
1 3/4	...	...	1.40	1.90	1.90	2.30	2.30	3.05	3.05	3.75	4.65	6.20	7.70	10.00	12.70	24.25	28.10
1 7/8	...	...	1.55	2.10	2.10	2.50	2.50	3.25	3.25	4.00	4.90	6.60	8.10	10.50			
2	...	...	1.70	2.30	2.30	2.70	2.70	3.45	3.45	4.25	5.15	7.00	8.60	11.00	13.50	26.00	30.20
2 1/4	...	...	...	2.70	2.70	3.10	3.10	3.85	3.85	4.75	5.65	8.00	9.75	12.00	14.90	28.00	32.95
2 1/2	...	...	...	...	...	...	...	4.65	4.65	5.80	6.80	9.00	10.50	13.50	15.50	30.50	35.65
2 3/4	...	...	...	...	...	...	...	6.00	6.00	7.00	8.00	10.00	12.50	15.00	17.00	33.00	
3	...	...	...	...	...	...	...	7.50	7.50	8.50	9.50	11.00	15.00	16.50	19.00	36.00	
3 1/4	...	...	...	...	...	...	...	9.00	9.00	10.50	11.50	15.00	17.50	18.50	22.50	39.50	
3 1/2	...	...	...	...	...	...	...	11.00	11.00	12.50	15.00	18.00	19.50	22.00	25.50	42.75	
3 3/4	...	...	...	...	...	...	...	13.50	13.50	15.00	18.50	20.00	22.50	25.00	28.00	46.60	
4	...	...	...	...	...	...	...	16.50	16.50	18.00	22.00	25.00	26.50	28.00	32.00	49.50	

The various kinds and finishes are all invoiced from above list and at varying discounts. Any of the above shapes may be secured in brass, bronze, bronzed or lacquered, nickel or silver-plated.

Special attention given to quantity orders for fancy finishes. Correspondence invited. State sizes and quantities.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

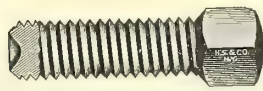
NEW
YORK

Iron Set Screws

Square Head



Round Point



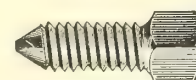
Cup Point



Flat Point



Cone Point



Hanger Point



Flat Pivot Point



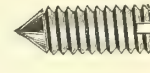
Round Pivot Point



Headless
Round Point



Headless
Cup Point



Headless
Cone Point

Square Head Cup and Round Point Set Screws are regular; all others are special. Prices upon application.

Set Screw prices shall apply to Headless Set Screws, threaded overall or nearly so, slotted, and burrs removed from head and slot.

No Screw which has a head more than $\frac{1}{16}$ inch larger in diameter than the body is classed as a Set Screw.

Set Screws are supplied case hardened unless ordered "soft."

Length of Iron Set Screws with heads is measured from under the head to extreme point; headless is measured overall.

List Per 100

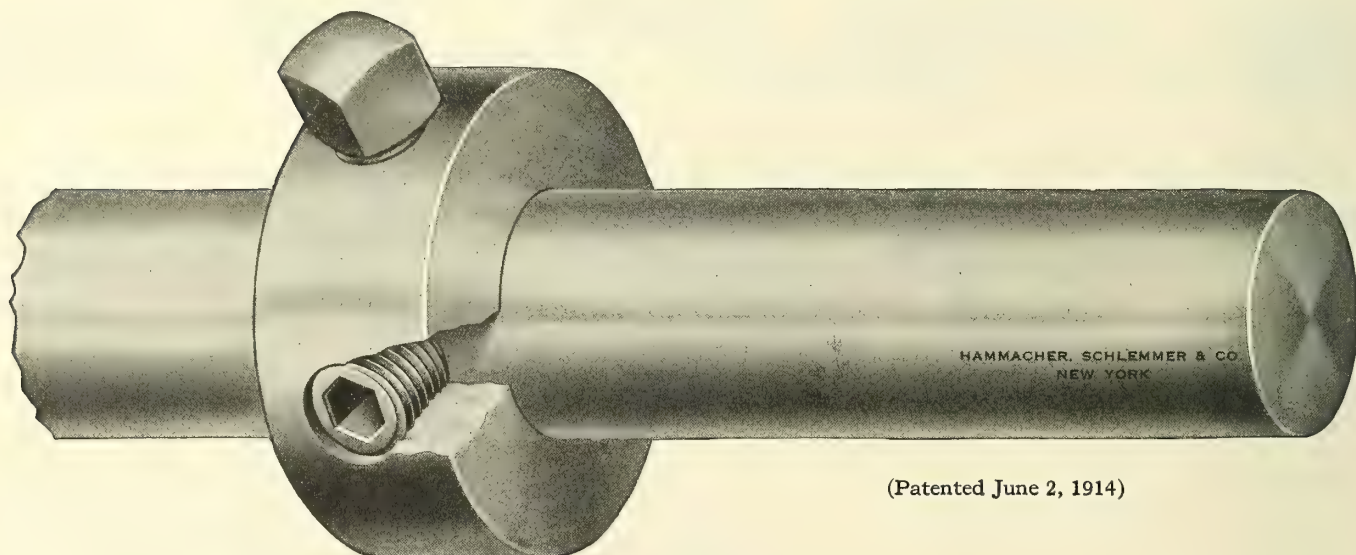
Diameter of Screw Inches	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Threads to Inch	20	18	16	14	*12 and 13	12	11	10	9	8	7	7
Length Inches												
$\frac{1}{2}$	\$1.80	\$2.00	\$2.35									
$\frac{5}{8}$	1.90	2.10	2.45	\$2.80	\$3.30							
$\frac{3}{4}$	2.00	2.20	2.50	2.90	3.40	\$5.00	\$5.00					
$\frac{7}{8}$	2.10	2.30	2.60	3.00	3.60	5.50	5.50					
1	2.15	2.35	2.65	3.10	3.80	5.75	5.75	\$10.00				
$1\frac{1}{4}$	2.30	2.50	2.85	3.50	4.30	6.50	6.50	11.00	\$15.50			
$1\frac{1}{2}$	2.50	2.70	3.10	4.00	4.80	7.25	7.25	12.00	16.20	\$22.00		
$1\frac{3}{4}$	2.75	3.00	3.50	4.50	5.40	8.00	8.00	12.80	17.70	24.00	\$41.70	
2	3.25	3.50	4.00	5.15	6.00	8.80	8.80	13.60	19.20	26.00	45.00	\$54.00
$2\frac{1}{4}$	3.75	4.00	4.50	5.75	6.75	9.60	9.60	14.50	20.70	28.00	48.30	58.30
$2\frac{1}{2}$	4.25	4.50	5.00	6.35	7.50	10.40	10.40	15.40	22.20	30.00	51.60	62.60
$2\frac{3}{4}$	4.75	5.00	5.50	6.75	8.25	11.20	11.20	16.30	23.70	32.00	54.90	66.90
3	5.25	5.50	6.00	7.20	9.00	12.00	12.00	17.30	25.20	34.00	58.20	71.20
$3\frac{1}{4}$	.....	.....	.....	7.60	9.75	12.75	12.75	18.40	26.70	36.00	61.50	75.50
$3\frac{1}{2}$	.....	.....	.....	8.00	10.50	13.50	13.50	19.50	28.20	38.00	64.80	79.80
$3\frac{3}{4}$	.....	.....	.....	8.50	11.25	14.30	14.30	20.75	29.70	40.00	68.10	84.10
4	.....	.....	.....	9.00	12.00	15.10	15.10	22.00	31.20	42.00	71.40	88.40
$4\frac{1}{4}$	.....	.....	.....	.....	.....	.....	15.90	23.50	32.70	44.00	74.70	92.70
$4\frac{1}{2}$	.....	.....	.....	.....	.....	.....	16.70	25.00	34.20	46.00	78.00	97.00
$4\frac{3}{4}$	.....	.....	.....	.....	.....	.....	.....	26.50	35.70	48.00	81.30	101.30
5	.....	.....	.....	.....	.....	.....	.....	.....	37.20	50.00	84.60	105.00
Add for each $\frac{1}{4}$ Inch	\$.50	.60	.70	.80	.90	1.10	1.10	1.50	1.70	2.25	3.30	4.30

For Steel Set Screws add 25 per cent. to above list.

State whether V or U. S. Standard threads are wanted; also style of point. When not specified, we send cup point (U. S. Standard).

* On $\frac{1}{2}$ -inch screws state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).

The H. S. & Co. Improved Hollow Set Screws



(Patented June 2, 1914)

The illustration shows at a glance the advantage of the Improved H. S. & Co. Hollow Set Screw over the old style projecting head. Liability insurance companies and state laws everywhere are demanding that projecting heads be eliminated or capped, to prevent accidents.

The Improved H. S. & Co. Screw is made from drawn steel, thoroughly case-hardened. Proper tests prove that screws stamped or "drawn up" from sheet steel are much stronger than those milled from solid bar, owing to the position of the fibres of the steel. Well-known proof of this is found in the comparative values of semi-finished nuts, those milled from solid bar not proving as strong as the stamped goods.

Hollow Set Screws are more economical for general use, as one length does for any depth of hole; they may be locked by using two screws. Deep holes need to be threaded only at the bottom, balance being counterbored.

Made Cup and Round Points and U. S. Standard Thread only, no V Thread. Illustrations below show full-size screws and full-size 5/8-inch wrench.

Cup Point Screws always sent unless otherwise ordered.



List Prices For Screws

One key is packed with each box of screws

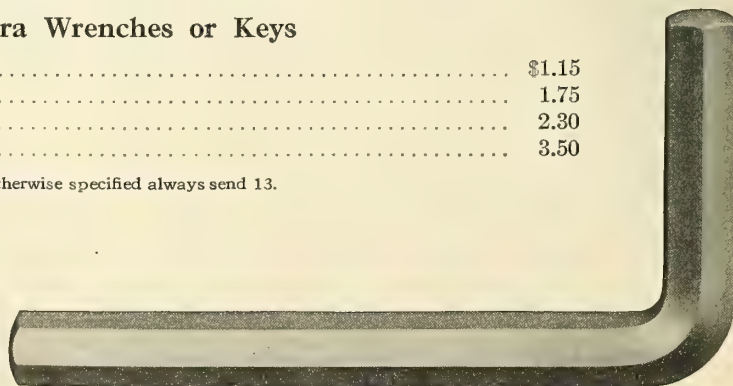
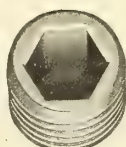
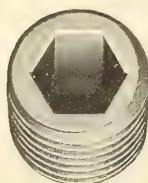
Diameter	Thread	Length	Packed	List Prices per 100
3/8 inch	16	3/8 inch	100 in box	\$3.30
*1/2 inch	12 and 13	9/16 inch	100 in box	3.90
5/8 inch	11	1 1/16 inch	50 in box	5.40
3/4 inch	10	7/8 inch	50 in box	8.40



List Prices For Extra Wrenches or Keys

For 3/8-inch screws, per 100	\$1.15
For 1/2-inch screws, per 100	1.75
For 5/8-inch screws, per 100	2.30
For 3/4-inch screws, per 100	3.50

*We make 1/2-inch screws with 12 and 13 threads, and unless otherwise specified always send 13.

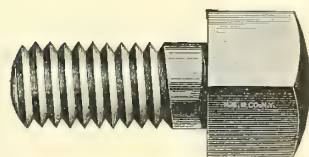


SINCE
1848

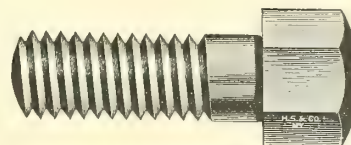
HAMMACHER SCHLEMMER & CO.

NEW
YORK

Iron Cap Screws



Square Head



Hexagon Head

On all Cap Screws of one inch and less in diameter, and less than four inches long, threads are cut three-quarters of the length. Beyond four inches threads are cut half the length. Regular Cap Screws are soft and have ground heads. Length of Cap Screws is measured under head to end.

List Per 100

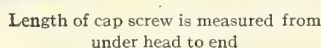
Diameter of screw, inch.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Threads to inch.....	20	18	16	14	*12 & 13	12	11	10	9	8	7	7
Hexagon, diameter of head, inch	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Square, diameter of head, inch.	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Length of head, inch.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Length, Inches												
$\frac{3}{4}$	\$3.00	\$3.25	\$3.75	\$4.50	\$5.70							
$\frac{7}{8}$	3.15	3.40	3.90	4.70	5.80							
1	3.25	3.50	4.00	4.90	5.90	\$9.25	\$9.25					
$1\frac{1}{4}$	3.50	3.75	4.25	5.30	6.50	9.50	9.50	\$12.50				
$1\frac{1}{2}$	3.75	4.00	4.50	5.70	7.10	10.00	10.00	13.50	\$18.40			
$1\frac{3}{4}$	4.00	4.25	4.85	6.10	7.70	10.75	10.75	14.50	19.70	\$22.75		
2	4.25	4.85	5.20	6.50	8.30	11.50	11.50	15.50	21.00	25.00	\$34.00	\$38.50
$2\frac{1}{4}$	4.70	5.35	5.55	7.15	8.90	12.60	12.60	16.50	22.40	27.25	36.75	42.00
$2\frac{1}{2}$	5.25	5.80	6.00	7.50	9.50	13.60	13.60	17.50	23.70	29.50	39.50	45.50
$2\frac{3}{4}$	5.75	6.30	6.65	7.90	10.10	14.40	14.40	19.00	25.00	31.75	42.25	49.00
3	6.25	6.80	7.20	8.40	10.70	15.20	15.20	20.60	26.40	34.00	45.00	52.50
$3\frac{1}{4}$	....	....	....	9.15	11.50	16.00	16.00	22.10	28.20	36.25	47.75	56.00
$3\frac{1}{2}$	....	....	....	9.75	12.30	17.30	17.30	23.70	30.00	38.50	50.50	59.50
$3\frac{3}{4}$	....	....	....	10.50	13.10	18.60	18.60	25.30	31.80	40.75	53.25	63.00
4	....	....	....	11.10	13.90	19.90	19.90	26.90	33.60	43.00	56.00	66.50
$4\frac{1}{4}$	....	....	....	....	....	....	21.20	28.50	35.40	45.25	58.75	70.00
$4\frac{1}{2}$	....	....	....	....	....	....	22.50	30.10	37.20	47.50	61.50	73.50
$4\frac{3}{4}$	....	....	....	....	....	....	....	31.70	39.00	49.75	64.25	77.00
5	....	....	....	....	....	....	....	....	40.80	52.00	67.00	80.50
Add for each $\frac{1}{4}$ inch.....	\$.40	.50	.60	.70	.80	1.30	1.30	1.60	1.80	2.25	2.75	3.50

For Steel Cap Screws add 25% to above list.

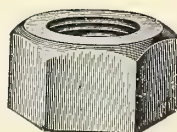
Special prices on Black Heads, extra finished and case-hardened screws. Cap Screws with over-sized heads take the list of regular Cap Screws of the same sized heads. State whether V or U. S. Standard threads are wanted.

* On $\frac{1}{2}$ -inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).

List Per 100

See discount sheet

Milled from Hexagon Bars



Size Bolt	Thread	Outside Diameter	Height Castellated Nut	Depth of Slot	Height Plain Nut
$\frac{1}{4}$	28	$\frac{3}{8}$	$\frac{9}{32}$	$\frac{3}{32}$	$\frac{7}{32}$
$\frac{5}{16}$	24	$\frac{1}{2}$	$\frac{21}{64}$	$\frac{3}{32}$	$\frac{17}{64}$
$\frac{3}{8}$	24	$\frac{9}{16}$	$\frac{13}{32}$	$\frac{1}{8}$	$\frac{21}{64}$
$\frac{7}{16}$	20	$\frac{11}{16}$	$\frac{29}{64}$	$\frac{1}{8}$	$\frac{3}{8}$
$\frac{1}{2}$	20	$\frac{3}{4}$	$\frac{9}{16}$	$\frac{3}{16}$	$\frac{7}{16}$
$\frac{9}{16}$	18	$\frac{7}{8}$	$\frac{39}{64}$	$\frac{3}{16}$	$\frac{31}{64}$
$\frac{5}{8}$	18	$\frac{15}{16}$	$\frac{23}{32}$	$\frac{1}{4}$	$\frac{35}{64}$
$\frac{11}{16}$	16	1	$\frac{49}{64}$	$\frac{1}{4}$	$\frac{19}{32}$
$\frac{3}{4}$	16	$1\frac{1}{8}$	$\frac{13}{16}$	$\frac{1}{4}$	$\frac{21}{32}$
$\frac{7}{8}$	14	$1\frac{1}{4}$	$\frac{29}{32}$	$\frac{1}{4}$	$\frac{49}{64}$
1	14	$1\frac{7}{16}$	1	$\frac{1}{4}$	$\frac{7}{8}$

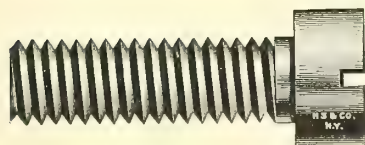
Prices on application

Dx1.5—Length of Threaded Portion
P-8—Flat Top
d—Dia. of Cotterpin

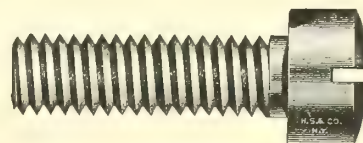
† This dimension applies to new S. A. E. list only; should be $1\frac{1}{8}$ inch for old A. L. A. M.

[illegible]

Iron Cap Screws



Round Head



Fillister Head

Length of Cap Screws is measured from under head to end

List Per 100

Diameter of screw, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Threads per inch.....	40	24	20	18	16	14	*12 & 13	12	11	10	9	8
Diameter of head, inches.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Length of head, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1

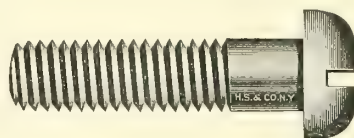
Length, Inches												
$\frac{3}{4}$	\$2.00	\$2.25	\$2.50	\$3.00	\$3.50	\$4.00	\$5.00					
1	2.25	2.50	2.75	3.25	3.75	4.25	5.30	\$6.60				
$1\frac{1}{4}$	2.50	2.75	3.00	3.50	4.00	4.50	5.60	6.90	\$9.00			
$1\frac{1}{2}$	2.75	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	\$12.00		
$1\frac{3}{4}$	3.00	3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50	\$15.25	
2	3.25	3.50	3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00	16.00	\$19.20
$2\frac{1}{4}$	3.50	3.75	4.00	4.75	5.50	6.00	7.25	8.50	11.50	13.75	16.75	20.20
$2\frac{1}{2}$	3.75	4.00	4.25	5.15	6.00	6.50	7.75	9.00	12.00	14.50	17.50	21.25
$2\frac{3}{4}$	....	4.25	4.50	5.55	6.50	7.00	8.25	9.50	12.75	15.25	18.30	22.40
3	....	....	4.75	5.95	7.00	7.50	8.75	10.00	13.50	16.00	19.10	23.60
$3\frac{1}{4}$	....	....	....	6.35	7.50	8.00	9.25	10.50	14.25	16.75	20.00	24.85
$3\frac{1}{2}$	....	....	....	....	8.00	8.50	9.75	11.00	15.00	17.50	21.00	26.10
$3\frac{3}{4}$	....	....	....	....	....	9.00	10.25	11.50	15.75	18.25	22.00	27.35
4	....	....	....	....	....	....	10.75	12.00	16.50	19.00	23.00	28.60
$4\frac{1}{4}$	....	....	....	....	....	....	....	12.50	17.25	19.75	24.00	29.85
$4\frac{1}{2}$	....	....	....	....	....	....	....	....	18.00	20.50	25.00	31.10
$4\frac{3}{4}$	....	....	....	....	....	....	....	....	....	21.25	26.00	32.35
5	....	....	....	....	....	....	....	....	....	....	27.00	33.60
Add for each $\frac{1}{4}$ inch.....	\$.25	.25	.25	.40	.50	.50	.50	.50	.75	.75	1.00	1.25

For Steel Set Screws add 25 per cent. to above list.

State whether V or U. S. Standard threads are wanted.

* On $\frac{1}{2}$ -inch screws state whether 12 or 13 threads are wanted. When not specified we send 13 threads (U. S. Standard).

Button Head, Iron Cap Screws



Length of Cap Screws is measured from under head to end

List Per 100

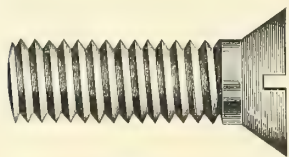
Diameter of screw, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
Threads per inch.....	40	24	20	18	16	14	*12 and 13	12	11	10
Diameter of head, inches....	$\frac{7}{32}$ full	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{15}{16}$	1	$1\frac{1}{4}$
Length, Inches										
$\frac{3}{4}$	\$2.25	\$2.50	\$3.00	\$3.50	\$4.00	\$5.00				
1	2.50	2.75	3.25	3.75	4.25	5.30	\$6.60			
$1\frac{1}{4}$	2.75	3.00	3.50	4.00	4.50	5.60	6.90	\$9.00		
$1\frac{1}{2}$	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	\$12.00	
$1\frac{3}{4}$	3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50	\$18.20
2	....	3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00	19.20
$2\frac{1}{4}$	....	....	4.75	5.50	6.00	7.25	8.50	11.50	13.75	20.20
$2\frac{1}{2}$	....	....	....	6.00	6.50	7.75	9.00	12.00	14.50	21.25
$2\frac{3}{4}$	....	....	....	....	7.00	8.25	9.50	12.75	15.25	22.40
3	....	....	....	....	....	8.75	10.00	13.50	16.00	23.60
Add for each $\frac{1}{4}$ inch.....	\$.25	.25	.40	.50	.50	.50	.50	.75	.75	1.15

For Steel Cap Screws add 25 per cent to above list

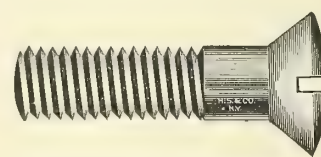
State whether V or U. S. Standard threads are wanted.

* On $\frac{1}{2}$ -inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard)

Flat and French Head Iron Cap Screws



Flat Head



French Head or Oval Countersunk

Length of Flat Head Cap Screws is measured over all. French Head or Oval Countersunk from top of countersink to end.

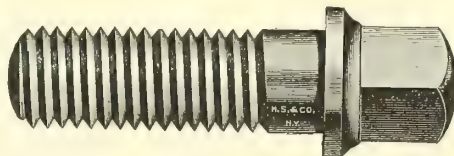
Diameter of screw, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
Threads per inch.....	40	24	20	18	16	14	*12 and 13	12	11	10
Diameter of head, inches....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{3}{8}$
Length, Inches										
$\frac{3}{4}$	\$2.25	\$2.50	\$3.10	\$4.00	\$5.00					
1	2.50	2.75	3.35	4.25	5.30	\$6.60				
$1\frac{1}{4}$	2.75	3.00	3.60	4.50	5.60	6.90	\$9.00			
$1\frac{1}{2}$	3.00	3.25	3.85	4.75	5.90	7.20	9.50	\$12.00		
$1\frac{3}{4}$	3.25	3.50	4.10	5.00	6.20	7.50	10.00	12.50	\$14.50	
2	....	3.75	4.35	5.50	6.75	8.00	10.75	13.00	15.25	\$19.20
$2\frac{1}{4}$	....	....	4.75	6.00	7.25	8.50	11.50	13.75	16.00	20.20
$2\frac{1}{2}$	....	....	....	6.50	7.75	9.00	12.00	14.50	16.75	21.25
$2\frac{3}{4}$	....	....	....	7.00	8.25	9.50	12.75	15.25	17.50	22.40
3	....	....	....	....	8.75	10.00	13.50	16.00	18.30	23.60
Add for each $\frac{1}{4}$ inch.....	\$.25	.25	.40	.50	.50	.50	.50	.75	1.00	1.25

For Steel Cap Screws, add 25 per cent. to above list

State whether V or U. S. Standard threads are wanted

* On $\frac{1}{2}$ -inch screws state whether 12 or 13 threads are wanted. When not specified we send 13 threads (U. S. Standard)

Collar Screws



Made to order only. Prices are per 100 for not less than 100 of one size. When collars are wider than standard, price will be according to size of collar. Length is measured from under head to extreme point.

Diameter of Screw, Inch	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
Length Inches										
$\frac{3}{4}$	\$2.50	\$2.80	\$3.10	\$3.75	\$4.40	\$5.00	\$6.25			
1	2.80	3.10	3.40	4.05	4.70	5.30	6.60	\$8.25		
$1\frac{1}{4}$	3.10	3.40	3.70	4.35	5.00	5.60	7.00	8.60	\$11.25	
$1\frac{1}{2}$	3.40	3.70	4.00	4.70	5.30	5.95	7.40	9.00	11.90	\$15.00
$1\frac{3}{4}$	3.70	4.05	4.35	5.05	5.65	6.35	7.80	9.45	12.60	15.60
2	....	4.40	4.70	5.45	6.25	6.85	8.40	10.00	13.35	16.25
$2\frac{1}{4}$	....	....	5.05	5.95	6.85	7.40	9.00	10.60	14.15	17.10
$2\frac{1}{2}$	....	....	5.45	6.45	7.55	8.05	9.60	11.25	15.00	18.00
$2\frac{3}{4}$	....	....	....	6.95	8.20	8.75	10.30	11.90	15.90	19.00
3	....	....	....	7.50	8.85	9.50	11.00	12.60	16.85	20.00
$3\frac{1}{4}$	....	....	....	....	9.50	10.30	11.80	13.40	17.95	21.20
$3\frac{1}{2}$	....	....	....	....	10.20	11.10	12.60	14.30	19.10	22.60
$3\frac{3}{4}$	....	....	....	....	....	11.95	13.50	15.30	20.40	24.20
4	....	....	....	....	....	12.80	14.40	16.30	21.70	25.80
$4\frac{1}{4}$	....	....	....	....	....	....	15.40	17.50	23.20	27.70
$4\frac{1}{2}$	....	....	....	....	....	....	16.40	18.70	24.70	29.60
$4\frac{3}{4}$	....	....	....	....	....	....	....	20.10	26.50	31.80
5	....	....	....	....	....	....	....	21.50	28.30	34.00

Philadelphia Eagle Carriage Bolts

The length of Turned, Bastard and Bevel Head Philadelphia Eagle Bolts is measured from under head to end; those with countersunk heads are measured overall.

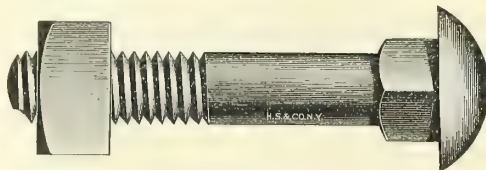
List per 100

List of May 24, 1899

Length Inches	Diameter Inch							
	$\frac{3}{16}$ and $\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$ and $\frac{5}{8}$	$\frac{3}{4}$	
1	\$3.00	\$4.00	\$5.40	\$7.30	\$9.50			
$1\frac{1}{4}$	3.10	4.00	5.40	7.30	9.50			
$1\frac{1}{2}$	3.20	4.00	5.40	7.30	9.50			
$1\frac{3}{4}$	3.30	4.00	5.40	7.50	9.80			
2	3.40	4.10	5.40	7.70	10.10	\$16.75		
$2\frac{1}{4}$	3.50	4.20	5.60	7.90	10.35	17.25		
$2\frac{1}{2}$	3.60	4.40	5.80	8.15	10.65	17.75		
$2\frac{3}{4}$	3.70	4.50	6.00	8.35	10.90	18.25		
3	3.80	4.70	6.20	8.55	11.20	18.75	\$21.50	
$3\frac{1}{4}$	3.90	4.90	6.50	8.75	11.50	19.25	22.35	
$3\frac{1}{2}$	4.00	5.00	6.70	8.95	11.75	19.75	23.25	
$3\frac{3}{4}$	4.10	5.20	6.90	9.15	12.00	20.25	24.50	
4	4.20	5.30	7.10	9.40	12.30	20.75	25.00	
$4\frac{1}{4}$	4.35	5.50	7.30	9.60	12.60	21.25	26.85	
$4\frac{1}{2}$	4.50	5.70	7.50	9.80	12.90	21.75	27.80	
$4\frac{3}{4}$	4.65	5.85	7.70	10.00	13.15	22.25	28.30	
5	4.80	6.00	7.90	10.25	13.45	22.75	28.75	
$5\frac{1}{2}$	5.10	6.30	8.40	10.65	14.00	23.75	30.50	
6	5.40	6.60	8.80	11.05	14.55	24.75	32.50	
$6\frac{1}{2}$	....	7.00	9.30	11.50	15.10	25.75	33.50	
7	....	7.30	9.70	11.85	15.70	26.75	36.25	
$7\frac{1}{2}$	....	7.60	10.10	12.35	16.25	27.75	38.00	
8	....	7.90	10.50	12.75	16.80	28.75	40.00	
$8\frac{1}{2}$	....	8.20	10.90	13.15	17.35	29.75	42.00	
9	....	8.50	11.40	13.60	17.90	30.75	43.75	
$9\frac{1}{2}$	....	....	11.90	14.00	18.50	31.75	45.75	
10	....	....	12.40	14.45	19.00	32.75	47.50	
$10\frac{1}{2}$	....	....	....	14.85	19.60	33.75	49.30	
11	....	....	....	15.25	20.15	34.75	51.25	
$11\frac{1}{2}$	....	....	....	15.70	20.70	35.75	53.00	
12	....	....	....	16.15	21.30	36.75	55.00	

For common Carriage Bolts, see next page

Common Carriage Bolts



The length of common Carriage Bolts is measured from under head to end

List of November 1, 1912

List Per 100

Length Inches	Diameter, Inch							Length Inches	Diameter, Inch						
	1/4	5/16	3/8	7/16	1/2	9/16 & 5/8	3/4		1/4	5/16	3/8	7/16	1/2	9/16 & 5/8	3/4
1 1/2	\$1.00	\$1.40	\$1.90	\$2.20				8 1/2	\$2.40	\$3.08	\$4.14	\$5.00	\$6.61	\$10.31	\$14.50
2	1.10	1.52	2.06	2.40				9	2.50	3.20	4.30	5.20	6.89	10.69	15.00
2 1/2	1.20	1.64	2.22	2.60	\$3.25	\$5.75	\$8.50	9 1/2	2.60	3.32	4.46	5.40	7.17	11.07	15.50
3	1.30	1.76	2.38	2.80	3.53	6.13	9.00	10	2.70	3.44	4.62	5.60	7.45	11.45	16.00
3 1/2	1.40	1.88	2.54	3.00	3.81	6.51	9.50	11	2.90	3.68	4.94	6.00	8.01	12.21	17.00
4	1.50	2.00	2.70	3.20	4.09	6.89	10.00	12	3.10	3.92	5.26	6.40	8.57	12.97	18.00
4 1/2	1.60	2.12	2.86	3.40	4.37	7.27	10.50	13	3.30	4.16	5.58	6.80	9.13	13.73	19.00
5	1.70	2.24	3.02	3.60	4.65	7.65	11.00	14	3.50	4.40	5.90	7.20	9.69	14.49	20.00
5 1/2	1.80	2.36	3.18	3.80	4.93	8.03	11.50	15	3.70	4.64	6.22	7.60	10.25	15.25	21.00
6	1.90	2.48	3.34	4.00	5.21	8.41	12.00	16	3.90	4.88	6.54	8.00	10.81	16.01	22.00
6 1/2	2.00	2.60	3.50	4.20	5.49	8.79	12.50	17	4.10	5.12	6.86	8.40	11.37	16.77	23.00
7	2.10	2.72	3.66	4.40	5.77	9.17	13.00	18	4.30	5.36	7.18	8.80	11.93	17.53	24.00
7 1/2	2.20	2.84	3.82	4.60	6.05	9.55	13.50	19	4.50	5.60	7.50	9.20	12.49	18.29	25.00
8	2.30	2.96	3.98	4.80	6.33	9.93	14.00	20	4.70	5.84	7.82	9.60	13.05	19.05	26.00

For Bolts with hexagon nuts, add 15 per cent. to above list

Common Carriage Approximate Contents of Full Cases

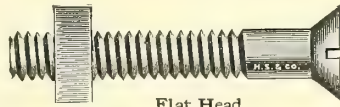
Length Inches	Diameter, Inch					Length Inches	Diameter, Inch			
	1/4	5/16	3/8	7/16	1/2		5/16	3/8	7/16	1/2
1 1/2	10000	5000	4000	2500	2000	6 1/2	2400	1600	1000	800
1 3/4	10000	5000	3300	2500	2000	7	2400	1250	1100	800
2	10000	5000	3300	2500	1800	7 1/2	1700	1500	1000	800
2 1/4	9600	5000	3300	2500	1800	8	2000	1500	1000	800
2 1/2	9000	5000	3000	2500	1800	8 1/2	....	1250	800	500
2 3/4	8000	4000	3000	2000	1800	9	....	1100	1000	500
3	7500	4000	3000	2000	1600	9 1/2	....	1100	800	500
3 1/4	7200	4000	3000	2000	1400	10	....	1000	800	500
3 1/2	6400	4000	2400	1800	1200	11	....	1000	600	500
3 3/4	6400	3800	2800	2100	1200	12	....	1000	700	400
4	6600	3300	2500	1800	1200	13	....	....	....	400
4 1/4	6000	3300	2500	1500	1200	14	....	....	....	400
4 1/2	5400	3600	2000	1400	1200	15	....	....	....	400
4 3/4	5200	3000	2000	1600	1200	16	....	....	....	400
5	5000	3000	2200	1500	1200	17	....	....	....	400
5 1/2	4000	3000	2000	1300	1000	18	....	....	....	400
6	4000	2100	2000	1500	1000					

Approximate Weights

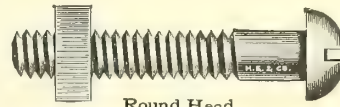
Pounds Per 100 Bolts

Length Inches	Diameter, Inch							Length Inches	Diameter, Inch					
	3/16	1/4	5/16	3/8	7/16	1/2	5/8		1/4	5/16	3/8	7/16	1/2	5/8
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1	1.6	2.6	5.0	7.1	10.5			7 1/2	10.8	17.7	26.1	35.9	47.9	80.6
1 1/2	2.0	3.2	6.0	8.6	12.5	17.5		8	11.5	18.7	27.5	37.8	50.4	84.6
2	2.4	3.9	7.0	10.1	14.4	20.1	36.6	9	....	....	30.3	41.7	55.6	92.6
2 1/2	2.8	4.5	8.00	11.6	16.4	22.7	40.6	10	....	....	33.1	45.6	61.	101.0
3	3.2	5.1	9.00	13.1	18.3	25.2	44.6	11	....	....	....	....	66.2	109.0
3 1/2	3.6	5.7	10.00	14.6	20.3	27.7	48.6	12	....	....	....	....	71.4	117.0
4	4.0	6.4	11.0	16.1	22.2	30.1	52.6	13	....	....	....	....	76.6	125.0
4 1/2	....	7.0	12.0	17.6	24.2	32.8	56.6	14	....	....	....	....	81.8	133.0
5	....	7.7	13.0	19.1	26.1	35.4	60.6	15	....	....	....	....	87.	141.0
5 1/2	....	8.3	13.9	20.5	28.0	37.9	64.6	16	....	....	....	....	92.2	149.0
6	....	9.0	14.9	21.9	30.0	40.4	68.6	17	....	....	....	....	97.4	157.0
6 1/2	....	9.6	15.8	23.3	32.0	42.9	72.6	18	....	....	....	....	102.6	165.0
7	....	10.2	16.8	24.7	33.9	45.4	76.6	19	....	....	....	....	107.8	173.0
								20	....	....	....	....	113.0	181.0

Stove Bolts



Flat Head



Round Head

Length of round head Stove Bolt is measured from under the head to end; flat head overall

List of June 1, 1908

List Per 100

Length Inches	Diameter, Inch								
	1/8	3/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2
3/8	\$.85	\$.85	\$.85						
1/2	.85	.85	.85	\$1.20	\$1.20				
5/8	.85	.85	.85	1.20	1.20				
3/4	.85	.85	.85	1.20	1.20	\$1.75	\$2.65		
7/8	.90	.90	.90	1.25	1.25	1.80	2.70		
1	.90	.90	.90	1.30	1.30	1.85	2.75	\$ 7.30	\$9.50
1 1/8	.95	.95	.95	1.35	1.35	1.90	2.85	7.30	9.50
1 1/4	1.00	1.00	1.00	1.40	1.40	1.95	2.90	7.30	9.50
1 3/8	1.05	1.05	1.05	1.45	1.45	2.00	3.00	7.30	9.50
1 1/2	1.10	1.10	1.10	1.50	1.50	2.05	3.10	7.30	9.50
1 3/4	1.15	1.15	1.15	1.55	1.55	2.15	3.20	7.50	9.80
2	1.20	1.20	1.20	1.60	1.60	2.30	3.40	7.70	10.10
2 1/4	....	....	1.25	1.70	1.70	2.40	3.60	7.90	10.35
2 1/2	....	....	1.30	1.80	1.80	2.50	3.80	8.15	10.65
2 3/4	....	....	1.40	1.90	1.90	2.60	4.00	8.35	10.90
3	....	....	1.50	2.00	2.00	2.70	4.20	8.55	11.20
3 1/4	....	....	1.60	2.10	2.10	2.85	4.40	8.75	11.50
3 1/2	....	....	1.70	2.20	2.20	3.00	4.60	8.95	11.75
3 3/4	....	....	1.80	2.30	2.30	3.15	4.80	9.15	12.00
4	....	....	1.90	2.40	2.40	3.30	5.00	9.40	12.30
4 1/4	....	....	2.00	2.50	2.50	3.45	5.20	9.60	12.60
4 1/2	....	....	2.10	2.60	2.60	3.60	5.40	9.80	12.90
4 3/4	....	....	2.20	2.70	2.70	3.75	5.60	10.00	13.15
5	....	....	2.30	2.85	2.85	3.90	5.80	10.25	13.45
5 1/4	....	....	2.40	3.00	3.00	4.10	6.00		
5 1/2	....	....	2.50	3.15	3.15	4.30	6.20	10.65	14.00
5 3/4	....	....	2.60	3.30	3.30	4.50	6.40		
6	....	....	2.75	3.45	3.45	4.70	6.60	11.05	14.55
6 1/4	....	....	2.90	3.60	3.60	4.90	6.80		
6 1/2	....	....	3.05	3.75	3.75	5.10	7.00	11.50	15.10
7	....	....	....	....	....	....	....	11.85	15.70

Nickel-plating, \$1.00 extra per 100 added to List Price

Approximate Number of Bolts in a Keg

Length Inches	5/32	3/16	7/32	1/4	5/16	3/8	Length Inches	1/4	5/16	3/8
3/8	13000	12000					3 1/4	2000	1300	1000
1/2	12000	10000	9500	9000			3 1/2	1800	1200	900
5/8	11000	9000	8500	8000			3 3/4	1800	1100	900
3/4	10000	8000	7500	7000	4800	3500	4	1500	900	750
7/8	9000	7500	7000	6500	4500	3200	4 1/4	1200	800	650
1	8000	7000	6500	6000	4000	3000	4 1/2	1200	800	600
1 1/8	7500	6500	6000	5500	3800	2700	4 3/4	1200	800	550
1 1/4	7000	6000	5500	5000	3500	2500	5	1000	700	500
1 3/8	6500	5500	5000	4800	3200	2200	5 1/4	1000	700	470
1 1/2	6000	5000	4800	4500	3000	2100	5 1/2	1000	660	450
1 3/4	5000	4000	4500	4000	2700	2000	5 3/4	1000	600	420
2	4000	3000	4000	3500	2300	1700	6	800	530	400
2 1/4	3500	3000	3500	3000	2000	1500	6 1/4	800	500	370
2 1/2	....	2800	3000	2800	1800	1400	6 1/2	800	500	350
2 3/4	....	2500	2800	2500	1600	1200				
3	....	2000	2500	2000	1300	1000				

Common Tire Bolts

With Chamfered and Trimmed Nuts

The length of these Bolts is measured overall

List of December 28, 1899

List Per 100



The length of these bolts is measured overall

Length Inches	Diameter, Inch				
	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
1	\$.60	\$.60	\$.95	\$1.40	\$2.20
1 $\frac{1}{4}$	.60	.60	.95	1.40	2.20
1 $\frac{1}{2}$	.60	.60	.95	1.40	2.20
1 $\frac{3}{4}$	.65	.65	1.00	1.40	2.20
2	.70	.70	1.05	1.47	2.20
2 $\frac{1}{4}$	....	.75	1.10	1.54	2.30
2 $\frac{1}{2}$	....	.80	1.15	1.61	2.40
2 $\frac{3}{4}$	....	.85	1.20	1.68	2.50
3	....	.90	1.25	1.75	2.60
3 $\frac{1}{4}$	....	.95	1.30	1.82	2.70
3 $\frac{1}{2}$	....	1.00	1.35	1.89	2.80
3 $\frac{3}{4}$	....	1.05	1.40	1.96	2.90
4	....	1.10	1.45	2.03	3.00
4 $\frac{1}{4}$	....	....	1.50	2.10	3.10
4 $\frac{1}{2}$	....	....	1.55	2.17	3.20
4 $\frac{3}{4}$	....	....	1.60	2.24	3.30
5	....	....	1.65	2.31	3.40
5 $\frac{1}{4}$	....	....	....	2.38	3.50
5 $\frac{1}{2}$	....	....	....	2.45	3.60
5 $\frac{3}{4}$	....	....	....	2.52	3.70
6	....	....	....	2.59	3.80

Blank Bolts

With Square, Round or Hexagon Heads. Finished Points

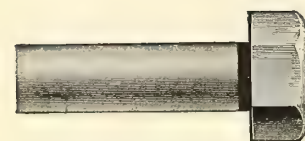
The length of these bolts is measured from under head to end

List of August 1, 1912

List Per 100



Square Head



Hexagon Head



Round Head

Length Inches	Diameter, Inches										
	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$ and $\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$
1 $\frac{1}{2}$	\$1.20	\$1.40	\$1.60	\$2.00	\$2.50	\$4.00	\$6.10	\$7.80	\$10.40	\$16.00	\$21.60
2	1.30	1.52	1.74	2.18	2.74	4.36	6.65	8.50	11.30	17.20	23.10
2 $\frac{1}{2}$	1.40	1.64	1.88	2.36	2.98	4.72	7.20	9.20	12.20	18.40	24.60
3	1.50	1.76	2.02	2.54	3.22	5.08	7.75	9.90	13.10	19.60	26.10
3 $\frac{1}{2}$	1.60	1.88	2.16	2.72	3.46	5.44	8.30	10.60	14.00	20.80	27.60
4	1.70	2.00	2.30	2.90	3.70	5.80	8.85	11.30	14.90	22.00	29.10
4 $\frac{1}{2}$	1.80	2.12	2.44	3.08	3.94	6.16	9.40	12.00	15.80	23.20	30.60
5	1.90	2.24	2.58	3.26	4.18	6.52	9.95	12.70	16.70	24.40	32.10
5 $\frac{1}{2}$	2.00	2.36	2.72	3.44	4.42	6.88	10.50	13.40	17.60	25.60	33.60
6	2.10	2.48	2.86	3.62	4.66	7.24	11.05	14.10	18.50	26.80	35.10
6 $\frac{1}{2}$	2.20	2.60	3.00	3.80	4.90	7.60	11.60	14.80	19.40	28.00	36.60
7	2.30	2.72	3.14	3.98	5.14	7.96	12.15	15.50	20.30	29.20	38.10
7 $\frac{1}{2}$	2.40	2.84	3.28	4.16	5.38	8.32	12.70	16.20	21.20	30.40	39.60
8	2.50	2.96	3.42	4.34	5.62	8.68	13.25	16.90	22.10	31.60	41.10
9	2.70	3.20	3.70	4.70	6.10	9.40	14.35	18.30	23.90	34.00	44.10
10	2.90	3.44	3.98	5.06	6.58	10.12	15.45	19.70	25.70	36.40	47.10
11	3.10	3.68	4.26	5.42	7.06	10.84	16.55	21.10	27.50	38.80	50.10
12	3.30	3.92	4.54	5.78	7.54	11.56	17.65	22.50	29.30	41.20	53.10
13	....	....	4.82	6.14	8.02	12.28	18.75	23.90	31.10	43.60	56.10
14	....	....	5.10	6.50	8.50	13.00	19.85	25.30	32.90	46.00	59.10
15	....	....	5.38	6.86	8.98	13.72	20.95	26.70	34.70	48.40	62.10
16	....	....	5.66	7.22	9.46	14.44	22.05	28.10	36.50	50.80	65.10
17	....	....	....	....	9.94	15.16	23.15	29.50	38.30	53.20	68.10
18	....	....	....	....	10.42	15.88	24.25	30.90	40.10	55.60	71.10
19	....	....	....	....	10.90	16.60	25.35	32.30	41.90	58.00	74.10
20	....	....	....	....	11.38	17.32	26.45	33.70	43.70	60.40	77.10

The following extras are understood as a part of this list:

Blank Bolts with Hexagon Heads, 10 per cent. extra.

Blank Bolts with Tee, Askew, or Eccentric Heads, 20 per cent. extra.

Intermediate lengths take next higher list.

Machine Bolts

With Square Heads and Square Nuts. Finished Points



Square Head and Square Nut



Hexagon Head and Hexagon Nut



Button Head and Square Nut

Length of these machine bolts is measured under head to end

List of August 1, 1912

List Per 100

Length Inches	Diameter, Inches										
	1/4	5/16	3/8	7/16	1/2	9/16 and 5/8	3/4	7/8	1	1 1/8	1 1/4
1 1/2	\$1.70	\$2.00	\$2.40	\$2.80	\$3.60	\$5.20	\$7.70	\$10.50	\$15.10	\$22.50	\$30.00
2	1.78	2.12	2.56	3.00	3.86	5.58	8.25	11.20	16.00	23.70	31.50
2 1/2	1.86	2.24	2.72	3.20	4.12	5.96	8.80	11.90	16.90	24.90	33.00
3	1.94	2.36	2.88	3.40	4.38	6.34	9.35	12.60	17.80	26.10	34.50
3 1/2	2.02	2.48	3.04	3.60	4.64	6.72	9.90	13.30	18.70	27.30	36.00
4	2.10	2.60	3.20	3.80	4.90	7.10	10.45	14.00	19.60	28.50	37.50
4 1/2	2.18	2.72	3.36	4.00	5.16	7.48	11.00	14.70	20.50	29.70	39.00
5	2.26	2.84	3.52	4.20	5.42	7.86	11.55	15.40	21.40	30.90	40.50
5 1/2	2.34	2.96	3.68	4.40	5.68	8.24	12.10	16.10	22.30	32.10	42.00
6	2.42	3.08	3.84	4.60	5.94	8.62	12.65	16.80	23.20	33.30	43.50
6 1/2	2.50	3.20	4.00	4.80	6.20	9.00	13.20	17.50	24.10	34.50	45.00
7	2.58	3.32	4.16	5.00	6.46	9.38	13.75	18.20	25.00	35.70	46.50
7 1/2	2.66	3.44	4.32	5.20	6.72	9.76	14.30	18.90	25.90	36.90	48.00
8	2.74	3.56	4.48	5.40	6.98	10.14	14.85	19.60	26.80	38.10	49.50
9	2.90	3.80	4.80	5.80	7.50	10.90	15.95	21.00	28.60	40.50	52.50
10	3.06	4.04	5.12	6.20	8.02	11.66	17.05	22.40	30.40	42.90	55.50
11	3.22	4.28	5.44	6.60	8.54	12.42	18.15	23.80	32.20	45.30	58.50
12	3.38	4.52	5.76	7.00	9.06	13.18	19.25	25.20	34.00	47.70	61.50
13	....	....	6.08	7.40	9.58	13.94	20.35	26.60	35.80	50.10	64.50
14	....	....	6.40	7.80	10.10	14.70	21.45	28.00	37.60	52.50	67.50
15	....	....	6.72	8.20	10.62	15.46	22.55	29.40	39.40	54.90	70.50
16	....	....	7.04	8.60	11.14	16.22	23.65	30.80	41.20	57.30	73.50
17	....	....	7.36	9.00	11.66	16.98	24.75	32.20	43.00	59.70	76.50
18	....	....	7.68	9.40	12.18	17.74	25.85	33.60	44.80	62.10	79.50
19	....	....	8.00	9.80	12.70	18.50	26.95	35.00	46.60	64.50	82.50
20	....	....	8.32	10.20	13.22	19.26	28.05	36.40	48.40	66.90	85.50
21	....	....	....	....	13.74	20.02	29.15	37.80	50.20	69.30	88.50
22	....	....	....	....	14.26	20.78	30.25	39.20	52.00	71.70	91.50
23	....	....	....	....	14.78	21.54	31.35	40.60	53.80	74.10	94.50
24	....	....	....	....	15.30	22.30	32.45	42.00	55.60	76.50	97.50
25	....	....	....	....	15.82	23.06	33.55	43.40	57.40	78.90	100.50
26	....	....	....	....	....	....	34.65	44.80	59.20	81.30	103.50
27	....	....	....	....	....	....	35.75	46.20	61.00	83.70	106.50
28	....	....	....	....	....	....	36.85	47.60	62.80	86.10	109.50
29	....	....	....	....	....	....	37.95	49.00	64.60	88.50	112.50
30	....	....	....	....	....	....	39.05	50.40	66.40	90.90	115.50

The following extras are understood as a part of this list:

Bolts with Hexagon Heads or Hexagon Nuts, 10 per cent. extra.

If both Hexagon Heads and Hexagon Nuts, 20 per cent. extra.

Joint Bolts with Oblong Nuts, 10 per cent. extra.

Bolts with Tee Heads, Askew Heads, and Eccentric Heads, 20 per cent. extra.

Bolts with Cube Heads, 20 per cent. extra.

Bolts requiring extra upsets to form the head, 20 per cent. extra for each upset.

Button Heads, round neck, take above list.

Bolts without nuts, 6 inches and shorter, 10 per cent. additional discount.

Longer than 6 inches, 5 per cent. additional discount.

For approximate weights and contents of full packages, see next page

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Machine Bolts

With Square Heads and Nuts

Approximate Weight, Pounds Per 100 Bolts

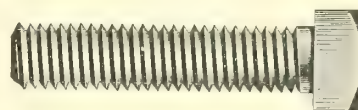
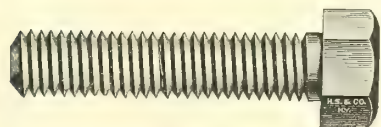
Length Inches	Diameter, Inch									
	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1	2.7	4.9	8.3	10.9	15.2	23.1	30.5			
1 $\frac{1}{4}$	3.0	5.5	9.0	11.9	16.5	24.8	32.5			
1 $\frac{1}{2}$	3.4	6.0	9.7	12.9	17.8	26.5	34.5	53.2		
1 $\frac{3}{4}$	3.7	6.5	10.4	13.8	19.1	28.1	36.5	56.0		
2	4.0	7.0	11.1	14.8	20.4	29.8	38.5	59.0	87	127
2 $\frac{1}{4}$	4.3	7.4	11.8	15.8	21.7	31.5	40.5	62.0	91	132
2 $\frac{1}{2}$	4.6	7.9	12.5	16.8	23.0	33.2	42.5	64.8	95	137
2 $\frac{3}{4}$	5.0	8.4	13.2	17.7	24.3	34.9	44.5	67.7	99	142
3	5.3	8.9	13.9	18.7	25.5	36.5	46.5	70.6	103	147
3 $\frac{1}{2}$	5.9	9.9	15.2	20.6	28.1	39.9	50.5	76.4	111	158
4	6.5	10.9	16.6	22.6	30.7	43.3	54.5	82.2	119	169
4 $\frac{1}{2}$	7.2	11.8	18.0	24.5	33.3	46.6	58.5	88.0	127	180
5	7.8	12.8	19.4	26.5	35.9	50.0	62.5	93.8	135	190
5 $\frac{1}{2}$	8.5	13.8	20.9	28.4	38.4	53.3	66.5	99.6	143	200
6	9.1	14.8	22.3	30.3	41.0	56.7	70.5	105.4	151	211
6 $\frac{1}{2}$	...	15.8	23.7	32.3	43.6	60.1	74.5	111.2	159	222
7	...	16.7	25.1	34.2	46.2	63.4	78.5	117.0	167	232
7 $\frac{1}{2}$	...	17.7	26.5	36.2	48.8	66.8	82.5	122.8	175	243
8	...	18.7	27.8	38.0	51.4	70.1	86.5	128.6	183	253
9	...	...	30.6	42.0	56.5	76.9	94.5	140.2	200	274
10	...	...	33.4	45.9	61.7	83.6	102.5	151.8	216	295
11	...	...	36.1	49.7	66.9	90.3	110.5	163.4	232	316
12	...	...	38.9	53.6	72.0	97.0	118.5	175.0	248	338
13	...	...	...	...	77.2	103.7	126.0	187.0	264	359
14	...	...	...	...	82.3	110.5	134.0	198.0	280	380
15	...	...	...	...	87.5	117.2	142.0	210.0	296	401
16	...	...	...	...	92.7	123.9	150.0	221.0	312	422
17	...	...	...	...	97.8	130.6	158.0	233.0	328	443
18	...	...	...	...	103.0	137.3	166.0	245.0	344	464
19	...	...	...	...	108.1	144.1	174.0	256.0	360	485
20	...	...	...	...	113.3	150.8	182.0	268.0	376	506

Approximate Contents of Full Cases and Kegs

Length Inches	Diameter, Inch											
	$\frac{1}{4}$		$\frac{5}{16}$		$\frac{3}{8}$		$\frac{1}{2}$		$\frac{5}{8}$		$\frac{3}{4}$	
	Case	Keg	Case	Keg	Case	Keg	Case	Keg	Case	Keg	Case	Keg
1	1000	7500	800	4600	500	3000	300	1600	200			
1 $\frac{1}{4}$	1000	6800	900	4100	600	2800	300	1500	200	750		
1 $\frac{1}{2}$	1000	6000	800	3400	600	2500	500	1300	400	700	250	450
1 $\frac{3}{4}$	900	5000	700	3100	550	2200	500	1200	500	650	200	425
2	1000	4000	800	2800	650	2000	450	1100	500	600	200	400
2 $\frac{1}{4}$	1000	...	700	2400	550	1900	400	1000	450	550	250	375
2 $\frac{1}{2}$	900	...	600	2200	500	1700	400	950	400	500	300	350
2 $\frac{3}{4}$	800	...	500	2000	450	1600	350	...	350	475	250	
3	700	...	500	1900	400	1500	300	750	350	450	250	300
3 $\frac{1}{4}$	...	...	500	1800	350	1400	300	...	300	...	250	
3 $\frac{1}{2}$	600	...	450	1700	350	1300	300	700	300	400	200	275
3 $\frac{3}{4}$	...	...	400	1500	300	1200	300	...	250	...	200	
4	500	...	400	1300	300	1100	250	600	250	350	200	250
4 $\frac{1}{4}$	...	...	350	...	250	...	250	...	250	...	200	
4 $\frac{1}{2}$	500	...	350	...	250	900	250	550	250	325	200	225
4 $\frac{3}{4}$	...	...	...	...	250	...	200	...	250	...	200	
5	400	...	350	...	250	800	200	500	250	300	200	200
5 $\frac{1}{2}$	...	...	350	...	200	750	200	450	200	275	150	175
6	...	...	300	...	200	750	200	400	200	250	150	175
6 $\frac{1}{2}$	...	...	...	...	200	...	200	350	200	250	150	150
7	...	...	...	...	200	...	200	350	200	225	150	150
7 $\frac{1}{2}$	...	...	...	...	...	...	150	350	200	200	150	150
8	...	...	...	...	...	...	150	300	150	200	150	125
8 $\frac{1}{2}$	...	...	...	...	...	...	150	...	150	...	150	125
9	...	...	...	...	...	...	150	300	150	175	150	125
9 $\frac{1}{2}$	...	...	...	...	...	...	150	...	150	...	150	125
10	...	...	...	...	...	...	100	250	150	150	150	110
10 $\frac{1}{2}$	...	...	...	...	...	...	100	...	150	...	150	...
11	...	...	...	...	...	...	100	250	150	125	100	100
11 $\frac{1}{2}$	...	...	...	...	...	...	100	...	100	...	100	
12	...	...	...	...	...	...	100	200	100	125	100	100
14	...	...	...	...	...	...	...	...	...	...	100	
16	...	...	...	...	...	...	...	...	...	...	100	

Forged Tap Bolts

With Square Heads



The length of Forged Tap Bolts is measured from under head to end

List of January 30, 1895

List Per 100

Length Inches	Diameter Inch								
	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$ and $\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1½	\$1.00	\$1.15	\$1.35	\$1.60	\$2.00	\$3.00	\$4.20	\$6.00	\$8.00
1¾	1.05	1.21	1.42	1.69	2.10	3.12	4.35	6.20	8.25
2	1.10	1.27	1.49	1.78	2.20	3.24	4.50	6.40	8.50
2¼	1.15	1.33	1.56	1.87	2.30	3.36	4.65	6.60	8.75
2½	1.20	1.39	1.63	1.96	2.40	3.48	4.80	6.80	9.00
2¾	1.25	1.45	1.70	2.05	2.50	3.60	4.95	7.00	9.25
3	1.30	1.51	1.77	2.14	2.60	3.72	5.10	7.20	9.50
3¼	....	1.57	1.84	2.23	2.70	3.84	5.25	7.40	9.75
3½	....	....	1.91	2.32	2.80	3.96	5.40	7.60	10.00
3¾	....	....	....	2.41	2.90	4.08	5.55	7.80	10.25
4	....	....	....	....	3.00	4.20	5.70	8.00	10.50

For Hexagon Heads, add 10 per cent. to above list.



Railroad Track Bolts

We are in position to furnish cut-thread Track Bolts made of iron or steel of quality specially suitable for the purpose. Rolled thread Track Bolts are made of steel and are undoubtedly superior to all others both in strength and durability. Prices on receipt of quantity specifications



With Square Nut

Bolt Ends

With Square Nuts

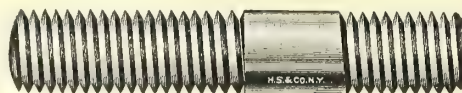
List of February 14, 1895

Size of Iron Inch	Length Inches	Length of Thread Inches	List Per Pound	Size of Iron Inches	Length Inches	Length of Thread Inches	List Per Pound
$\frac{5}{16}$	6	1	\$.20	$1\frac{1}{8}$	13	$4\frac{1}{2}$	\$.10
$\frac{3}{8}$	7	$1\frac{1}{4}$	.18	$1\frac{1}{4}$	14	5	.11
$\frac{7}{16}$	7	$1\frac{1}{2}$	.16	$1\frac{3}{8}$	15	$5\frac{1}{2}$	.11
$\frac{1}{2}$	8	$2\frac{1}{2}$	.14	$1\frac{1}{2}$	16	6	.11
$\frac{5}{8}$	9	3	.12	$1\frac{5}{8}$	17	$6\frac{1}{2}$	.12
$\frac{3}{4}$	10	$3\frac{1}{2}$	.10	$1\frac{3}{4}$	18	7	.12
$\frac{7}{8}$	11	$3\frac{1}{2}$	.10	$1\frac{7}{8}$	19	$7\frac{1}{2}$	.12
1	12	4	.10	2	20	8	.12

For Hexagon Nuts, add 10 per cent. to above list

Prices of Bolt Ends shorter than above standard lengths will be quoted upon application

Milled Iron Studs



When ordering Studs, give length of thread wanted on each end, and length of body. Unless otherwise ordered, the shorter threaded end will be a tight fit and the longer end regular. The length is measured overall.

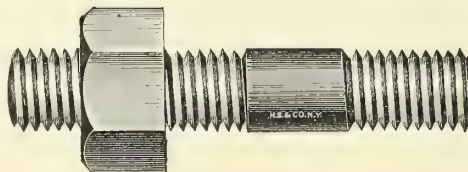
List Per 100

Length Inches	Diameter, Inches									
	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
	Threads per Inch									
	16	14	*12 & 13	12	11	10	9	8	7	7
$1\frac{1}{4}$	\$3.35	\$4.05	\$4.40	\$5.10						
$1\frac{1}{2}$	3.50	4.20	4.60	5.30	\$6.10					
$1\frac{3}{4}$	3.65	4.35	4.80	5.50	6.30					
2	3.80	4.50	5.00	5.70	6.50	\$8.80				
$2\frac{1}{4}$	3.95	4.65	5.20	5.90	6.70	9.10				
$2\frac{1}{2}$	4.10	4.80	5.40	6.10	6.90	9.40	\$12.00			
$2\frac{3}{4}$	4.25	4.95	5.60	6.30	7.10	9.70	12.50			
3	4.40	5.10	5.80	6.50	7.30	10.00	13.00	\$17.00	\$21.00	
$3\frac{1}{4}$	.....	5.25	6.00	6.70	7.50	10.30	13.50	17.75	22.00	
$3\frac{1}{2}$	.....	5.40	6.20	6.90	7.70	10.60	14.00	18.50	23.00	\$27.00
$3\frac{3}{4}$	.....	5.55	6.40	7.10	7.90	10.90	14.50	19.25	24.00	28.00
4	.....	.....	6.60	7.30	8.10	11.20	15.00	20.00	25.00	29.00
$4\frac{1}{4}$	.....	.....	6.70	7.40	8.25	11.45	15.40	20.50	25.75	29.75
$4\frac{1}{2}$	.....	.....	6.80	7.50	8.40	11.65	15.75	21.00	26.50	30.50
$4\frac{3}{4}$	.....	.....	.....	7.60	8.55	11.90	16.15	21.50	27.25	31.25
5	.....	.....	.....	7.70	8.70	12.10	16.50	22.00	28.00	32.00
$5\frac{1}{4}$	.....	.....	.....	7.80	8.85	12.35	16.90	22.50	28.75	32.75
$5\frac{1}{2}$	.....	.....	.....	.....	9.00	12.55	17.25	23.00	29.50	33.50
$5\frac{3}{4}$	.....	.....	.....	.....	9.15	12.80	17.65	23.50	30.25	34.25
6	.....	.....	.....	.....	9.30	13.00	18.00	24.00	31.00	35.00
Add for each $\frac{1}{4}$ inch	\$.15	.20	.20	.20	.25	.30	.40	.60	.75	1.00

State whether V or U. S. Standard threads are wanted.

*On $\frac{1}{2}$ -inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).

Rough Stud Bolts



When ordering Stud Bolts give length of thread wanted at each end, and length of body. Unless otherwise ordered the shorter threaded end will be a tight fit and the longer end regular. The length is measured overall. With U. S. Standard Chamfered and Trimmed Hexagon Nuts

List Per 100

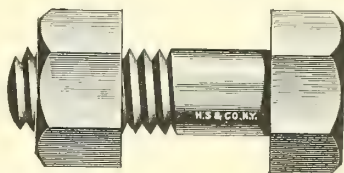
Length Inches	Diameter, Inches									
	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
	Threads to Inch									
	16	14	*12 or 13	12	11	10	9	8	7	7
$1\frac{1}{2}$	\$4.00	\$5.10	\$5.50							
$1\frac{3}{4}$	4.10	5.25	5.65							
2	4.20	5.40	5.80	\$8.50	\$8.50	\$12.40				
$2\frac{1}{4}$	4.30	5.55	5.95	8.75	8.75	12.70				
$2\frac{1}{2}$	4.40	5.70	6.10	9.00	9.00	13.00	\$18.00			
$2\frac{3}{4}$	4.50	5.85	6.25	9.25	9.25	13.30	18.50			
3	4.60	6.00	6.40	9.50	9.50	13.60	19.00	\$27.80		
$3\frac{1}{4}$	4.70	6.15	6.55	9.75	9.75	13.90	19.50	28.40		
$3\frac{1}{2}$	4.80	6.30	6.70	10.00	10.00	14.20	20.00	29.00		
$3\frac{3}{4}$	4.90	6.45	6.85	10.25	10.25	14.50	20.50	29.60		
4	5.00	6.60	7.00	10.50	10.50	14.80	21.00	30.20	\$45.00	\$64.00
$4\frac{1}{2}$	5.25	6.90	7.30	11.00	11.00	15.40	22.00	31.40	46.50	66.50
5	.....	.....	7.60	11.50	11.50	16.00	23.00	32.60	48.00	69.00
$5\frac{1}{2}$	.....	.....	8.00	12.00	12.00	16.60	24.00	33.80	49.50	71.50
6	.....	.....	8.45	12.50	12.50	17.20	25.00	35.00	51.00	74.00

State whether V or U. S. Standard threads are wanted.

*On $\frac{1}{2}$ -inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).

Stud Bolts without nuts, 15 per cent. reduction from list prices.

Coupling Bolts



Length is measured from under head to end. Milled to size and under head

List Per 100

Diameter of head, inches.....	$\frac{7}{8}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$1\frac{7}{16}$	$1\frac{5}{8}$	$1\frac{13}{16}$	2
Length of head, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Diameter of bolt, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Length, Inches							
2	\$20.00	\$25.00					
$2\frac{1}{4}$	20.50	25.75	\$32.00				
$2\frac{1}{2}$	21.00	26.50	32.00	\$38.75			
$2\frac{3}{4}$	21.50	27.25	33.00	39.75	\$56.00		
3	22.00	28.00	34.00	40.75	56.00	\$70.00	
$3\frac{1}{4}$	22.50	28.75	35.00	41.75	57.00	71.50	\$100.00
$3\frac{1}{2}$	23.00	29.50	36.00	42.75	58.00	73.00	100.00
$3\frac{3}{4}$	23.50	30.25	37.00	43.75	59.00	74.50	102.50
4	24.00	31.00	38.00	44.75	60.00	76.00	105.00
$4\frac{1}{4}$	24.50	31.75	39.00	45.75	61.00	77.50	107.50
$4\frac{1}{2}$	25.00	32.50	40.00	46.75	62.00	79.00	110.00
$4\frac{3}{4}$	25.50	33.25	41.00	47.75	63.00	80.50	112.50
5	.....	34.00	42.00	48.75	64.00	82.00	115.00
$5\frac{1}{4}$	.....	.....	43.00	49.75	65.00	83.50	117.50
$5\frac{1}{2}$	.....	.....	.....	50.75	66.00	85.00	120.00
$5\frac{3}{4}$	.....	.....	.....	.....	67.00	86.50	122.50
6	.....	.....	.....	.....	.....	88.00	125.00
Thickness of nut, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Short diameter of nut, inches.....	$\frac{7}{8}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$1\frac{7}{16}$	$1\frac{5}{8}$	$1\frac{13}{16}$	2

Intermediate lengths take next higher list

Hanger Bolts or Screws

Up to $\frac{1}{4}$ inch diameter have rolled threads. $\frac{1}{4}$ inch diameter and over have cut thread. The length of all Hanger Bolts on this page is measured overall



With Square Nut



With Pressed Steel Wing Nut



With Malleable Iron Wing Nut

List of May 21, 1912

List Per 100

Length Overall, Inch	Diameter, Inch							
	$\frac{1}{4}$ and $\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$ and $\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
2	\$3.00	\$3.60	\$4.24	\$5.06	\$6.19			
$2\frac{1}{2}$	3.19	3.83	4.54	5.44	6.75	\$9.90		
3	3.38	4.05	4.84	5.81	7.31	10.73		
$3\frac{1}{2}$	3.57	4.28	5.14	6.19	7.88	11.55	\$15.00	
4	3.75	4.50	5.44	6.56	8.44	12.38	16.00	
$4\frac{1}{2}$	3.94	4.73	5.74	6.94	9.00	13.20	17.00	
5	4.13	4.95	6.04	7.31	9.56	14.03	18.00	\$26.25
$5\frac{1}{2}$	4.32	5.18	6.34	7.69	10.13	14.85	19.00	27.50
6	4.50	5.40	6.64	8.06	10.69	15.68	20.00	28.75
$6\frac{1}{2}$	.....	5.62	6.94	8.43	11.25	16.50	21.00	30.00
7	.....	5.84	7.24	8.80	11.82	17.33	22.50	31.25
$7\frac{1}{2}$	.....	6.06	7.54	9.17	12.38	18.15	23.44	32.50
8	.....	6.28	7.84	9.55	12.95	19.03	24.37	33.75
9	.....	.....	8.14	9.92	13.51	19.85	26.25	35.62
10	.....	.....	.....	10.30	14.08	20.68	27.50	37.50
11	.....	.....	.....	.....	14.64	21.50	28.75	39.38
12	.....	.....	.....	.....	15.21	22.32	30.00	41.25

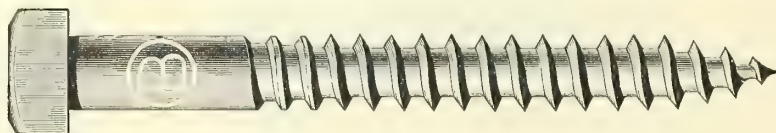
For Hexagon Nuts, add 10 per cent. to above list

For Wing Nuts, net prices will be quoted on application

Coach or Lag Screws

Square Head. Gimlet Point

The length of these screws is measured from under head to end



Square Head

List Per 100

List of November 12, 1908

Length Inches	Diameter, Inches				Diameter, Inches			
	$\frac{1}{4}$ and $\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$ and $\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1½	\$2.25	\$2.70	\$3.15	\$3.75				
2	2.45	2.96	3.47	4.11	\$6.00			
2½	2.65	3.22	3.79	4.47	6.50	\$9.20		
3	2.85	3.48	4.11	4.83	7.00	9.90	\$15.00	
3½	3.05	3.74	4.43	5.19	7.50	10.60	16.00	\$22.00
4	3.25	4.00	4.75	5.55	8.00	11.30	17.00	23.30
4½	3.45	4.26	5.07	5.91	8.50	12.00	18.00	24.60
5	3.65	4.52	5.39	6.27	9.00	12.70	19.00	25.90
5½	3.85	4.78	5.71	6.63	9.50	13.40	20.00	27.20
6	4.05	5.04	6.03	6.99	10.00	14.10	21.00	28.50
6½	.....	.....	6.35	7.35	10.50	14.80	22.00	29.80
7	.....	.....	6.67	7.71	11.00	15.50	23.00	31.10
7½	.....	.....	6.99	8.07	11.50	16.20	24.00	32.40
8	.....	.....	7.31	8.43	12.00	16.90	25.00	33.70
9	.....	.....	7.95	9.15	13.00	18.30	27.00	36.30
10	.....	.....	.....	9.87	14.00	19.70	29.00	38.90
11	.....	.....	.....	10.59	15.00	21.10	31.00	41.50
12	.....	.....	.....	11.31	16.00	22.50	33.00	44.10

Coach Screws with Hexagon Heads 10 per cent. advance

Approximate Weight Pounds Per 100 Screws

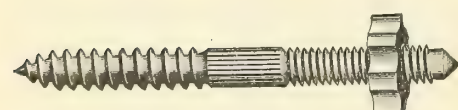
Length Inches	Diameter, Inch									Length Inches	Diameter, Inch							
	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1		$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1½	2.4	3.5	5.7	8.2	10.9					4½	8.7	12.9	18.2	24.3	39.6	60	86	116
1¾	2.6	3.9	6.3	9.0	12.0					5	9.5	14.1	19.9	26.6	43.2	65	93	125
2	2.9	4.4	6.9	9.8	13.1	21.8				5½	10.4	15.3	21.6	28.8	46.7	70	100	134
2¼	3.1	4.8	7.5	10.7	14.3	23.6				6	11.2	16.5	23.3	31.1	50.3	75	107	143
2½	3.4	5.2	8.1	11.5	15.4	25.4	40			7	....	....	....	35.5	57.4	85	121	161
3	3.9	6.1	9.3	13.2	17.6	28.9	45	65		8	....	....	....	40.0	64.5	95	135	179
3½	...	6.9	10.5	14.9	19.9	32.5	50	72	98	9	....	....	....	44.5	71.6	105	148	197
4	...	7.8	11.7	16.6	22.1	36.0	55	79	107	10	....	....	....	49.0	78.8	115	162	215
										11	....	....	....	53.5	85.9	125	175	233
										12	....	....	....	58.0	93.0	135	189	251

Hand Rail Screws

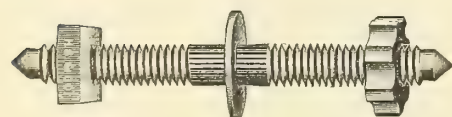
The length of these screws is measured overall

List of January 1, 1881

List Per Gross



With One Nut



With Two Nuts

One Nut			Two Nuts		
Length Inches	Diameter, Inch		Length Inches	Diameter, Inch	
	$\frac{5}{16}$	$\frac{3}{8}$		$\frac{5}{16}$	$\frac{3}{8}$
4	\$9.00		4	\$10.25	
4½	10.00	\$11.25	4½	11.25	\$13.50
5	11.25	12.50	5	12.50	14.50
5½	12.25	13.50	5½	13.50	15.75
6	13.25	14.50	6	14.50	16.75

Hand Rail Screws with Wood Screw Thread on both ends are invoiced from the One Nut List

Bed Screws



Square Head

Length is measured overall

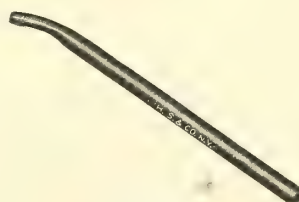


Plain Cabinet Head

Length is measured from under the head to the end. $\frac{3}{8}$ -inch in diameter.
Length, inches..... 4 4½ 5 5½ 6 6½ 7 7½ 8
Gross..... \$5.50 5.75 6.00 6.25 6.50 6.75 7.00 7.25 7.50
Two steel pin wrenches are furnished with each gross of these screws.

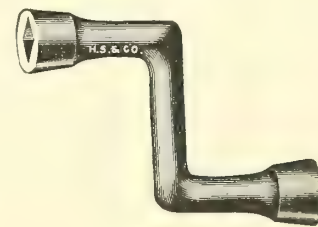
Length Inches	Diameter $\frac{3}{8}$ Inch Gross	Diameter $\frac{1}{16}$ Inch Gross
4	\$4.00	
4½	4.25	
5	4.50	\$5.70
5½	4.75	6.05
6	5.00	6.40
6½	5.25	6.75
7	5.50	7.10
7½	5.75	7.45
8	6.00	7.80

Extra Wrenches



No. 1

For cabinet head screws,
dozen..... \$1.00



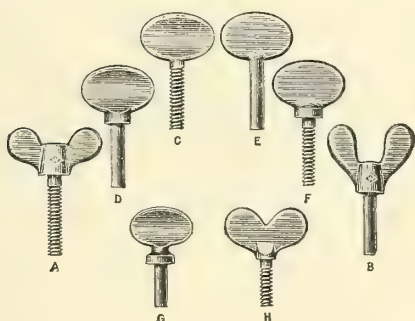
No. 2

For square head screws,
dozen..... \$.72

Thumb Screws

Drop-Forged from Steel

Blank or Threaded

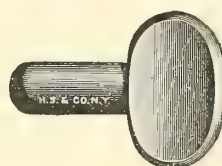


Blanks per 100, of any type
Threaded Screws, double following list prices

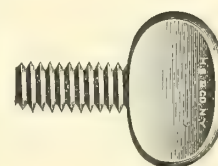
Length Under Head Inches	Diameter and U. S. Standard Threads per Inch									
	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
	32	24	20	18	16	14	13 & 12	12	11	10
$\frac{1}{4}$	\$1.60	\$1.80	\$2.05	\$2.40	\$2.95					
$\frac{1}{2}$	1.70	1.90	2.15	2.50	3.05	\$3.80	\$4.75	\$5.85		
$\frac{3}{4}$	1.80	2.00	2.25	2.60	3.20	4.00	5.00	6.20		
1	1.90	2.10	2.35	2.75	3.40	4.25	5.30	6.55	\$8.00	\$11.55
1¼	2.00	2.20	2.45	2.90	3.60	4.50	5.60	6.90	8.40	12.20
1½	2.10	2.30	2.55	3.10	3.80	4.75	5.95	7.30	8.90	12.90
1¾	2.20	2.40	2.70	3.30	4.05	5.05	6.30	7.75	9.40	13.60
2	2.30	2.50	2.85	3.50	4.30	5.35	6.65	8.20	9.95	14.30
2¼	2.40	2.60	3.05	3.70	4.60	5.70	7.05	8.65	10.50	15.05
2½	2.50	2.70	3.25	3.95	4.90	6.05	7.45	9.15	11.05	15.80
2¾	2.60	2.80	3.45	4.20	5.20	6.40	7.90	9.65	11.65	16.55
3	2.70	2.90	3.60	4.45	5.50	6.75	8.35	10.15	12.25	17.35
3½	2.80	3.00	3.75	4.65	5.75	7.05	8.75	10.65	12.85	18.15
4	2.90	3.10	3.90	4.85	6.00	7.35	9.15	11.15	13.45	19.00
4½	3.00	3.20	4.05	5.05	6.25	7.65	9.55	11.65	14.05	20.00
5	3.10	3.30	4.20	5.25	6.50	7.95	9.95	12.15	14.45	21.00
5½	3.20	3.40	4.35	5.45	6.75	8.25	10.35	12.65	15.05	22.00
6	3.30	3.50	4.50	5.60	6.90	8.45	10.60	12.95	15.45	23.00

Style C will be sent unless otherwise ordered.

Malleable Iron



Blank



Threaded

Length Under Head Inches	Diameter of Screw, Inch								
	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
	Width of Head, Inch	1	1 1/16	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4
	Threads per Inch	18	16	14	13	11	10		
¾	.....	\$1.10	\$1.40						
1	\$2.10	1.20	1.50	\$2.00	\$2.70				
1¼	.....	1.65							
1½	2.60	1.45	1.80	2.35	3.00				
1¾	.....	1.95							
2	3.10	1.70	2.10	2.70	3.40	\$4.60	\$5.80	\$9.00	
2¼	.....	1.95	2.40	3.05	3.80	5.20	6.50	10.00	
2½	.....	2.20	2.70	3.40	4.20	5.80	7.20	11.00	
2¾	.....	2.55	3.00	3.75	4.60	6.40	7.90	12.00	
3	.....	2.80	3.30	4.10	5.00	7.00	8.60	13.00	\$22.00
3¼	.....	.....	3.80	4.65	5.60	7.80	9.50	14.25	23.50
3½	.....	.....	4.30	5.20	6.20	8.60	10.40	15.50	25.00
3¾	.....	.....	4.80	5.75	6.80	9.40	11.30	16.75	26.50
4	.....	.....	5.30	6.30	7.40	10.20	12.20	18.00	28.00
4¼	.....	.....	6.50	7.70	9.00	11.60	14.00	20.50	31.00
4½	.....	.....	7.70	9.10	10.60	13.40	15.80	23.00	34.00
4¾	.....	.....	.....	.....	.....	.....	17.60	25.50	37.00
5	.....	.....	.....	.....	.....	.....	.....	28.00	40.00
Blank									
Pound,	.25	.15	.12	.10	.10	.10	.10	.10	.10

Expansion Bolts

Star
Machine Bolt Type

Double



List Per Hundred, with Square Head Bolts

Length Inches	Diameter of Bolt, Inches								
	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
1 3/4	\$8.95								
2	9.00	\$10.00							
2 1/2	9.05	10.05	\$12.40						
3	9.10	10.10	12.50	\$16.60	\$20.00				
3 1/2	9.15	10.15	13.00	16.80	20.15	\$27.25			
4	9.20	10.20	13.70	17.00	20.30	27.50	\$40.00		
4 1/2	9.25	10.25	13.80	17.25	20.45	27.75	40.30		
5	9.30	10.30	13.90	17.50	20.60	28.00	40.60	\$52.00	
5 1/2	9.35	10.35	14.00	17.75	20.75	28.25	40.90	52.43	\$74.45
6	9.40	10.40	14.10	18.00	20.90	28.50	41.20	52.86	75.00
6 1/2	.....	.....	14.20	18.10	21.05	28.75	41.50	53.29	75.55
7	.....	.....	14.30	18.20	21.20	29.00	41.80	53.72	76.10
7 1/2	.....	.....	14.40	18.30	21.35	29.25	42.10	54.15	76.65
8	.....	.....	14.50	18.40	21.50	29.50	42.40	54.58	77.20
9	.....	.....	.....	.....	21.65	29.75	42.70	55.01	77.75
10	.....	.....	.....	.....	21.80	30.00	43.00	55.44	78.30
11	.....	.....	.....	.....	22.00	30.50	43.50	56.00	79.00
12	.....	.....	.....	.....	23.50	31.00	44.00	57.00	80.00

List for Shields Only

Diameter of bolt.....	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
List per 100.....	\$8.00	9.00	11.00	15.00	18.00	24.00	35.00	44.00	63.00
Length of shield.....	1 1/2	1 7/8	2 3/8	2 1/2	2 5/8	3 1/4	4	4 3/4	5
Size of hole to receive expansion.....	1/2	5/8	11/16	7/8	7/8	1	1 1/4	1 1/2	1 5/8
Diameter of drill required	1/2	5/8	11/16	7/8	7/8	1	1 1/4	1 1/2	1 5/8

This style can also be furnished 1 1/8, 1 1/4 and 1 1/2 inch bolt diameter, any length.

Single



List Per Hundred, with Square Head Bolts

Length Inches	Diameter of Bolt, Inches								
	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
1 1/2	\$8.00	\$9.50							
2	8.20	9.50	\$11.80	\$15.25	\$18.00	\$24.00			
2 1/2	8.30	9.55	11.90	15.50	18.25	24.50			
3	8.40	9.60	12.00	16.00	18.50	25.00			
3 1/2	8.50	9.65	12.50	16.25	18.75	25.50	\$34.00		
4	8.60	9.70	13.00	16.50	19.00	26.00	34.50	\$43.00	\$54.00
4 1/2	8.70	9.75	13.30	16.75	19.25	26.25	34.75	43.50	54.50
5	8.80	9.80	13.40	17.00	19.50	26.50	35.00	44.00	55.00
6	.....	9.90	13.60	17.25	19.90	27.00	35.50	45.00	56.00
7	.....	.....	.....	.....	20.20	27.50	36.00	46.00	57.00
8	.....	.....	.....	.....	20.50	28.00	37.00	47.00	58.00
9	.....	.....	.....	.....	20.65	28.25	38.00	48.00	59.00
10	.....	.....	.....	.....	20.80	28.50	39.00	49.00	60.00
11	.....	.....	.....	.....	21.00	29.00	40.00	50.00	61.00
12	.....	.....	.....	.....	22.50	29.50	41.00	51.00	62.00

List for Shields Only

Diameter of bolt.....	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
List per 100.....	\$7.50	8.50	10.50	14.00	16.00	21.00	29.00	36.00	44.00
Length of shield.....	1	1 1/2	1 3/4	1 3/4	1 3/4	2	3	3 3/4	3 3/4
Size of hole to receive expansion.....	1/2	5/8	11/16	7/8	7/8	1	1 1/8	1 3/8	1 7/8
Diameter of drill required	1/2	5/8	11/16	7/8	7/8	1	1 1/8	1 3/8	1 7/8

Instructions for Ordering

The diameter of the expansion bolt is understood to be the size of the bolt itself and not the outside of the expansion parts. The length of the bolt is found by adding the thickness of material to length of the shield.

Instructions for Using

Use a drill same size as hole to receive the expansion; sizes are given in table above; insert shield in hole, run bolt through hole in object to be fastened, and on into shield and tighten.

We furnish bolts with sleeves or collars, and all kinds of special heads. Prices on application.

Brass Expansion Bolts

Star
Machine Screw Type

Single



Double



List Per Hundred, with Screws

Length Inches	3/16-inch No. 10	1/4-inch Nos. 12 or 14	5/16-inch No. 18	3/8-inch No. 24
3/4	\$8.50			
1	8.60	\$11.00		
1 1/4	8.70	11.50		
1 1/2	8.90	12.00	\$13.50	\$20.50
1 3/4	9.00	12.50	14.00	21.00
2	9.20	13.00	14.50	21.50
2 1/2	.....	14.00	15.50	22.50
3	.....	15.00	16.50	24.00
3 1/2	.....	19.00	21.00	28.00
4	.....	22.00	26.00	33.00
Length of expansion, inch	3/4	1	1 3/8	1 3/4
Size hole to receive expansion, inch.....	3/8	7/16	9/16	1 1/16
Shields only.....	7.75	9.50	\$11.00	\$13.00

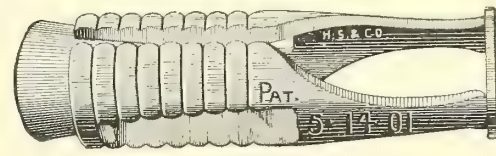
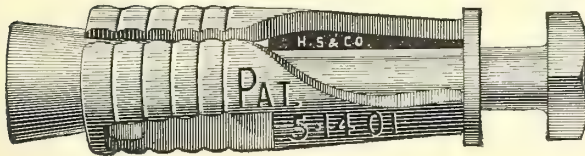
List Per Hundred, with Screws

Length Inches	1/4-inch No. 14	5/16-inch No. 18	3/8-inch No. 24
1 1/2	\$13.50		
1 3/4	14.00		
2	14.50	\$16.50	
2 1/2	15.50	17.50	\$27.50
3	17.00	18.50	29.00
3 1/2	21.00	25.00	32.00
4	24.00	30.00	37.00
Length of expansion, inch....	1 1/2	1 7/8	2 3/8
Size hole to receive expansion, inch.....	1/2	5/8	1 1/16
Shields only.....	11.00	13.00	16.00

Expansion Bolts

Brohard

Machine Bolt Type



List Per 100 With Square Head Bolt

Length Inches	Diameter, Inch									
	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	
1 3/4	\$8.95									
2	9.00	\$10.00								
2 1/2	9.05	10.05	\$12.40							
3	9.10	10.10	12.50	\$16.60	\$20.00					
3 1/2	9.15	10.15	13.00	16.80	20.15	\$27.25				
4	9.20	10.20	13.70	17.00	20.30	27.50	\$40.00			
4 1/2	9.25	10.25	13.80	17.25	20.45	27.75	40.30			
5	9.30	10.30	13.90	17.50	20.60	28.00	40.60	\$52.00		
5 1/2	9.35	10.35	14.00	17.75	20.75	28.25	40.90	52.43	\$74.45	
6	9.40	10.40	14.10	18.00	20.90	28.50	41.20	52.86	75.00	
6 1/2	...	...	14.20	18.10	21.05	28.75	41.50	53.29	75.55	
7	...	...	14.30	18.20	21.20	29.00	41.80	53.72	76.10	
7 1/2	...	...	14.40	18.30	21.35	29.25	42.10	54.15	76.65	
8	...	...	14.50	18.40	21.50	29.50	42.40	54.58	77.20	
9	...	...	...	...	21.65	29.75	42.70	55.01	77.75	
10	...	...	...	...	21.80	30.00	43.00	55.44	78.30	
11	...	...	...	...	22.00	30.50	43.50	56.00	79.00	
12	...	...	...	...	23.50	31.00	44.00	57.00	80.00	
Length of Expansion Case	1 1/2	2 1/4	2 3/4	3 1/2	3 3/8	4	4 1/2	4 1/2	5 1/8	
Size of Hole to Receive Expansion Case	5/16	5/8	1 1/8	7/8	1	1 1/8	1 3/8	1 1/2	1 5/8	

Shields Only

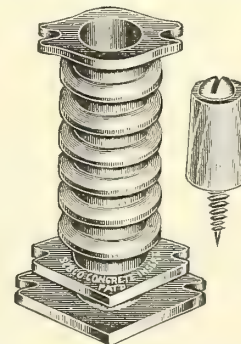
For Bolt Inches	Length of Case Inches	Size of Hole to Receive Case, Inches	List Per 100	
			Iron	Brass
1/4	1 1/2	5/16	\$8.00	\$15.00
5/16	2 1/4	5/8	9.00	17.00
3/8	2 3/4	1 1/8	11.00	21.00
7/16	3 1/2	7/8	15.00	
1/2	3 3/8	1	18.00	
5/8	4	1 1/8	24.00	
3/4	4 1/2	1 3/8	35.00	
7/8	4 1/2	1 1/2	44.00	
1	5 1/8	1 5/8	63.00	
1 1/4	6 1/2	2 1/8	150.00	
1 1/2	7 3/8	2 3/8	220.00	

The 1/4 to 1/2 inch expand two ways; the 5/8 inch and larger expand four ways, giving a firmer hold, and are especially adapted for heavy work.

Concrete Inserts

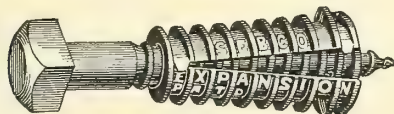
Sebco

For Insertion in the Concrete Before It Sets



Sebco

Lag or Coach Screw Type



List Per 100 With Lag Screws

Length Inches	Diameter of Bolt, Inches									
	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/4
1 1/2	\$10.13	\$11.60								
2	10.85	11.65								
2 1/2	11.00	11.85	\$15.90	\$20.30	\$24.15	\$31.70	\$48.30			
3	11.25	12.00	16.10	20.50	24.45	32.10	48.85			
4	11.50	12.35	16.40	20.80	25.35	32.90	50.00			
5	11.85	12.65	16.90	21.15	25.90	33.75	51.05			
6	12.20	13.00	17.35	21.50	26.45	34.60	52.20	\$68.90	\$79.55	
7	...	13.30	17.65	21.80	27.00	35.40	53.30	70.00	81.65	
8	...	...	18.00	22.15	27.55	36.25	54.45	71.10	83.70	\$174.45
9	...	...	...	22.50	28.10	37.10	55.55	72.20	85.75	181.10
10	...	...	...	...	...	37.95	56.65	73.30	87.75	187.75
11	...	...	...	...	...	38.80	57.75	74.40	89.90	194.45
12	...	...	...	...	...	39.60	58.90	75.55	92.00	201.10

List Per 100 For Shields Only

Diam. of Lag Screw	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/4
Per 100	\$9.40	10.50	13.35	17.75	22.00	27.80	39.95	53.30	66.60	100.00
Length of Shield Long Standard	1 1/2	2	2 3/4	3	3 1/2	3 1/2	3 1/2	5	5	8
Length of Shield Short Standard	...	1 1/2	2	2	2	2	2			
Length of Shield Ex. short Stand.	...	...	1 1/2	...	1 1/2	1 1/2				
Outside Diameter of Shield	7/16	1/2	5/8	1 1/8	3/4	7/8	1	1 1/4	1 1/2	1 3/8
Diameter of Drill Required	7/16	1/2	5/8	1 1/8	3/4	7/8	1	1 1/4	1 1/2	1 3/8

List Per 100 With Square Head Screws or Bolts

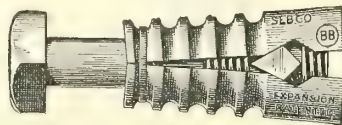
Length Inches	Diameter of Screw or Bolt							
	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
1 1/4	\$11.00	\$12.70						
2	11.10	12.90						
2 1/2	11.20	13.10	\$14.20	\$17.00				
3	11.30	13.40	14.40	17.50	\$20.20	\$25.60	\$26.60	\$34.70
4	11.40	14.00	14.80	18.20	20.80	26.50	27.50	35.70
5	...	14.40	15.20	19.00	21.40	27.30	28.30	36.70
6	...	...	15.60	19.60	22.10	28.30	29.30	37.70
7	...	...	...	20.30	22.70	29.20	30.20	38.70
8	...	...	...	21.00	23.30	30.10	31.10	39.70
Inserts only	9.00	10.00	11.00	13.00	15.00	18.00	19.00	26.00
Length of Insert	1 1/2	2	2	2	2 1/2	2 1/2	2 1/2	3

Either machine bolts or machine screws, lag screws or wood screws may be used with the insert.

To order, state if bolts or screws are desired; if inserts only are wanted, state if they are to be threaded for screws or bolts.

Expansion Bolts

Sebco "B-B" (Bottom Bearing)



This type is of special value in fastening pipe hangers to ceilings, in elevator work and mine work, and wherever the use of a Stud or hanger bolt is required, or where the article to be attached does not bear directly against the wall or ceiling.

The shield may be placed as far back into the hole as desired, and as the expansion is always at the inner end the entire strain is well back from the surface of the wall. The corrugated rings become firmly embedded in the walls of the hole, making a positive expansion that no strain can loosen.

The expansion is even and bears equally at all points of contact with the wall.

List Per 100 Shields Only

To fit bolt diameter,							
inch.....	1/4	3/8	7/16	1/2	9/16	5/8	3/4
Per 100.....	\$9.00	12.00	16.00	19.00	22.00	25.00	35.00
Length of shield, inches	1	2	2	2 1/2	2 1/2	2 1/2	4
Diameter of shield, inches	7/16	1 1/16	1 3/16	7/8	1	1	1 1/4
Size drill, inches.....	7/16	1 1/16	1 3/16	7/8	1	1	1 1/4

List Per 100, with Square Head Bolts

Length Inches	Diameter of Bolt, Inch						
	1/4	3/8	7/16	1/2	9/16	5/8	3/4
1 1/2	\$9.65						
2	9.70	\$13.70	\$18.80				
2 1/2	9.75	13.85	18.95	\$22.95	\$27.10	\$30.10	
3	9.80	14.00	19.10	23.10	27.50	30.50	
4	9.90	14.20	19.40	23.55	27.90	30.90	\$44.00
5	10.00	14.40	19.70	23.95	28.50	31.50	44.80
6	10.10	14.60	20.05	24.40	29.15	32.15	45.50
7	10.20	14.85	20.40	24.90	29.75	32.75	46.50
8	10.30	15.10	20.70	25.25	30.40	33.40	47.00
9	10.40	15.30	21.05	25.65	30.90	33.90	48.00
10	10.50	15.50	21.40	26.15	31.60	34.60	49.00
11	10.60	15.70	21.70	26.55	31.85	34.85	49.50
12	10.70	15.90	22.05	27.00	32.90	35.90	50.00

Screw Anchors

Sebco



Made of one piece of composition metal. Used with ordinary wood or machine screws. In ordering, state gauge of screw to be used.

List Per 100. Prices do not include screws

Size Inches	Screw Number	Outside Diameter Anchor and Diameter of Drill required	Per 100	Size Inches	Screw Number	Outside Diameter Anchor and Diameter of Drill required	Per 100
1/8x 1/2	5-6-7-8	1/4	\$4.40	1/4x 3/4	13-14-15	3/8	\$5.60
1/8x 5/8	5-6-7-8	1/4	4.40	1/4x1	13-14-15	3/8	5.60
1/8x 3/4	5-6-7-8	1/4	4.40	1/4x1 1/2	13-14-15	3/8	6.75
3/16x 1/2	9-10-11-12	5/16	5.00	1/4x2	13-14-15	3/8	7.80
3/16x 3/4	9-10-11-12	5/16	5.00	5/16x 3/4	16-17-18	7/16	6.25
5/16x1	9-10-11-12	5/16	5.00	5/16x1	16-17-18	7/16	6.25
5/16x1 1/8	9-10-11-12	5/16	6.25	5/16x1 1/2	16-17-18	7/16	7.50
1/4x 1/2	13-14-15	3/8	5.60	5/16x2	16-17-18	7/16	8.75

Twin Bolts

Sebco Duplex

For Use on Hollow Metal

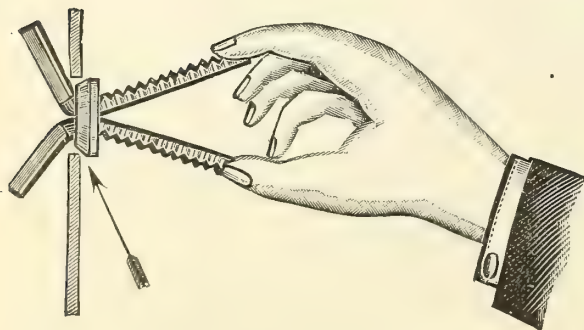


Figure 1

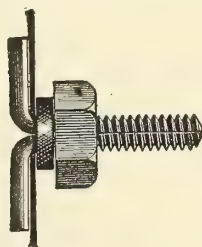


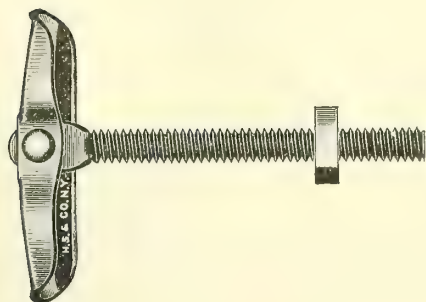
Figure 2

Diameter Inch	Length Inches	Per 100
3/16	3/4	\$4.50
3/16	1	5.25
3/16	1 1/4	6.00
3/16	2	6.75
3/16	2 1/2	7.50
3/16	3	8.25
1/4	3/4	5.25
1/4	1	6.00
1/4	1 1/4	6.75
1/4	2	7.50
1/4	2 1/2	8.25
1/4	3	9.00

Figure 1 shows the twin bolt in position, ready to draw together, and attach fastening nut. Figure 2 shows the sections drawn together and clamped with fastening nut.

Toggle Bolts

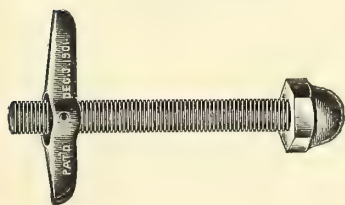
Philadelphia No. 1



List Per 100

Length Inches	Diameter Bolt, Inch					
	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
1½	\$3.65					
2	3.75	\$5.00				
2½	3.85	5.12	\$7.75	\$9.50		
3	4.00	5.25	8.00	10.00		
3½	4.15	5.50	8.50	10.25		
4	4.25	5.75	9.00	10.50	12.00	\$14.00
5	4.40	6.00	9.50	11.50	12.50	14.50
6	4.50	6.50	10.00	12.00	13.00	15.00
Size of Round Hole to Pass Bolt	$\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{5}{8}$ $\frac{11}{16}$ $\frac{11}{16}$					

Philadelphia No. 4



List Per 100

Length Inches	Diameter Inch	Per 100
4	$\frac{3}{16}$	\$7.50
4	$\frac{1}{4}$	10.00
4	$\frac{5}{16}$	12.00

The Toggle Hood on No. 4 is not riveted on like No. 1 (shown above) but consists of the Steel Hood or Head, with a pivoted nut on an endless threaded bolt, on which can be fastened or screwed at will, a Brass Bonnet or Cap Nut (as shown), to take the place of the ordinary iron nut (like No. 1 style), when a finished appearance is required.

It can readily be seen that the bolt is intended to screw through the pivoted nut and pass through the hole in the head when screwed through the nut, thus locking the head. This insures the Toggle Bolt holding if either end should break out the tile or wall.

Sebco No. 1



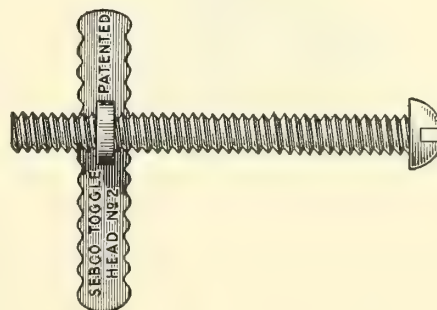
List Per 100

Length of Screw Inches	Diameter of Screw, Inch					
	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
3	\$6.00	\$7.50	\$8.50	\$12.25	\$14.75	
3½	6.25	8.00	9.00	13.00	15.00	
4	6.75	8.50	9.50	14.00	15.50	\$28.00
5	7.50	9.25	10.25	15.00	17.00	29.00
6	8.00	10.00	11.00	15.50	17.50	30.00
Size Drill Size Hole	$\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{5}{8}$					

Directions for Use

Drill hole with drill, of size given in above table; insert the Toggle, putting in short end first—one end of the plate being longer, the Toggle automatically adjusts itself. Then press the stay-washer firmly against the wall; material may then be placed and fastened with a nut. The stay-washer permits placing the Toggles first and will hold them securely until ready to attach the moulding or whatever is being fastened.

Sebco No. 2



List Per 100

With Round or Flat Head Iron Machine Screws

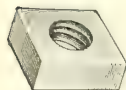
Length Inches	Diameter of Screws		
	No. 6 ($\frac{1}{8}$ inch)	No. 10 ($\frac{3}{16}$ inch)	No. 14 ($\frac{1}{4}$ inch)
3	\$4.20	\$5.20	\$5.90
3½	4.40	5.50	6.20
4	4.60	5.90	6.60
4½	4.85	6.10	6.85
5	5.10	6.40	7.10
6	5.60	6.90	7.60
Toggle Heads only	2.60	2.90	3.20
Size Hole Drill required Inch	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$

No. 2 Toggle Heads fit all machine screws. Like No. 1, shown above, they are for making fastenings to Tile and Hollow Brick; and to those walls and places which do not afford sufficient hold for a screw or expansion bolt.

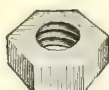
Miscellaneous Nuts

Tapped for Machine Screws

Cold Punched



Square



Hexagon

Size Number	Threads Per Inch	List Per Gross			
		Square		Hexagon	
		Iron	Brass	Iron	Brass
4	32, 36	\$.23	\$.72	\$.36	\$1.08
6	30, 32	.23	.72	.36	1.08
8	30, 32	.26	.80	.40	1.22
10	24, 30, 32	.29	.87	.43	1.30
12	24	.32	.94	.48	1.44
14	20, 24	.36	1.08	.55	1.66
16	18, 20	.48	1.44	.72	2.16
18	16, 18	.62	1.88	.94	2.81
20	16, 18	.82	2.45	1.22	3.67
22	16, 18	.93	2.70	1.44	4.32
24	14, 16	1.06	3.17	1.58	4.75
26	14, 16	1.20	3.60	1.80	5.40
28	14, 16	1.35	4.10	2.02	6.05
30	14, 16	1.50	4.55	2.30	6.91

Tapped for Stove Bolts

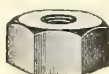
Cold Pressed—Square

List Per 100

Size, inch.....	1/8	5/32	3/16	7/32	1/4	5/16	3/8
Thread.....	32	30	24	24	18	18	18
List.....	\$.18	.18	.20	.22	.28	.50	.64

Semi-Finish Brass Hexagon

Full and Jam



Milled from Hexagon Brass Rod

Size Bolt Inch	Threads Per Inch	Short Diameter Inches	Thickness Full Nut Inch	Jam Nut Inch	List Per 100
3/16	24	3/8	3/16	..	\$1.40
1/4	20	1/2	1/4	3/16	2.40
5/16	18	19/32	5/16	3/32	3.20
3/8	16	11/16	3/8	1/4	5.20
7/16	14	3/4	7/16	9/32	7.20
1/2	13	7/8	1/2	5/8	9.60
1 1/2	12	7/8	1 1/2	1 1/2	9.60
5/8	11	1 1/16	5/8	3/8	17.00
3/4	10	1 1/4	3/4	1/2	27.00
7/8	9	1 7/16	7/8	1 1/2	45.00
1	8	1 5/8	1	9/16	68.00

Drop-Forged Thumb

Blank or Tapped



Style A



Style B

List Per 100

For bolt, size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Diameter top, inch	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2
U. S. Standard											
Threads.....	32	24	20	18	16	14	13 & 12	12	11	10	
Blank.....	\$1.75	2.00	2.25	2.60	3.25	4.00	5.00	6.00	7.25	10.50	
Tapped.....	3.50	4.00	4.50	5.20	6.50	8.00	10.00	12.00	14.50	21.00	

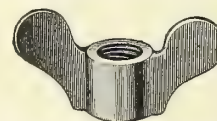
Style A will be sent unless otherwise ordered. Tapped Nuts have base faced at right angle to hole.

Hexagon Brass Cap



Size and Thread	Diameter of Hexagon Base Inch	Height Inch	List Per 100
6-32, 8-32	5/16	9/32	\$.80
10-24, 10-32, 12-24	3/8	11/32	1.00
14-20, 14-24, 1/4-20	7/16	3/8	1.25
1/4-20, 16-18, 18-18	1/2	13/32	1.45
5/16-18, 20-18	9/16	7/16	2.00
24-16, 3/8-16	5/8	1/2	2.80
7/16-14, 1/2-12, 1/2-13	3/4	9/16	4.50

Pressed Brass Wing

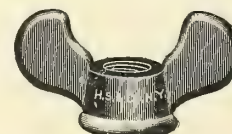


These Nuts are of smooth finish and uniform dimensions and present a far better appearance than cast brass. The smooth finish make them especially suitable for nickel plating.

Size	Width Across Wings Inches	Size and Thread	List Per 100
A	3/4	4-36, 6-32, 8-32	\$1.50
B	1 1/8	10-32, 10-24	1.80
C	1 1/16	12-24, 14-20, 14-24, 1/4-20	2.25
E	1 1/2	16-18, 18-18, 5/16-18, 20-18	3.75
F	1 3/4	24-16, 3/8-16, 7/16-14	5.50

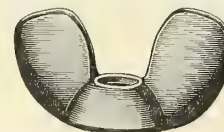
Nuts tapped with special threads will be supplied to order.

Malleable Iron Thumb



Size Inch	Threads Per Inch	List Per 100 Threaded	Blank List Per Pound
3/16	24	\$1.45	\$.25
1/4	20	1.60	.15
5/16	18	1.80	.12
3/8	16	2.25	.12
7/16	14	2.80	.12
1/2	13	4.00	.10
5/8	11	6.00	.10
3/4	10	7.00	.10

Pressed Steel Wing Nuts



These nuts are forged from solid steel bars. They are well finished and have no rough edges or checks in the nuts and wings.

Size Inch	Threads Per Inch	Weight per 1,000 Tapped Pounds	List Per 100 Threaded
5/32 and 3/16	24	8	\$1.50
7/32 and 1/4	20	13	1.65
5/16	18	21	1.95
3/8	16	37	2.70

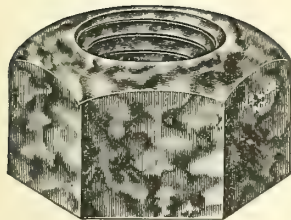
Special Threads furnished when specially ordered.

Hexagon Nuts

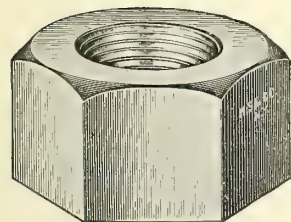
Finished, Case-Hardened and Semi-Finished

With United States Standard, Whitworth Standard or V-Threads

List of May 5, 1911



Finished



Semi-Finished

Size of Bolt Inches	Width Inches	Thickness Inches	Threads Per Inch	Finished Case-Hardened Each	With Double Chamfer Each	Semi-Finished Each	With Double Chamfer Each
1/4	1/2	1/4	20	\$.06	\$.065	\$.02	\$.025
5/16	13/32	5/16	18	.07	.075	.025	.0275
3/8	11/16	3/8	16	.08	.0875	.0325	.04
7/16	7/8	7/16	14	.09	.10	.0375	.0475
1/2	1	1/2	13 or 12	.10	.11	.045	.055
9/16	1 1/8	9/16	12	.12	.13	.055	.065
5/8	1 1/16	5/8	11	.16	.175	.065	.075
11/16	1 5/16	11/16	11	.22	.24	.085	.105
3/4	1 1/4	3/4	10	.22	.24	.085	.105
7/8	1 5/8	7/8	9	.27	.295	.12	.145
1	1 3/4	1	8	.38	.415	.175	.21
1 1/8	1 15/16	1 1/8	7	.50	.545	.24	.285
1 1/4	2	1 1/4	7	.66	.72	.33	.39
1 3/8	2 3/16	1 3/8	6	.90	.97	.49	.57
1 1/2	2 3/8	1 1/2	6	1.20	1.30	.69	.78
1 5/8	2 9/8	1 5/8	5 1/2	1.45	1.58	.93	1.05
1 3/4	2 3/4	1 3/4	5	1.75	1.90	1.30	1.45
1 7/8	2 15/8	1 7/8	5	2.50	2.70	1.70	1.90
2	3 1/8	2	4 1/2	3.25	3.50	2.15	2.40
2 1/4	3 1/2	2 1/4	4 1/2	5.50	6.00	3.10	3.45
2 1/2	3 7/8	2 1/2	4	8.50	9.50	4.75	5.25
2 3/4	4 1/4	2 3/4	4	12.00	13.50	6.30	6.95
3	4 5/8	3	3 1/2	18.00	20.00	9.90	11.00

Finished Nuts not Case-Hardened.—Use regular list prices.

Nuts Polished after Case-Hardening.—Add 30 per cent. to list prices.

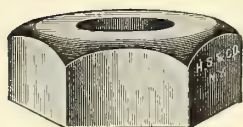
Semi-Finished Nuts, Case-Hardened.—Add 20 per cent. to list prices.

Semi-Finished Nuts, Rounded on Top.—Use the Double Chamfered List.

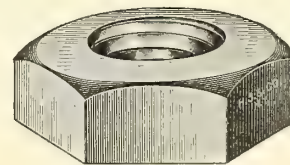
In ordering, always specify size of bolt, state style of thread, and on the 1/2-inch state whether 13 or 12 threads are wanted.

When not specified, we send U. S. Standard, and 13 threads on 1/2 inch.

Hexagon Check or Jam Nuts



Cold Punched, Chamfered and Trimmed



Semi-Finished

List of March 20, 1907

Size of Bolt Inches	Size of Hole Inches	Width Inches	Thickness Inches	Blank 100 Pounds	Tapped 100 Pounds
1/4	13/64	1/2	3/16	\$33.00	\$37.50
5/16	1/4	13/32	7/32	28.00	32.50
3/8	19/64	11/16	1/4	24.00	27.00
7/16	11/32	25/32	5/16	20.00	22.50
1/2	13/32	7/8	5/16	17.00	18.50
9/16	29/64	31/32	11/32	17.00	18.50
5/8	33/64	1 1/16	3/8	15.00	16.30
3/4	5/8	1 1/4	7/16	13.50	14.60
7/8	47/64	1 1/2	1/2	13.00	14.10
-	27/32	1 5/8	9/16	13.00	14.10
1 1/8	15/16	1 13/16	5/8	13.00	14.10
1 1/4	1 1/16	2	3/4	13.00	14.10
1 3/8	1 5/32	2 3/16	13/16	14.00	15.30
1 1/2	1 3/2	2 3/8	7/8	14.50	16.00
1 5/8	1 25/64	2 9/16	15/16	15.00	16.70
1 3/4	1 1/2	2 3/4	1	16.00	17.70
1 7/8	1 5/8	2 15/16	1 1/16	16.00	18.00
2	1 3/2	3 1/8	1 1/8	16.00	18.10

List of May 5, 1911

Size of Bolt Inches	Width Inches	Thickness Inches	Threads Per Inch	Each	With Double Chamfer Each
1/4	1/2	3/16	20	\$.02	\$.025
5/16	13/32	7/32	18	.025	.0275
3/8	11/16	1/4	16	.0325	.04
7/16	7/8	5/16	14	.0375	.0475
1/2	1	11/16	13 or 12	.045	.055
9/16	1 1/8	3/8	12	.055	.065
5/8	1 1/16	1/2	11	.065	.075
11/16	1 5/16	5/8	11	.085	.105
3/4	1 1/4	3/4	10	.085	.105
7/8	1 5/8	7/8	9	.12	.145
1	1 3/4	1	8	1.75	.21
1 1/8	1 15/16	1 1/8	7	.24	.285
1 1/4	2	1 1/4	7	.33	.39
1 3/8	2 3/16	1 3/8	6	.49	.57
1 1/2	2 3/8	1 1/2	6	.69	.78
1 5/8	2 9/8	1 5/8	5 1/2	.93	1.05
1 3/4	2 3/4	1 3/4	5	1.30	1.45
1 7/8	2 15/8	1 7/8	5	1.70	1.90
2	3 1/8	2	4 1/2	2.15	2.40
2 1/4	3 1/2	2 1/4	4 1/2	3.10	3.45
2 1/2	3 7/8	2 1/2	4	4.75	5.25
2 3/4	4 1/4	2 3/4	4	6.30	6.95
3	4 5/8	3	3 1/2	9.90	11.00

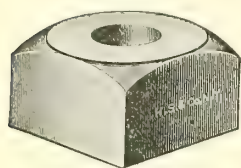
Nuts finished top and bottom use double chamfered list.

Hot Pressed Nuts

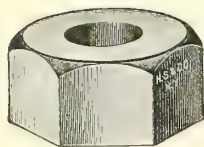
United States Standard Sizes

List of January 1, 1906

List Per 100 Pounds



Square



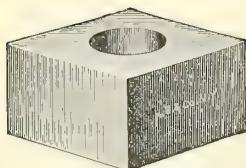
Hexagon

Short Diameter	Thickness	Hole	Size of Bolt	Square		Hexagon	
				Blank	Tapped	Blank	Tapped
1/2	1/4	3/16 scant	1/4	\$13.00	\$15.00	\$20.00	\$22.50
1/2	5/16	1/4 scant	5/16	12.00	13.50	18.00	20.00
3/2	3/8	1/2 scant	3/8	10.50	11.60	14.00	15.60
1/2	7/16	1/2 scant	7/16	10.00	10.90	13.00	14.30
3/2	1/2	3/4 scant	1/2	9.00	9.70	11.20	12.20
7/8	9/16	1/2 scant	9/16	9.00	9.60	11.20	12.10
3/2	5/8	3/4 scant	5/8	8.70	9.20	10.50	11.20
1 1/16	3/4	1/2 scant	3/4	8.50	8.90	10.00	10.60
1 1/4	7/8	1/2 scant	7/8	8.40	8.80	9.90	10.50
1 1/2	1	1/2 scant	1	8.40	8.80	9.90	10.50
1 3/4	1 1/8	1/2 full	1 1/8	8.40	8.80	9.90	10.50
2	1 1/4	1 1/8 full	1 1/4	8.40	8.80	9.90	10.50
2 1/16	1 3/8	1 5/8 full	1 3/8	8.50	9.00	10.00	10.70
2 3/8	1 1/2	1 3/2 full	1 1/2	8.80	9.40	10.30	11.10
2 5/8	1 5/8	1 5/2 scant	1 5/8	9.00	9.70	10.50	11.40
2 7/8	1 3/4	1 1/2 scant	1 3/4	9.30	10.00	10.80	11.70
2 9/16	1 7/8	1 5/8 scant	1 7/8	9.50	10.30	11.00	12.00
3 1/8	2	1 2/3 scant	2	9.70	10.60	11.20	12.30
3 5/16	2 1/8	1 3/2 scant	2 1/8	10.00	11.00	11.70	12.90
3 1/2	2 1/4	1 3/2 scant	2 1/4	10.00	11.10	11.70	13.00
3 11/16	2 3/8	2 1/16	2 3/8	10.30	11.50	12.20	13.60
3 7/8	2 1/2	2 1/16	2 1/2	10.50	11.80	12.40	13.90
4 1/16	2 5/8	2 5/16	2 5/8	11.00	12.40	13.00	14.60
4 1/4	2 3/4	2 1/16	2 3/4	11.00	12.40	13.00	14.60
4 1/2	2 7/8	2 1/16	2 7/8	11.50	13.00	13.50	15.20
4 5/8	3	2 1/16	3	11.50	13.00	13.50	15.20

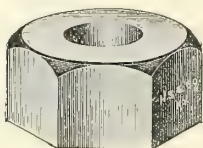
For less than keg lots (200 pounds), add 20 cents per cwt. list for 100 pounds or more; 50 cents per cwt. for less than 100 pounds.

Cold Punched Nuts

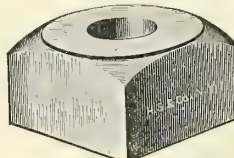
United States Standard Sizes



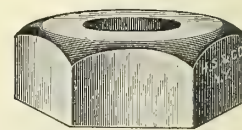
Square, Plain



Hexagon, Plain



Square, Chamfered, Trimmed
and Reamed



Hexagon, Chamfered, Trimmed
and Reamed

Revised List of January 1, 1906

List Per 100 Pounds

Wide	Thick	Hole	Bolt	Square		Hexagon		Chamfered, Trimmed and Reamed		Hexagon	
				Blank	Tapped	Blank	Tapped	Blank	Tapped	Blank	Tapped
1/2	1/4	13/64	1/4	\$13.80	\$15.80	\$21.00	\$23.50	\$20.00	\$22.00	\$27.00	\$29.50
1/2	5/16	1/4	5/16	12.80	14.30	19.00	21.00	18.00	19.50	24.00	26.00
3/2	3/8	5/16	3/8	11.00	12.10	14.70	16.30	14.50	15.60	18.50	20.10
1/2	7/16	3/4	7/16	10.50	11.40	13.70	15.00	14.00	14.90	18.00	19.30
3/2	1/2	1/2	1/2	9.30	10.00	11.50	12.50	11.30	12.00	14.00	15.00
7/8	9/16	5/8	9/16	9.30	9.90	11.50	12.40	11.30	11.90	14.00	14.90
3/2	5/8	3/4	5/8	8.90	9.40	10.70	11.40	10.00	10.50	12.50	13.20
1 1/16	3/4	5/8	3/4	8.60	9.00	10.20	10.80	9.70	10.10	11.40	12.00
1 1/4	7/8	3/4	7/8	8.60	9.00	10.20	10.80	9.60	10.00	11.10	11.70
1 1/2	1	1	1	8.60	9.00	10.20	10.80	9.60	10.00	11.10	11.70
1 3/4	1 1/8	1 1/8	1 1/8	8.60	9.00	10.20	10.80	9.60	10.00	11.10	11.70
2	1 1/4	1 5/8	1 1/4	8.80	9.20	10.50	11.10	10.10	10.50	11.50	12.10
2 1/16	1 3/8	1 1/4	1 3/8	8.80	9.30	10.50	11.20	10.30	10.80	12.00	12.70
2 3/8	1 1/2	1 1/2	1 1/2	9.60	10.20	11.30	12.10	10.70	11.30	12.60	13.40
2 5/8	1 5/8	1 1/2	1 5/8	9.60	10.30	11.30	12.20	11.10	11.80	13.20	14.10
2 7/8	1 3/4	1 1/2	1 3/4	10.20	10.90	12.10	13.00	11.50	12.20	14.00	14.90
2 9/16	1 7/8	1 5/8	1 7/8	10.20	11.00	12.10	13.10	12.00	12.80	14.50	15.50
3 1/8	2	1 3/4	2	10.60	11.50	12.60	13.70	12.00	12.90	14.50	15.60
3 5/16	2 1/8	1 1/2	2 1/8	11.00	12.00	13.00	14.20	12.50	13.60	15.00	16.20
3 1/2	2 1/4	1 3/2	2 1/4	11.50	12.60	13.50	14.80	13.50	14.80	15.00	16.30
3 11/16	2 3/8	2 1/16	2 3/8					14.00	15.40	16.00	17.40
3 7/8	2 1/2	2 3/16	2 1/2					14.50	16.00	16.00	17.50
4 1/16	2 3/4	2 7/16	2 3/4					14.50	16.10	16.50	18.10
4 1/4	3	2 3/2	3					14.50	16.20	17.00	18.70
4 5/8	3 1/4	2 3/2	3 1/4					15.50	17.20	17.00	18.80
5	3 1/2	3 1/8	3 1/2					15.50	17.20	17.00	18.90
5 3/8	3 3/4	3 3/2	3 3/4							18.00	19.90
5 1/2	4	3 1/2	4							18.00	19.90

For less than keg lots (200 pounds) add 20 cents list for 100 pounds or over; 50 cents for less than 100 pounds. See page 689 for approximate number in 100 pounds.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

United States Standard Nuts

Approximate Number in One Hundred Pounds

Size of Bolt Inches	Hot Pressed		Cold Punched—Plain					
	Blank		Tapped		Plain		Chamfered, Trimmed and Reamed	
	Square	Hexagon	Square	Hexagon	Square	Hexagon	Square	Hexagon
1/4	7200	8400	7632	8904	6530	7650	6710	7900
5/16	4300	5100	4558	5406	3790	4400	3880	4520
3/8	2550	3000	2703	3180	2450	2830	2500	2950
7/16	1770	2030	1876	2152	1590	1830	1650	1900
1/2	1180	1400	1250	1484	1110	1320	1180	1360
5/8	915	1065	970	1129	830	980	850	1025
3/4	655	780	694	827	600	710	625	750
7/8	385	475	408	504	365	440	380	460
1	260	308	276	326	235	290	250	305
1 1/8	172	212	182	225	160	200	170	212
1 1/4	130	150	138	159	118	145	125	151
1 1/2	96	111	102	118	92	105	96	111
1 3/8	70	85	74	90	68.5	82	73	88
1 1/2	59	69	63	73	54.7	65	58	68

Size of Bolt Inches	Hot Pressed		Cold Punched—Blank					
	Blank		Tapped		Plain		Chamfered, Trimmed and Reamed	
	Square	Hexagon	Square	Hexagon	Square	Hexagon	Square	Hexagon
1 5/8	46	54	49	57	42	51	45	53
1 3/4	35	41	37	43	32.5	40.5	35	42
1 7/8	29	35	31	37	27	33.5	29	35
2	24	29	25 1/2	30 3/4	22.5	28	24	29
2 1/8	21	25	22 3/4	26 1/2	19	23.8	...	24.8
2 1/4	17 1/2	21	18 1/2	22 1/4	16.2	20.5	17.4	21.5
2 3/8	14 3/4	18	15 3/4	19 1/4	...	...	...	18.3
2 1/2	12	15 1/2	12 3/4	16 1/2	...	...	12.7	15.6
2 3/4	9	11	9 1/2	11 3/4	...	...	9.6	12
3	7 1/3	8 1/2	7 3/4	9	...	...	7.5	9.4
3 1/4	...	...	...	...	...	...	6	7.4
3 1/2	...	...	...	...	...	...	4.82	5.9
3 3/4	...	...	...	...	...	...	3.93	4.8
4	...	...	...	...	...	...	3.23	4

Wrought Steel Washers—Round



Add \$.10 cwt. for 100 pound kegs; add .20 cwt. for 50 to 100 pound boxes; add .30 cwt. for 25 to 50 pound boxes; add .50 cwt. for 5-pound boxes; add 1.00 cwt. for 1-pound boxes.

U. S. Standard Sizes, in 200-pound kegs.

Adopted January 20, 1910.

Size of Bolt Inch	Diameter Inches	Size of Hole Inch	Thickness English Standard Wire Gauge	Estimated Number in 100 Pounds	List 100 Pounds
3/16	9/16	1/4	18	44,075	\$14.00
1/4	3/4	5/16	16	15,600	12.20
5/16	7/8	3/8	16	11,250	11.40
3/8	1	7/8	14	6,800	10.50
7/16	1 1/4	1 1/2	14	4,300	9.80

Size of Bolt Inches	Diameter Inches	Size of Hole Inches	Thickness English Standard Wire Gauge	Estimated Number in 100 Pounds	List 100 Pounds
1/2	1 3/8	9/16	12	2,600	\$9.40
5/8	1 1/2	5/8	12	2,250	9.30
3/4	1 3/4	11/16	10	1,300	9.20
7/8	2	13/16	10	1,013	9.10
1	2 1/4	15/16	9	858	9.00
1 1/8	2 1/2	1 1/16	9	617	9.00
1 1/4	2 3/4	1 1/4	9	516	9.00
1 3/8	3	1 3/8	9	403	9.20
1 1/2	3 1/4	1 1/2	8	320	9.20
1 5/8	3 1/2	1 5/8	8	278	9.20
1 3/4	3 3/4	1 3/4	8	247	9.50
1 7/8	4	1 7/8	8	224	9.50
2	4 1/4	2	8	200	9.50
2 1/4	4 1/2	2 1/8	8	180	9.50
2 1/2	4 3/4	2 3/8	8	140	10.50
	5	2 5/8	7	115	10.50

Wrought Iron Washers—Square



Size of Bolt Inches	Width Inches	Thickness Inch	Size of Hole Inches	Number in 100 Pounds	List 100 Pounds
3/8	1 1/2	1/8	7/16	1,300	\$10.90
1/2	1 3/4	1/8	1 1/2	1,100	10.30
5/8	2	1/8	9/16	500	9.80
3/4	2 1/4	1/4	3/4	315	9.50
7/8	2 1/2	1/4	7/8	250	9.50
1	3	1/4	1	165	9.50
1 1/8	3 1/2	3/8	1 1/8	87	9.50
1 1/4	4	3/8	1 1/4	65	9.50
1 3/8	4 1/2	3/8	1 3/8	48	9.50
1 1/2	5	3/8	1 1/2	40	9.50
1 3/4	6	3/8	1 5/8	28	9.60
2	6 1/2	3/8	1 7/8	24	9.70
	7	3/8	2 1/8	21	9.70

Malleable Iron Washers

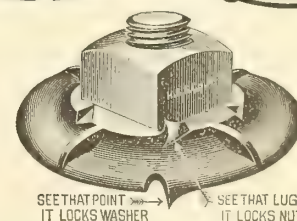
With Nut-Locking Feature

Eastern Pattern No. 44

Engineers Standard

Hole, size of bolt, inches.....	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Diameter, inches.....	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	7 1/2
Thickness, inch.....	1/4	5/16	3/8	3/8	7/16	1/2	9/16	5/8	3/4	3/4	
Weight per 100 washers, pounds	7	15	23	38	58	85	111	152	203	288	372

400 per cent. stronger than cast-iron washers. Weight is about one-third of cast iron. No loss in breakage, as they are indestructible. Standard diameter is the same; thickness about one-half that of cast-iron washers.

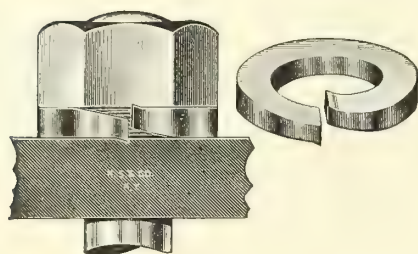


SEE THAT POINT
IT LOCKS WASHER

SEE THAT LUG
IT LOCKS NUT

Lock Washers

Positive



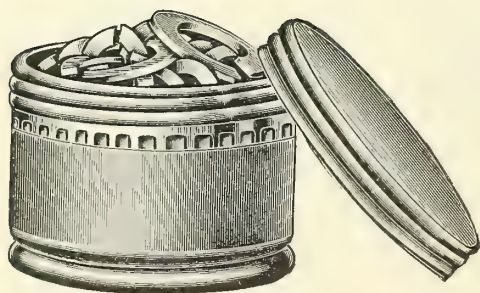
This washer is so constructed that the body of the washer carries the load of compression and the tapered ends are thus relieved, and the spring is constant. The barbs, being free to move when subjected to vibration, force themselves deeply into the nut and metal backing.

The washer is reversible and can be used many times. Does not injure the nut, its threads or the threads of the bolt.

Size Bolt Inches	Width Inch	Thickness Inch	Per 1000	Proper Size For
3/16	3/32	3/64	\$1.90	Cap Screw Head
1/4	1/8	1/16	2.25	Cap Screw Head
5/16	1/8	1/16	2.35	Cap Screw Head
3/8	1/8	3/32	2.90	Cap Screw Head
7/8	3/16	1/8	4.10	Bolt Head or Nut
1/2	3/32	3/32	3.50	Cap Screw Head
1/2	3/16	1/8	4.45	Bolt Head or Nut
1/2	3/16	1/8	4.70	Cap Screw Head
1/2	1/4	3/16	6.20	Bolt Head or Nut
5/8	3/16	1/8	5.65	Cap Screw Head
5/8	1/4	1/16	6.85	Bolt Head or Nut
3/4	3/16	1/8	6.05	Cap Screw Head
3/4	1/4	3/16	7.80	Bolt Head or Nut
7/8	3/16	1/16	7.10	Cap Screw Head
7/8	1/4	3/16	8.80	Bolt Head or Nut
1	5/16	1/4	12.35	Cap Screw Head
1	3/8	1/4	16.20	Bolt Head or Nut
1 1/8	3/8	1/4	18.20	Bolt Head or Nut
1 1/4	3/8	1/4	20.20	Bolt Head or Nut
1 1/2	1/2	1/4	27.50	Bolt Head or Nut

Lock Washers

Assorted, Positive



Put up in round fibre boxes with metal bottom and metal screw top. Contains 45 washers, sizes ranging from 1/4 inch to 5/8 inch.

Assortment No. 6, per dozen boxes \$2.00

Lock Washers

National



Showing Lock Washer on Bolt

When the nut is screwed upon the bolt it first strikes the rib on the Lock Washer which, being harder than the nut, progressively upsets and forces some of the metal of the nut into the thread of the bolt, thereby preventing the nut from backing off or loosening.

Can be used on any make of bolt or nut. The same bolt, nut and lock washer can be used as often as required.

Directions: Place National Lock Washer on bolt with rib next to nut and wrench nut home as usual. In the case of wood construction, place a flat plate washer under the National, so as to give a larger bearing surface.

Size Bolt Inches	Width Inch	Thickness Inch	Per 1000
1/4	1/8	5/64	\$6.00
5/16	3/16	3/32	6.50
3/8	1/4	1/8	7.50
1/2	1/4	1/8	9.00
5/8	5/16	3/16	10.50
3/4	5/16	7/32	12.50
7/8	5/16	1/4	14.50
1	3/8	1/4	20.00
1 1/8	3/8	1/4	23.00
1 1/4	3/8	1/4	26.00
1 3/8	3/8	1/4	30.00
1 1/2	3/8	1/4	34.00
1 5/8	7/8	5/16	40.00

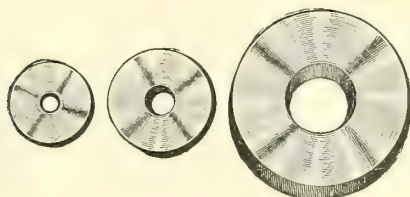
Above are proper sizes for bolt heads or nuts.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Brass Washers



For Bolt Inch	Outside Diameter Inch	Thickness Inch	For Bolt Inch	Outside Diameter Inches	Thickness Inches
$\frac{1}{8}$	$\frac{1}{4}$	.025	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{1}{16}$
$\frac{3}{16}$	$\frac{1}{2}$	.050	$\frac{1}{2}$	$1\frac{3}{8}$	$\frac{1}{8}$
$\frac{1}{4}$	$\frac{1}{2}$	.050	$\frac{5}{8}$	$1\frac{3}{4}$	10
$\frac{1}{4}$	$\frac{5}{8}$	.065	$\frac{3}{4}$	2	10
$\frac{5}{16}$	$\frac{3}{4}$	$\frac{1}{16}$	$\frac{7}{8}$	$2\frac{1}{4}$	9
$\frac{3}{8}$	1	$\frac{1}{16}$	1	$2\frac{1}{2}$	9

Prices on application

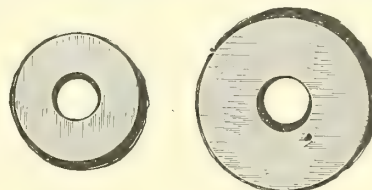
Brass Burrs

Diameters and thickness are approximate only



Size Number.....	7	8	9	10	12
Inside diameter, inch.....	$\frac{11}{64}$	$\frac{5}{32}$	$\frac{9}{64}$	$\frac{9}{64}$	$\frac{1}{8}$
Outside diameter, inch.....	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{13}{32}$	$\frac{25}{64}$
Thickness, inch.....	.050	.045	.036	.036	.028

Plumbers Washers

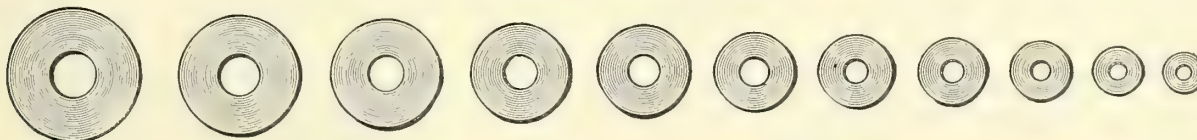


No. 6

No. 330

No. 6 Brass, dipped, gross	} Prices on application
No. 6 Brass, nickel-dipped, gross	
No. 330 Brass, dipped, gross	
No. 330 Brass, nickel-dipped, gross	
No. 6 Inside diameter $\frac{7}{32}$ inch; outside diameter $\frac{31}{32}$ inch; thickness 17 B. & S. gauge.	
No. 330 Inside diameter $\frac{1}{4}$ inch; outside diameter $\frac{27}{32}$ inch; thickness 17 B. & S. gauge.	

Copper Burrs



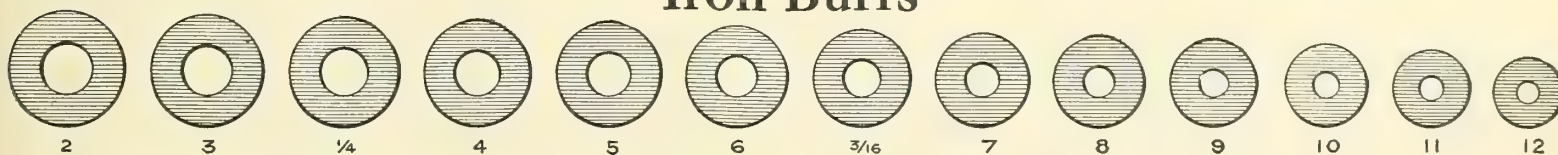
	No. 5	6	7	8	9	10	11	12	13	14	15	
Size Number		5	6	7	8	9	10	11	12	13	14	15
Per Pound.....		\$.49	.49	.49	.50	.52	.54	.56	.58	.60	.65	.70

Approximate Dimensions

Number	Outside Diameter, Inch	Size Hole Inch	Thickness Inch
5	.688	.220	.058
6	.628	.203	.049
7	.562	.180	.049
8	.500	.165	.042
9	.469	.148	.035

Number	Outside Diameter, Inch	Size Hole Inch	Thickness Inch
10	.406	.134	.032
12	.344	.109	.032
13	.312	.095	.028
14	.250	.083	.025
15	.219	.072	.022

Iron Burrs



Size	Per Pound	Size	Per Pound
$\frac{3}{8}$ -inch	\$.36	$\frac{3}{16}$ -inch	\$.42
$\frac{11}{32}$ -inch	.36	No. 7	.43
$\frac{5}{16}$ -inch	.36	No. 8	.44
No. 1	.36	No. 9	.45
No. 2	.36	No. 10	.47
No. 3	.36	No. 11	.50
$\frac{1}{4}$ -inch	.36	No. 12	.60
No. 4	.37	No. 13	.70
No. 5	.38	No. 14	.80
No. 6	.42		

Net Extras—For metallic tinning, add $3\frac{1}{2}$ cents per pound; for coppering or tin plating, add $1\frac{1}{2}$ cents per pound.

List Rebates—For 25 and 50-pound boxes, deduct 2 cents per pound; for 100-pound boxes, deduct 3 cents per pound; for 100 and 200-pound kegs, deduct 4 cents per pound.

Approximate Dimensions

Size	Outside Diameter Inch	Size Hole Inch	Thickness B. W. G. No.
No. 12	.350	.111	20
No. 11	.375	.122	20
No. 10	.400	.136	19
No. 9	.425	.150	19
No. 8	.450	.168	19
No. 7	.475	.183	19
$\frac{3}{16}$ -inch	.475	.192	19
No. 6	.500	.206	18
No. 5	.525	.223	18
No. 4	.550	.242	18
$\frac{1}{4}$ -inch	.550	.257	18
No. 3	.575	.263	18
No. 2 or $\frac{9}{32}$ -inch	.600	.288	17

Steel Spring Cotters

List of January 1, 1906



List Per 1,000

These cotters are made of the best quality, half round, spring wire. The length measurements given are from point to neck or under the eye.

Length Inches	Diameter, Inch														
	$\frac{3}{32}$	$\frac{7}{64}$	$\frac{1}{8}$	$\frac{9}{64}$	$\frac{5}{32}$	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{13}{64}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
$\frac{1}{2}$	\$3.50	\$4.00	\$5.00	\$6.00	\$7.00	\$8.00									
$\frac{3}{4}$	4.15	4.75	5.85	7.00	8.15	9.30	\$11.10	\$12.00							
1	4.80	5.50	6.70	8.00	9.30	10.60	12.80	14.00	\$18.00	\$20.00	\$32.50				
$1\frac{1}{4}$	5.45	6.25	7.55	9.00	10.45	11.90	14.50	16.00	20.80	23.50	37.50				
$1\frac{1}{2}$	6.10	7.00	8.40	10.00	11.60	13.20	16.20	18.00	23.60	27.00	42.50	\$72.00			
$1\frac{3}{4}$	6.75	7.75	9.25	11.00	12.75	14.50	17.90	20.00	26.40	30.50	47.50	79.20	\$108.00		
2	7.40	8.50	10.10	12.00	13.90	15.80	19.60	22.00	29.20	34.00	52.50	86.40	119.50	\$148.50	
$2\frac{1}{4}$	.....	.....	10.95	13.00	15.05	17.10	21.30	24.00	32.00	37.50	57.50	93.60	131.00	163.50	
$2\frac{1}{2}$	.....	.....	11.80	14.00	16.20	18.40	23.00	26.00	34.80	41.00	62.50	100.80	142.50	178.50	
$2\frac{3}{4}$	.....	.....	.....	.....	.....	.....	24.70	28.00	37.60	44.50	67.50	108.00	154.00	193.50	
3	.....	.....	.....	.....	.....	.....	26.40	30.00	40.40	48.00	72.50	115.20	165.50	208.50	\$384.00
$3\frac{1}{4}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	51.50	77.50	122.40	177.00	223.50	404.00
$3\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	55.00	82.50	129.60	188.50	238.50	424.00
$3\frac{3}{4}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	58.50	87.50	136.80	200.00	253.50	444.00
4	.....	.....	.....	.....	.....	.....	.....	.....	.....	62.00	92.50	144.00	211.50	268.50	464.00
5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	257.00	328.50	544.00
6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	388.50	644.00

Brass Spring Cotters. List prices 8 times list of steel

Steel Cellar Box Cotters

List of
January 1
1906

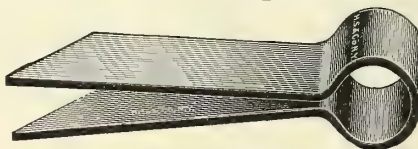


List Per
1,000

Length Inches	Diameter of Wire, Inch					
	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
3	.....	.....	.....	.....	.....	\$900.00
4	.....	.....	.....	.....	.....	1,068.00
5	.....	.....	.....	.....	.....	1,236.00
6	.....	.....	.....	.....	.....	1,404.00
7	\$412.00	\$628.00	\$796.00	\$852.00	\$960.00	1,572.00
8	454.00	689.00	877.00	948.00	1,080.00	1,740.00
9	496.00	750.00	958.00	1,044.00	1,200.00	1,908.00
10	538.00	811.00	1,039.00	1,140.00	1,320.00	2,076.00
11	580.00	872.00	1,120.00	1,236.00	1,440.00	2,244.00
12	622.00	933.00	1,201.00	1,332.00	1,560.00	2,412.00
13	664.00	994.00	1,282.00	1,428.00	1,680.00	2,580.00
14	706.00	1,055.00	1,363.00	1,524.00	1,800.00	2,748.00
15	748.00	1,116.00	1,444.00	1,620.00	1,920.00	2,916.00
16	790.00	1,177.00	1,525.00	1,716.00	2,040.00	3,084.00
17	832.00	1,238.00	1,606.00	1,812.00	2,160.00	3,252.00
18	876.00	1,299.00	1,687.00	1,908.00	2,280.00	3,420.00

Flat Spring Keys

List of
January 1, 1906



List Per
1,000

Length Inches	Width, Inch (Nos. 16 and 17 Wire Gauge)				
	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
$1\frac{1}{4}$	\$39.00	\$52.00			
$1\frac{1}{2}$	44.50	58.00			
$1\frac{3}{4}$	50.00	64.00	\$78.00		
2	55.50	70.00	84.50	\$104.00	\$125.00
$2\frac{1}{4}$	61.00	76.00	91.00	111.00	131.00
$2\frac{1}{2}$	66.50	82.00	97.50	118.00	138.00
$2\frac{3}{4}$	72.00	88.00	104.00	125.00	147.00
3	77.50	94.00	110.50	132.00	155.00
$3\frac{1}{4}$	.....	.....	117.00	139.00	162.00
$3\frac{1}{2}$	.....	.....	123.50	146.00	170.00

Flat Riveted Keys



Made to order only. Price on receipt of quantity specifications, accompanied by sample or sketch.

Packing of Spring Cotters

	To Package		
$\frac{1}{16}$ and $\frac{5}{64}$ inch diameter, all lengths	1000	$\frac{3}{8}$ inch diameter	In bulk
$\frac{3}{32}$, $\frac{7}{64}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$ inch diameter, 1 inch and shorter	1000	$\frac{1}{16}$ inch diameter	In bulk
$\frac{3}{32}$, $\frac{7}{64}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$ inch diameter, $1\frac{1}{8}$ inches and longer	500	$\frac{1}{2}$ inch diameter	In bulk
$\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$ inch diameter, $1\frac{1}{2}$ inches and shorter	500	$\frac{5}{8}$ inch diameter	In bulk
$\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$ inch diameter, $1\frac{3}{4}$ inches and longer	250	$\frac{3}{4}$ inch diameter	In bulk
$\frac{1}{4}$ inch diameter, all lengths	250		
$\frac{5}{16}$ inch diameter, 2 inches and shorter	250		
$\frac{5}{16}$ inch diameter, $2\frac{1}{4}$ inches and longer	125		

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Iron Rivets

Any Style Head



Round Head



Flat Head



Wheel Head



Globe Head



Truss Head



Cone Head



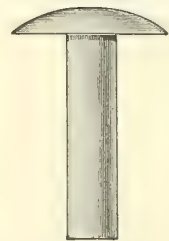
Bevel Head



Countersunk Head



Oval Countersunk Head



Wagon Box Head

Measured by English Standard Gauge

List Per Pound in 10-pound or 5-pound Boxes

List of January 8, 1904. (Revised May, 1906 and April 1, 1913)

Size Wire 1 and longer	Length, Inch																
	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{15}{32}$	$\frac{7}{16}$	$\frac{13}{32}$	$\frac{3}{8}$	$\frac{11}{32}$	$\frac{5}{16}$	$\frac{9}{32}$	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{3}{16}$	$\frac{5}{32}$	$\frac{1}{8}$	$\frac{3}{32}$
$\frac{7}{16}$	\$.19	\$.19½	\$.19½	\$.20	\$.20	\$.20											
$\frac{3}{8}$	.19	.19½	.19½	.20	.20	.21											
$\frac{11}{32}$	.19½	.20	.20	.20½	.20½	.21	\$.21										
$\frac{5}{16}$	.19½	.20	.20	.20½	.20½	.21	.22	\$.22	\$.22								
1	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	\$.23							
2	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	.23	\$.24						
3	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	.23	.24	\$.24	\$.24				
$\frac{1}{4}$	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	.23	.24	.24	.24	\$.25	\$.25		
4	.21	.21½	.21½	.22	.22	.23	.23	.24	.24	.24	.24	.24	.24	.25	.25	\$.26	
5	.21	.21½	.21½	.22	.22	.23	.24	.24	.24	.24	.25	.26	.26	.27	.27	.28	\$.28
6	.21	.21½	.21½	.22	.22	.23	.24	.24	.25	.25	.26	.26	.27	.28	.29	.29	.30
$\frac{3}{16}$	.21	.21½	.21½	.22	.22	.23	.24	.24	.25	.25	.26	.26	.27	.28	.29	.30	.31
7	.21	.21½	.22	.23	.23	.24	.24	.24	.25	.25	.26	.26	.27	.28	.29	.30	.31
8	.22	.22½	.22½	.23	.23	.24	.25	.25	.26	.26	.27	.27	.28	.29	.30	.31	.32
9	.23	.23½	.23½	.24	.24	.25	.26	.26	.27	.27	.29	.29	.29	.30	.31	.33	.35
10	.24	.24½	.24½	.25	.25	.26	.27	.28	.29	.31	.33	.34	.34	.36	.39	.41	.43
11	.25	.25½	.25½	.26	.26	.28	.30	.32	.33	.34	.36	.37	.37	.39	.43	.46	.48
12	.26	.26½	.26½	.27	.27	.30	.32	.34	.35	.36	.38	.40	.41	.42	.47	.51	.56
13	.30	.30½	.30½	.31	.31	.33	.36	.39	.40	.41	.43	.45	.46	.47	.51	.56	.61
14	.32	.32½	.32½	.33	.33	.36	.41	.44	.46	.51	.56	.58	.61	.64	.64	.66	.69

Rivets made from smaller wire than No. 14, all lengths, list 80 cents per pound; $\frac{3}{32}$ diameter, list price No. 13; $\frac{1}{8}$ diameter, list price No. 5; $\frac{1}{4}$ diameter, list price No. 11; $\frac{3}{8}$ diameter, list price No. 2.

List Extras.—For Shoulder and Pointed Rivets, add 2 cents per pound to list price for each specialty, except Pointed Hame. Intermediate lengths and diameters, list price of nearest smaller size.

Net Extras.—For Tin or Copper Plating, add 1½ cents per pound to net price. For Metallic Tinning, add 3½ cents per pound to net price.

List Rebates.—For 25 or 50 pound Boxes, deduct 2 cents per pound from list price.

For 100 pound Boxes, deduct 3 cents per pound from list price.

For 100 or 200 pound Kegs, deduct 4 cents per pound from list price.

For approximate number of rivets to one pound, see next page.

Round Head Iron Rivets

Approximate Number in One Pound

Listed on Preceding Page

Length Inches	Diameter of Wire									
	$\frac{3}{8}$	0	$\frac{1}{8}$	1	2	3	$\frac{1}{4}$	4	5	6
$\frac{3}{8}$	..	..	..	..	..	..	..	..	..	154
$\frac{1}{2}$	32	42	51	57	63	75	80	89	108	131
$\frac{5}{8}$	29	37	45	50	57	67	70	78	94	114
$\frac{3}{4}$	26	33	41	45	51	59	63	70	84	101
$\frac{7}{8}$	24	30	37	41	46	54	57	63	75	91
1	22	28	34	39	42	49	52	57	68	82
$1\frac{1}{8}$	20	26	31	34	39	45	47	53	63	75
$1\frac{1}{4}$	19	24	29	32	36	42	44	49	58	69
$1\frac{3}{8}$	18	22	27	29	33	39	41	45	54	64
$1\frac{1}{2}$	17	21	25	28	31	37	38	42	51	59
$1\frac{3}{4}$	15	18	22	24	27	33	34	40	44	55
2	13	17	20	22	25	29	30	35	40	47
$2\frac{1}{4}$	12	15	18	19	22	27	28	32	36	42
$2\frac{1}{2}$	11	14	17	18	20	24	25	29	33	39

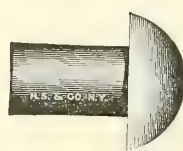
Length Inches	Diameter of Wire									
	$\frac{3}{8}$	0	$\frac{1}{8}$	1	2	3	$\frac{1}{4}$	4	5	6
$2\frac{3}{4}$	10	13	15	17	19	22	23	26	30	36
3	9	12	14	15	17	21	22	24	28	33
$3\frac{1}{4}$	8 $\frac{1}{2}$	11	13	14	16	19	20	23	26	31
$3\frac{1}{2}$	8	10 $\frac{1}{2}$	12	13 $\frac{1}{2}$	15	18	19	21	24	29
$3\frac{3}{4}$	7 $\frac{1}{2}$	9 $\frac{3}{4}$	11 $\frac{3}{4}$	12 $\frac{3}{4}$	14	17	18	20	23	27
4	7 $\frac{1}{4}$	9 $\frac{1}{4}$	11	12	13	16	17	18	21	25
$4\frac{1}{4}$	7	8 $\frac{3}{4}$	10 $\frac{1}{2}$	11 $\frac{1}{4}$	12 $\frac{3}{4}$	15	16	17	20	24
$4\frac{1}{2}$	6 $\frac{1}{2}$	8 $\frac{1}{4}$	10	10 $\frac{3}{4}$	12	14	15	16	19	23
$4\frac{3}{4}$	6 $\frac{1}{4}$	8	9 $\frac{1}{4}$	10	11 $\frac{1}{2}$	13 $\frac{3}{4}$	14 $\frac{3}{4}$	15 $\frac{3}{4}$	18	22
5	6	7 $\frac{1}{2}$	9	9 $\frac{3}{4}$	11	13	14	15	17	21
$5\frac{1}{4}$	5 $\frac{3}{4}$	7 $\frac{3}{4}$	8 $\frac{1}{2}$	9 $\frac{1}{4}$	10 $\frac{1}{2}$	12 $\frac{1}{2}$	13 $\frac{1}{2}$	14 $\frac{1}{2}$	16 $\frac{1}{2}$	20
$5\frac{1}{2}$	5 $\frac{1}{2}$	7	8 $\frac{1}{4}$	9	10	12	13	14	16	19
$5\frac{3}{4}$	5 $\frac{1}{4}$	6 $\frac{3}{4}$	7 $\frac{3}{4}$	8 $\frac{1}{2}$	9 $\frac{1}{2}$	11 $\frac{1}{2}$	12 $\frac{1}{2}$	13 $\frac{1}{2}$	15	18
6	5	6 $\frac{1}{2}$	7 $\frac{1}{2}$	8 $\frac{1}{4}$	9 $\frac{1}{4}$	11	12	13	14	17

Boiler and Structural Steel Rivets

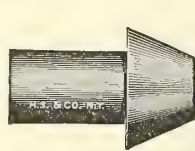
Standard List of Extras for Rivets in 200 pound Kegs



Countersunk Head



Round or Button Head



Cone Head

Round or Button Head.....	Base price
Cone Head.....	Base price
Countersunk Heads.....	Add \$.25 per 100 pounds
Flat Heads.....	Add .25 per 100 pounds
$\frac{3}{4}$ to $1\frac{1}{4}$ -inch diameter, 2 to 5-inch length.....	Base price
$\frac{5}{8}$ and $\frac{3}{4}$ -inch diameter.....	Add \$.15 per 100 pounds
$\frac{1}{2}$ and $\frac{5}{8}$ -inch diameter.....	Add .50 per 100 pounds
Diameter over $1\frac{1}{4}$ inches.....	Add .25 per 100 pounds
Lengths 1 inch and shorter.....	Add .50 per 100 pounds
Lengths from 1 inch to 2 inches.....	Add .25 per 100 pounds
Lengths over 5 inches.....	Add .25 per 100 pounds
In 100-pound kegs.....	Add .10 per 100 pounds
Less than 100 pounds of a size.....	Add .50 per 100 pounds

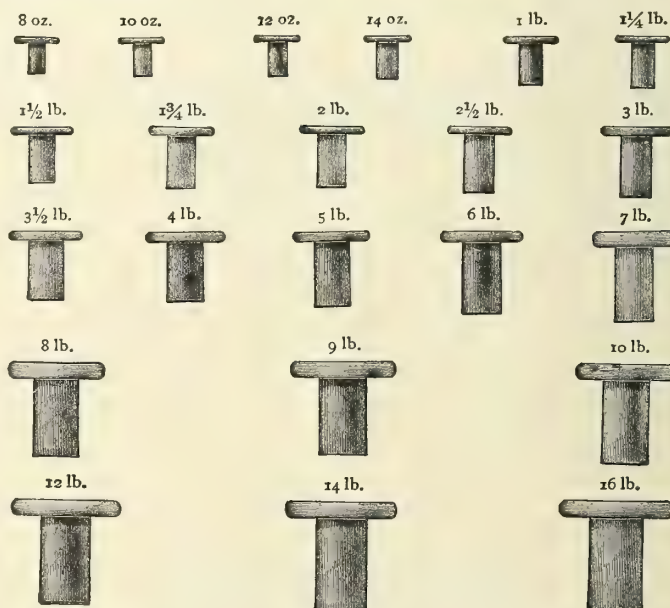
Tinners Rivets

List of January 8, 1904. (Revised May, 1906, and April, 1 1913)

Measured by English Standard Gauge

In Packages (Boxes) of 1000—Per 1000				
Size	Black	Tinned	Tin-plated	
8 Ounce	\$.22	\$.31	\$.26	
10 Ounce	.24	.35	.29	
12 Ounce	.26	.39	.32	
14 Ounce	.28	.43	.35	
1 Pound	.29	.47	.37	
$1\frac{1}{4}$ Pound	.32	.54	.42	
$1\frac{1}{2}$ Pound	.37	.64	.49	
$1\frac{3}{4}$ Pound	.41	.72	.55	
2 Pound	.44	.79	.59	
$2\frac{1}{2}$ Pound	.56	1.00	.75	
3 Pound	.62	1.15	.85	
$3\frac{1}{2}$ Pound	.72	1.34	.99	
4 Pound	.79	1.49	1.09	
5 Pound	1.00	1.88	1.38	
6 Pound	1.12	2.17	1.57	
7 Pound	1.31	2.54	1.84	
8 Pound	1.50	2.90	2.10	
9 Pound	1.68	3.26	2.36	
10 Pound	1.77	3.52	2.52	
12 Pound	2.06	4.16	2.96	
14 Pound	2.40	4.85	3.45	
16 Pound	2.77	5.57	3.97	

In Boxes of 10 and 5 Pounds—Per Pound				
Size	Black	Size	Black	
8 Ounce	\$.42	$3\frac{1}{2}$ Pound	\$.23	
10 Ounce	.38	4 Pound	.22	
12 Ounce	.35	5 Pound	.22	
14 Ounce	.33	6 Pound	.21	
1 Pound	.30	7 Pound	.21	
$1\frac{1}{4}$ Pound	.27	8 Pound	.21	
$1\frac{1}{2}$ Pound	.26	9 Pound	.21	
$1\frac{3}{4}$ Pound	.25	10 Pound	.20	
2 Pound	.24	12 Pound	.19 $\frac{1}{2}$	
$2\frac{1}{2}$ Pound	.24	14 Pound	.19 $\frac{1}{2}$	
3 Pound	.23	16 Pound	.19 $\frac{1}{2}$	



Net Extras	
For Metallic Tinning.....	Add 3 $\frac{1}{2}$ cents per pound
For Tin Plating.....	Add 1 $\frac{1}{2}$ cents per pound

List Rebates	
For 25 and 50-pound boxes.....	Deduct 2 cents per pound
For 100-pound boxes.....	Deduct 3 cents per pound
For 100 and 200-pound kegs.....	Deduct 4 cents per pound

Oval or countersunk heads, or extra lengths, 10 cents per 1,000 in addition to the above prices.

Approximate Dimensions

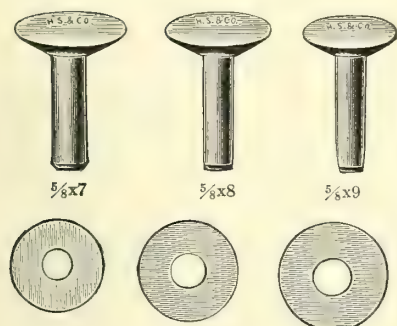
Revised October 21, 1884

Size	Length	Diameter Wire Gauge
8 ounce	$\frac{5}{16}$	No. 13 $\frac{1}{4}$
10 ounce	$\frac{11}{32}$	No. 13
12 ounce	$\frac{1}{16}$	No. 12 $\frac{1}{4}$
14 ounce	$\frac{1}{16}$	No. 12
1 pound	$\frac{1}{16}$	No. 11 $\frac{1}{4}$
$1\frac{1}{4}$ pound	$\frac{1}{16}$	No. 11
$1\frac{1}{2}$ pound	$\frac{1}{16}$	No. 10 $\frac{1}{4}$
$1\frac{3}{4}$ pound	$\frac{1}{16}$	No. 10

Size	Length	Diameter Wire Gauge
2 pound	$\frac{11}{32}$	No. 9 $\frac{1}{4}$
$2\frac{1}{2}$ pound	$\frac{11}{32}$	No. 9
3 pound	$\frac{11}{32}$	No. 8 $\frac{1}{4}$
$3\frac{1}{2}$ pound	$\frac{11}{32}$	No. 8
4 pound	$\frac{11}{32}$	No. 7 $\frac{1}{4}$
5 pound	$\frac{3}{16}$	No. 6 $\frac{3}{4}$
6 pound	$\frac{3}{16}$	No. 6

Size	Length	Diameter Wire Gauge
7 pound	$\frac{11}{32}$	No. 5 $\frac{1}{4}$
8 pound	$\frac{11}{32}$	No. 4 $\frac{3}{4}$
9 pound	$\frac{11}{32}$	No. 4 $\frac{1}{4}$
10 pound	$\frac{11}{32}$	No. 4
12 pound	$\frac{1}{2}$	No. 3
14 pound	$\frac{1}{2}$	No. 2
16 pound	$\frac{1}{2}$	No. 1

★Copper Belt Rivets and Burrs



The following lengths are regular: $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches.

Per Pound for Any Regular Length

Numbers.....	7	8	9	10	11	12	13	14	15
Per pound.....	\$.49	.50	.52	.54	.56	.58	.60	.65	.70

Approximate Number to a Pound of Copper Belt Rivets and Burrs

Number	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	Burrs
7	211	171	150	132	110	97	91	72	63	368
8	266	227	172	147	136	116	100	88	71	417
9	365	261	228	184	169	156	133	113	99	600
10	411	336	257	223	206	180	162	...	..	820
11	416	360	320	...	...	...	...	...	..	944
12	545	400	325	292	257	221	190	...	..	1167
13	799	547	448	392	316	...	...	...	..	1442

★Copper Oval Head or Trunk Rivets and Burrs



The following lengths are regular: $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1 and $1\frac{1}{4}$ inches.

No. 9 In any regular length, as listed above, pound..... \$.52

*Copper Rivets are measured from $\frac{1}{8}$ to $\frac{1}{4}$ inch from small end—or about where the burr sets, after being riveted or “headed” on.

The rivets are not absolutely uniform, the holes in the burrs allowing a variation of .002 inch over and under, are as follows: No. 7, .180; No. 8, .165; No. 9, .148; No. 10, .134; No. 11, .120; No. 12, .109; No. 13, .095; No. 14, .083 and No. 15, .072.

Iron Belt Rivets and Burrs

Measured by English Standard Gauge

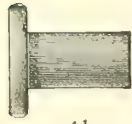
List Per Pound Any Length

	Tinned or Coppered	7	8	9	10	11	12	13	14
Uniform lengths in 1-pound boxes..		\$.35	\$.36	\$.37	\$.39	\$.41	\$.45	\$.48	\$.51
Uniform lengths in $\frac{1}{2}$ -pound boxes.		.39	.40	.41	.43	.45	.49	.52	.55
Uniform lengths in $\frac{1}{4}$ -pound boxes.		.43	.44	.45	.47	.49	.53	.56	.59
Assorted lengths, $\frac{3}{8}$ to $\frac{3}{4}$ inch, in 1-pound boxes.....		.39	.40	.41	.43	.45	.49	.52	.55
Assorted lengths, $\frac{3}{8}$ to $\frac{3}{4}$ inch, in $\frac{1}{2}$ -pound boxes.....		.43	.44	.45	.47	.49	.53	.56	.59
Assorted lengths, $\frac{3}{8}$ to $\frac{3}{4}$ inch, in $\frac{1}{4}$ -pound boxes.....		.47	.48	.49	.51	.53	.57	.60	.63

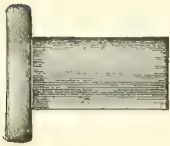
Lengths are same as Belt Rivets and Burrs listed above.



2d



4d



6d

Coopers Rivets

List Per Pound in 10 and 5 Pound Boxes

List of April 1, 1913

Size	Approximate Dimensions Length Inch	Diameter	Pound
1d	$\frac{1\frac{1}{2}}{3\frac{1}{2}}$	No. 4	\$.21
2d	$\frac{1\frac{1}{2}}{1\frac{1}{2}}$	No. 3	.20½
3d	$\frac{1\frac{1}{2}}{3\frac{1}{2}}$	No. 2	.20
4d	$\frac{1\frac{1}{2}}{3\frac{1}{2}}$	No. 1	.20
5d	$\frac{1\frac{1}{2}}{3\frac{1}{2}}$	No. 0	.20
6d	$\frac{1\frac{1}{2}}{1\frac{1}{2}}$	No. 00	.20

Hame Rivets

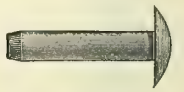
List Per Pound in 10, 5 and 1 Pound Boxes

List of April 1, 1913

Size	Length, Inch			
	1	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{5}{8}$
No. 6	\$.21	\$.21½	\$.21½	\$.22
No. $\frac{3}{16}$	.21	.21½	.21½	.22
No. 7	.21	.21½	.22	.23
No. 8	.21	.21½	.22	.23



Flat



Round



Bevel

List Rebates on Coopers and Hame Rivets

For 25 and 50-pound boxes, deduct 2 cents per pound; for 100 pound boxes, deduct 3 cents per pound; for 100 and 200-pound kegs, deduct 4 cents per pound.

Copper Brake Band Rivets



For Automobile Construction and Repair Work

	Size Shank Inch	Length Overall Inch	Pound
No. 6	.209	$\frac{3}{4}$	\$.49
No. 8	.169	$\frac{3}{4}$	.50
No. 8	.169	$\frac{5}{8}$	.50
No. 10	.138	$\frac{5}{8}$	.54
No. 10	.138	$\frac{1}{2}$	.54
No. 12	.122	$\frac{5}{8}$	.58

Specify number and length

Bifurcated Rivets



Made of soft steel, copper-plated. Diameter of head $\frac{5}{16}$ -inch; diameter of body $\frac{5}{32}$ -inch.

Length, inch . . .	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Per 1000	\$.75	.75	.75	.85	.85	.85	.95	1.05

Above list applies only when packed in bulk cases. When packed 1000 to the box, add 2 cents per 1000.

Assorted lengths, $\frac{1}{4}$ to $\frac{1}{2}$ -inch, 100 in box, with handle in each box for holding rivets while clinching, per dozen boxes \$.70

Escutcheon Pins

In one pound paper boxes. Measured by Washburn & Moen gauge

List Per Pound

Brass

Inches . . .	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
No. 10			\$.75	\$.73	\$.72	\$.71	\$.70	\$.69	\$.68	\$.67	\$.66	\$.65	\$.63
No. 11 . . . . .			.76	.74	.73	.72	.71	.70	.69	.68	.67	.66	.66
No. 12 . . . . .			.77	.75	.74	.73	.72	.71	.70	.69	.68	.67	.67
No. 13 . . . . .			.78	.76	.75	.74	.73	.72	.71	.70	.69	.69	.69
No. 14	\$.90	\$.83	.80	.77	.76	.75	.74	.73	.72	.71	.70	.70	.70
No. 15 . . . . .	.95	.85	.82	.78	.77	.76	.75	.74	.73	.72	.72	.72	.72
No. 16	1.00	.90	.85	.82	.80	.78	.76	.75	.74	.74	.74	.74	.75
No. 17	1.10	1.00	.92	.89	.87	.85	.83	.81	.80	.80	.80	.81	.82
No. 18	1.20	1.10	1.00	.96	.94	.92	.90	.90	.90	.92	.92	.93	.95
No. 19	1.35	1.20	1.15	1.10	1.05	1.00	1.00	1.03	1.03	1.03	1.05		
No. 20	1.55	1.35	1.25	1.20	1.15	1.10	1.10	1.15	1.15	1.15			
No. 21	1.75	1.55	1.45	1.25	1.30	1.30	1.35	1.35					
No. 22	2.00	1.75	1.60	1.45	1.40	1.45							

For Whitening (silver dipped), add 12 cents per pound net.

Iron

Inches . . .	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
No. 10			\$.29	\$.26	\$.24	\$.23	\$.22	\$.21	\$.20	\$.19	\$.17	\$.17	\$.16
No. 11 . . . . .			.29	.26	.24	.23	.22	.21	.20	.19	.17	.17	.16
No. 12 . . . . .			.32	.28	.26	.24	.23	.22	.21	.19	.18	.17	.17
No. 13 . . . . .			.34	.30	.28	.26	.24	.23	.22	.20	.19	.19	.19
No. 14 . . . . .			.37	.33	.30	.27	.24	.23	.23	.21	.20	.20	.20
No. 15		\$.44	.40	.36	.32	.28	.25	.24	.24	.23	.22	.22	.22
No. 16 . . . . .		.47	.42	.37	.33	.29	.26	.25	.25	.24	.24	.24	.24
No. 17 . . . . .		.49	.44	.39	.35	.31	.28	.27	.27	.26	.26	.26	.26
No. 18 . . . . .		.52	.47	.42	.37	.33	.30	.29	.29	.28	.28	.28	.28
No. 19 . . . . .		.62	.52	.47	.42	.37	.35	.35	.35	.35	.35		
No. 20	\$1.02	.82	.67	.57	.47	.42	.42	.42	.42	.42			
No. 21	1.22	1.02	.87	.77	.62	.57	.57	.57					

Tacks

All prices are per hundred pounds. List of June 1, 1914

Upholsterers



Tinned. Genuine Swedish Iron

Can also be supplied made of soft steel.

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	\$60.00	45.00	34.00	28.50	24.50	22.50	21.00	20.00
½-pound papers	58.00	43.00	32.00	26.50	22.50	20.50	19.00	18.00
1-pound packages	57.00	42.00	31.00	25.50	21.50	19.50	18.00	17.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	\$19.50	19.00	19.00	19.00	19.00	19.00	19.00	19.00
½-pound papers	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
1-pound packages	16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Blued. Genuine Swedish Iron

Can also be supplied made of soft steel.

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	\$45.00	35.00	26.50	23.50	20.50	19.00	18.00	17.00
½-pound papers	43.00	33.00	24.50	21.50	18.50	17.00	16.00	15.00
1-pound packages	42.00	32.00	23.50	20.50	17.50	16.00	15.00	14.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	\$16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00
½-pound papers	14.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00
1-pound packages	13.50	13.00	13.00	13.00	13.00	13.00	13.00	13.00

Baling



Blued. Soft Steel

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	\$45.00	35.00	26.50	23.50	20.50	19.00	18.00	17.00
½-pound papers	43.00	33.00	24.50	21.50	18.50	17.00	16.00	15.00
1-pound packages	42.00	32.00	23.50	20.50	17.50	16.00	15.00	14.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	\$16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00
½-pound papers	14.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00
1-pound packages	13.50	13.00	13.00	13.00	13.00	13.00	13.00	13.00

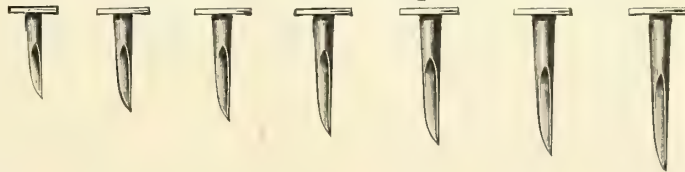
Oval Head Carpet



Tinned. Soft Steel

Number	3	4	6	8	10	12
¼-pound papers	\$23.50	22.00	20.50	19.50	19.00	18.60
½-pound papers	21.50	20.00	18.50	17.50	17.00	16.50
1-pound packages	20.50	19.00	17.50	16.50	16.00	15.50
Number	14	16	18	20	22	24
¼-pound papers	\$18.50	18.60	18.50	18.50	18.50	18.50
½-pound papers	16.50	16.50	16.50	16.50	16.50	16.50
1-pound packages	15.50	15.50	15.50	15.50	15.50	15.50

American Flat Head Carpet. Soft Steel



Blued

Number	3	4	6	8	10	12
¼-pound papers	\$20.00	18.50	17.50	16.50	16.00	15.50
½-pound papers	18.00	16.50	15.50	14.50	14.00	13.50
1-pound packages	17.00	15.50	14.50	13.50	13.00	12.50
Number	14	16	18	20	22	24
¼-pound papers	\$15.50	15.50	15.50	15.50	15.50	15.50
½-pound papers	13.50	13.50	13.50	13.50	13.50	13.50
1-pound packages	12.50	12.50	12.50	12.50	12.50	12.50

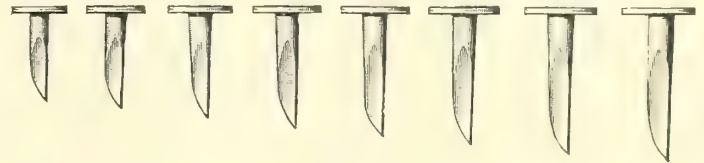
Established Lengths

Number	3	4	6	8	10	12
Length in sixteenths of an inch	6	7	8	9	10	11

Deductions for Bulk

For 25 or 50-pound boxes, deduct \$1.00 per 100 pounds from the 1-pound lists; for 100-pound kegs, deduct \$2.00 per 100 pounds from the 1-pound list

Bill Posters. Soft Steel



Blued

Number	2	2½	3	4	6	8	10
¼-pound papers	\$23.50	20.50	17.50	16.00	15.00	14.00	13.50
1-pound packages	22.50	19.50	16.50	15.00	14.00	13.00	12.50
Number	12	14	16	18	20	22	24
¼-pound papers	\$13.00	13.00	13.00	13.00	13.00	13.00	13.00
1-pound packages	12.00	12.00	12.00	12.00	12.00	12.00	12.00

Tinned

Number	2	2½	3	4	6	8	10
¼-pound papers	\$31.00	25.50	21.50	19.50	18.00	17.00	16.50
1-pound packages	30.00	24.50	20.50	18.50	17.00	16.00	15.50
Number	12	14	16	18	20	22	24
¼-pound papers	\$16.00	16.00	16.00	16.00	16.00	16.00	16.00
1-pound packages	15.00	15.00	15.00	15.00	15.00	15.00	15.00

These can also be supplied made of genuine Swedish Steel.

American Cut. Soft Steel

This is the same type tack as Upholsterers, except has smaller head and shank.



Blued

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	\$45.50	35.50	27.00	24.00	21.00	19.50	18.50	17.50
½-pound papers	42.50	32.50	24.00	21.00	18.00	16.50	15.50	14.50
1-pound packages	42.50	32.50	24.00	21.00	18.00	16.50	15.50	14.50
Number	10	12	14	16	18	20	22	24
¼-pound papers	\$17.00	16.50	16.50	16.50	16.50	16.50	16.50	16.50
½-pound papers	15.00	14.50	14.50	14.50	14.50	14.50	14.50	14.50
1-pound packages	14.00	13.50	13.50	13.50	13.50	13.50	13.50	13.50

Tinned

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	\$60.50	45.50	34.50	29.00	25.00	23.00	21.50	20.50
½-pound papers	58.50	43.50	32.50	27.00	23.00	21.00	19.50	18.50
1-pound packages	57.50	42.50	31.50	26.00	22.00	20.00	18.50	17.50
Number	10	12	14	16	18	20	22	24
¼-pound papers	\$20.00	19.50	19.50	19.50	19.50	19.50	19.50	19.50
½-pound papers	18.00	17.50	17.50	17.50	17.50	17.50	17.50	17.50
1-pound packages	17.00	16.50	16.50	16.50	16.50	16.50	16.50	16.50

Established Lengths of all Tacks on this Page

Number	1	1½	2	2½	3	4	6	8
Length in sixteenths of an inch	3	3½	4	5	6	7	8	9
Number	10	12	14	16	18	20	22	24
Length in sixteenths of an inch	10	11	12	13	14	15	16	18

Tinned

Number	3	4	6	8	10	12
¼-pound papers	\$23.50	22.00	20.50	19.50	19.00	18.50
½-pound papers	21.50	20.00	18.50	17.50	17.00	16.50
1-pound packages	20.50	19.00	17.50	16.50	16.00	15.50
Number	14	16	18	20	22	24
¼-pound papers	\$18.50	18.50	18.50	18.50	18.50	18.50
½-pound papers	16.50	16.50	16.50	16.50	16.50	16.50
1-pound packages	15.50	15.50	15.50	15.50	15.50	15.50

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Tacks

All prices are per hundred pounds. List of June 1, 1914.

Lace. Soft Steel



Blued

Number.....	1	1½	2	2½	3	4	6	8
¼-pound papers.....	\$51.00	41.00	31.00	27.50	24.00	21.00	20.00	19.00
1-pound packages.....	50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00
Number.....	10	12	14	16	18	20	22	24
¼-pound papers.....	18.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
1-pound packages.....	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00

Tinned

Number.....	1	1½	2	2½	3	4	6	8
¼-pound papers.....	\$66.00	51.00	38.50	32.50	28.50	24.50	23.00	22.00
1-pound packages.....	65.00	50.00	37.50	31.50	27.50	23.50	22.00	21.00
Number.....	10	12	14	16	18	20	22	24
¼-pound papers.....	\$21.50	21.00	21.00	21.00	21.00	21.00	21.00	21.00
1-pound packages.....	20.50	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Gimp



Blued. Genuine Swedish Iron

Number.....	1	1½	2	2½	3	4	6	8
¼-pound papers.....	\$50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00
1-pound papers.....	48.00	38.00	28.00	24.50	21.50	18.00	17.00	16.00
1-pound packages.....	47.00	37.00	27.00	23.50	20.50	17.00	16.00	15.00
Number.....	10	12	14	16	18	20	22	24
¼-pound papers.....	\$17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
½-pound papers.....	15.50	15.00	15.00	15.00	15.00	15.00	15.00	15.00
1-pound packages.....	14.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00

Tinned. Soft Steel

Number.....	1	1½	2	2½	3	4	6	8
¼-pound papers.....	\$65.00	50.00	37.50	31.50	27.50	23.50	22.00	21.00
½-pound papers.....	63.00	48.00	35.50	29.50	25.50	21.50	20.00	19.00
1-pound packages.....	62.00	47.00	34.50	28.50	24.50	20.50	19.00	18.00
Number.....	10	12	14	16	18	20	22	24
¼-pound papers.....	\$20.50	20.00	20.00	20.00	20.00	20.00	20.00	20.00
½-pound papers.....	18.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
1-pound packages.....	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00

Established Lengths of Lace and Gimp Tacks

Number.....	1	1½	2	2½	3	4	6	8	10	12	14	16	18	20	22	24
Length, in sixteenths of an inch.....	3½	4	5	6	7	8	9	10	11	12	13	14	15	16		



Looking Glass

Blued. Soft Steel

Number.....	1	1½	2	2½	3	4	6	8
¼-pound papers.....	\$51.00	41.00	31.00	27.50	24.50	21.00	20.00	19.00
1-pound packages.....	50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00
Number.....	10	12	14	16	18	20	22	24
¼-pound papers.....	\$18.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
1-pound packages.....	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00

Solid Head Lining Nails

Japanned or Silvered

Number.....	2½	3	4	6	8
1-pound packages.....	\$30.00	25.00	24.00	23.00	22.00
Number.....	10	12	14	16	18
1-pound packages.....	\$21.00	20.00	20.00	20.00	20.00

Deductions for Bulk

For 25 or 50-pound boxes, deduct \$1.00 per 100 pounds from the 1-pound list; for 100-pound kegs, deduct \$2.00 per 100 pounds from the 1-pound list.



Brush

Blued. Soft Steel

Length, inch.....	¾	1½	5/8	¾	7/8	1
1-pound packages.....	\$44.00	41.00	40.00	38.50	38.00	37.00

For 25 or 50-pound boxes, deduct \$1.00 per 100 pounds; for 100-pound kegs, deduct \$2.00 per 100 pounds.



Cut Copper Tacks

Number.....	2	2½	3	4	6	8	10	12
Established lengths in sixteenths of an inch.....	4	5	6	7	8	9	10	11

In ¼-pound papers and 1-pound packages. Prices on application.

Wire Tacks

For 25 or 50-pound boxes, deduct \$1.00 per 100 pounds from 1-pound list. For 100-pound kegs, deduct \$2.00 per 100 pounds from 1-pound list.

American

Carpet

Peerless



List of June 1, 1914

List Per Hundred Pounds

Number	3	4	6	8	10	12	14	16	18	20	22	24
Polished or Blued												
1/4-pound papers	\$20.00	18.50	17.50	16.50	16.00	15.50	15.50	15.50	15.50	15.50	15.50	15.50
1/2-pound papers	18.00	16.50	15.50	14.50	14.00	13.50	13.50	13.50	13.50	13.50	13.50	13.50
1-pound packages	17.00	15.50	14.50	13.50	13.00	12.50	12.50	12.50	12.50	12.50	12.50	12.50
Tinned or Coppered												
1/4-pound papers	23.50	22.00	20.50	19.50	19.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50
1/2-pound papers	21.50	20.00	18.50	17.50	17.50	16.50	16.50	16.50	16.50	16.50	16.50	16.50
1-pound packages	20.50	19.00	17.50	16.50	16.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50

American

Upholsterers

Peerless



Number	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	22	24
Blued																
1/4-pound papers	\$45.00	35.00	26.50	23.50	20.50	19.00	18.00	17.00	16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00
1/2-pound papers	43.00	33.00	24.50	21.50	18.50	17.00	16.00	15.00	15.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00
1-pound packages	42.00	32.00	23.50	20.50	17.50	16.00	15.00	14.00	14.50	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Tinned																
1/4-pound papers	60.00	45.00	34.00	28.50	24.50	22.50	21.00	20.00	19.50	19.00	19.00	19.00	19.00	19.00	19.00	19.00
1/2-pound papers	58.00	43.00	32.00	26.50	22.50	20.50	19.00	18.00	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
1-pound packages	57.00	42.00	31.00	25.50	21.50	19.50	18.00	17.00	16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Bill Posters

Large Heads—Needle Pointed

Number	3	4	6	8	10	12
Blued, in 1, 5 or 10-pound packages	\$16.50	15.00	14.00	13.00	12.50	12.00
Tinned, in 1, 5 or 10-pound packages	20.50	18.50	17.00	16.00	15.50	15.00

Linoleum Brads

Soft steel, cut. In 1/2-pound papers.

Length, inch	1/2	5/8	3/4
Pound	\$.45	.39	.34

Tempered steel wire, headless, with diamond point. For laying linoleum on cement floors.

1/2 inch long, 15 1/2 gauge wire, pound. \$.20

Zinc Shoe Nails

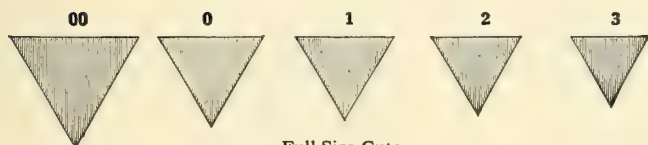


Length, inch	3/8	1/2	5/8	3/4
1 Pound packages	\$.25	.25	.25	.25

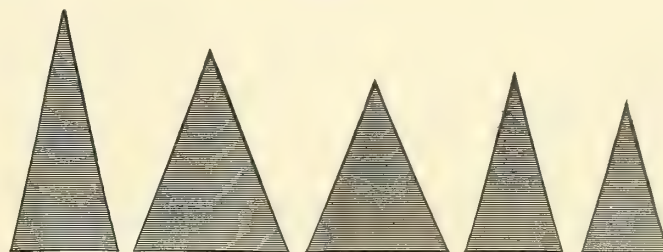
Points

Panel

Glaziers



Full Size Cuts



Zinc, in 1/2-pound papers, per dozen	\$1.20
Zinc, in bulk, per 100 pounds	20.00

1/2 x 1 1/4 inches	3/4 x 1 inch	3/4 x 7/8-inch	1/2 x 3/4-inch	1/4 x 3/4-inch
No. 17 gauge	Either size, in bulk, per 100 pounds			
No. 17 gauge	Either size in 10-pound boxes, per box			

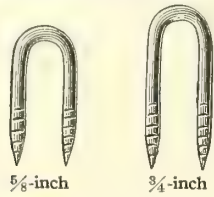
Picture Frame

List Per 100 Pounds

Number	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	22	24
Blued, 1-pound packages	\$50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
Tinned, 1-pound packages	65.00	50.00	37.50	31.50	27.50	23.50	22.00	21.00	20.50	20.00	20.00	20.00	20.00	20.00	20.00	20.00

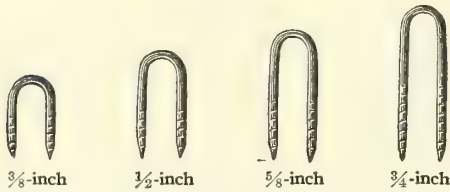
Staples

Barbed Bed Spring



In bulk, in 100-pound kegs. Made of No. 15 coppered wire.
Length, inch..... $\frac{5}{8}$ $\frac{3}{4}$
Per pound..... \$.38 .37
For packing in 50-pound boxes, add \$.15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

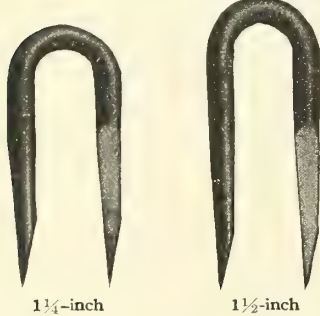
Barbed Blind



In bulk, in 100-pound kegs. Made of No. 18 coppered wire.
Length, inch..... $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$
Per pound..... \$.50 .48 .48 .48
For packing in 50-pound boxes, add \$.15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Fence

Annealed or polished take base price. When made of No. 9 wire, base prices apply. wire, for which extras are charged, as shown
Galvanized at extra as shown below. Also made of Nos. 8, 10, 11, 12 and 13 below. Packed in kegs containing 100 pounds at base price. Also packed in 5-pound, 10-pound, 15-pound, 25-pound and 50-pound boxes, for which extras are charged, as shown below.
Prices on staples up to 3 inches in length, special wide spread staples or gauges not listed, furnished on request.



Length Inches	Approximate Number to Pound No. 9 Gauge
$\frac{7}{8}$	120
1	108
$1\frac{1}{8}$	96
$1\frac{1}{4}$	87
$1\frac{1}{2}$	72
$1\frac{3}{4}$	65
2	58

Extras

Cut from No. 9 wire..... Base
Cut from No. 8 wire and coarser..... \$.25 per 100 pounds extra
Cut from No. 10 wire..... .10 per 100 pounds extra
Cut from No. 11 wire..... .20 per 100 pounds extra
Cut from No. 12 wire..... .35 per 100 pounds extra
Cut from No. 13 wire..... .50 per 100 pounds extra
Galvanizing..... .40 per 100 pounds extra
Oiling..... .15 per 100 pounds extra

Annealed Fence Staples same price as polished.
Barbed Staples, all gauges and lengths, 15 cents per 100 pounds extra

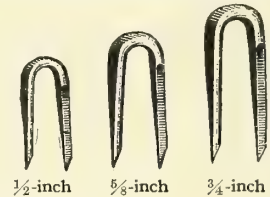
Wrought Iron



Machine-made

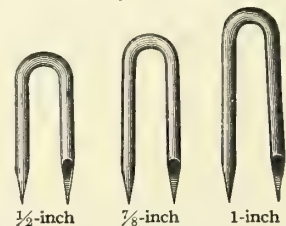
Length, inches.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$
Plain, per gross.....	\$1.20	1.20	1.25	1.70	2.00	2.35
Galvanized, per gross.....	1.80	2.00	2.25	3.00	3.50	4.00
Length, inches.....	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5
Plain, per gross.....	\$2.65	3.20	3.70	5.25	6.50	8.00
Galvanized, per gross.....	5.00	6.00	7.00	9.00	11.00	13.00

Flat Steel Bed Spring



In bulk, in 100-pound kegs.
Length, inch..... $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$
Blued, per pound..... \$.43 .40 .38 .38
Tinned, per pound..... .50
For packing in 50-pound boxes, add \$.15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Poultry Netting



In bulk, in 100-pound kegs. Made from No. 14 galvanized wire.
Length, inch..... $\frac{3}{4}$ $\frac{7}{8}$ 1
Number of staples in pound..... 480 416 352
Per pound..... \$.20 .20 .20
For packing in 50-pound boxes, add \$.15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Light Hoop



Copper Plated

Packed in 100-pound kegs.
Width, inch..... $\frac{1}{2}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{5}{8}$
Length, inch..... $\frac{1}{2}$ $\frac{5}{8}$ $\frac{1}{2}$ $\frac{5}{8}$
Per pound..... \$.39 .36 .36 .35

Electricians



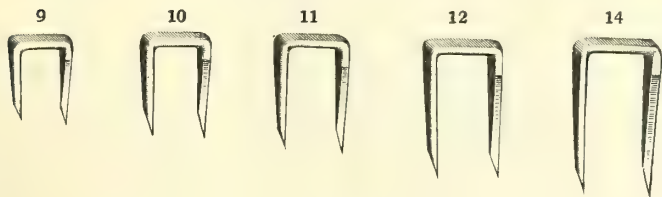
In bulk, in 100-pound kegs. Made of tinned wire.
 $\frac{1}{2}$ inch long, per pound..... \$.50
For packing in 50-pound boxes, add \$.15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Clinch



In bulk, in 100-pound kegs. Made of heavy, flat coppered steel wire.
Size, inches..... $\frac{3}{4}$ $\frac{7}{8}$ 1 $1\frac{1}{4}$
Number of wire..... 12 12 11 10
Per pound..... \$.32 .32 .31 .29
For packing in 50-pound boxes, add \$.15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Double-Pointed Tacks



In 100 Count Papers

Number.....	9	10	11	12	14
Blued or Coppered, dozen.....	\$1.20	1.30	1.40	1.95	2.20
Tinned, dozen.....	1.55	1.65	1.80	2.50	2.80

In 25 lb. Boxes

Number.....	9	10	11	12	14
Blued or Coppered, pound.....	\$.46	.42	.41	.40	.39
Tinned, pound.....	.61	.57	.56	.55	.54

In 100 lb. Kegs

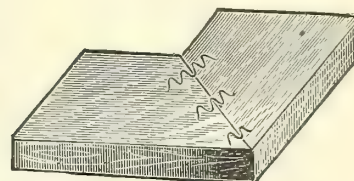
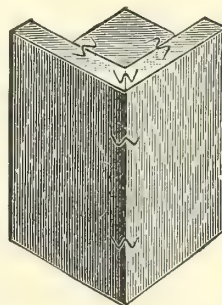
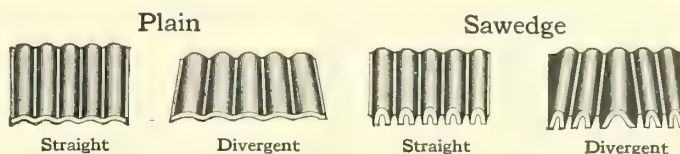
Number.....	9	10	11	12	14
Blued or Coppered, pound.....	\$.46	.42	.41	.40	.39
Tinned, pound.....	.61	.57	.56	.55	.54

Double-Pointed Shade Tacks



In 120 count papers, blued, dozen.....	\$1.60
In 120 count papers, tinned, dozen.....	2.60
In 100 pound kegs, blued, pound.....	.50
In 100 pound kegs, tinned, pound.....	.65

Corrugated Steel Fasteners



Illustrations show method of fastening

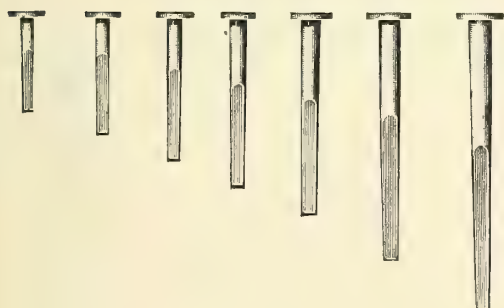
Corrugated Fasteners are a cheap and efficient substitute for nails, dowels, screws etc. Straight Fasteners are preferable when the joint is well made. Divergent Fasteners draw the parts of the work together. The Saw Edge Fasteners drive easier than the Plain, but are more expensive.

List Per 1000

Number of Corrugations	Inches in Depth							
	1/8	3/16	1/4	3/8	1/2	5/8	3/4	1
2	\$.45	\$.55	\$.60	\$.80	\$.90	\$1.00	\$1.15	\$1.15
3	.60	.75	.85	1.00	1.15	1.35	1.45	1.45
4	.75	.95	1.05	1.30	1.45	1.75	1.85	1.85
5	.90	1.20	1.30	1.70	1.85	2.20	2.40	2.40
6	1.10	1.40	1.50	1.85	2.15	2.55	2.85	2.85
7	1.30	1.60	1.80	2.20	2.50	3.00	3.35	3.35
8	1.50	1.80	2.10	2.55	2.90	3.45	3.85	3.85
9	1.75	2.00	2.40	2.90	3.20	3.65	4.10	4.10
10	2.00	2.20	2.70	3.15	3.55	3.90	4.35	4.35
11	2.20	2.40	2.85	3.30	3.75	4.15	4.65	4.65

Clout Nails

Prices are Per 100 Pounds



List of June 1, 1914

Blued

Length, inches	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
1 lb. pkgs.....	\$18.00	15.00	14.50	14.00	13.00	12.50	12.50	12.50	12.50	12.50	12.50

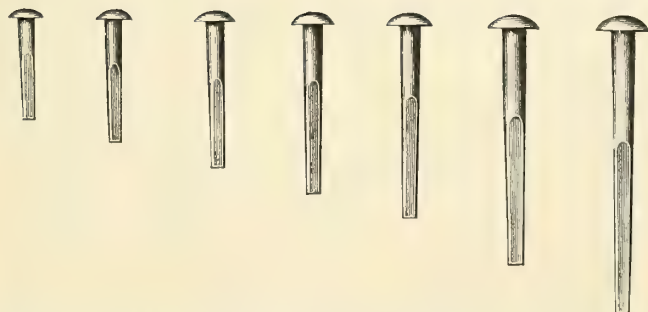
Tinned

Length, inches.	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
1 lb. pkgs.....	\$22.00	18.00	17.50	17.00	16.00	15.50	15.50	15.50	15.50	15.50	15.50

For 25 or 50 pound boxes, deduct \$1.00 per 100 pounds from above list. For 100 pound kegs, deduct \$2.00 per 100 pounds from above list.

Trunk Nails

Prices are Per 100 Pounds



List of June 1, 1914

Blued

Length, inch	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1 pound packages.....	\$18.00	15.00	14.50	14.00	13.00	12.50
Length, inches.....	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	
1 pound packages.....	\$12.50	12.50	12.50	12.50	12.50	

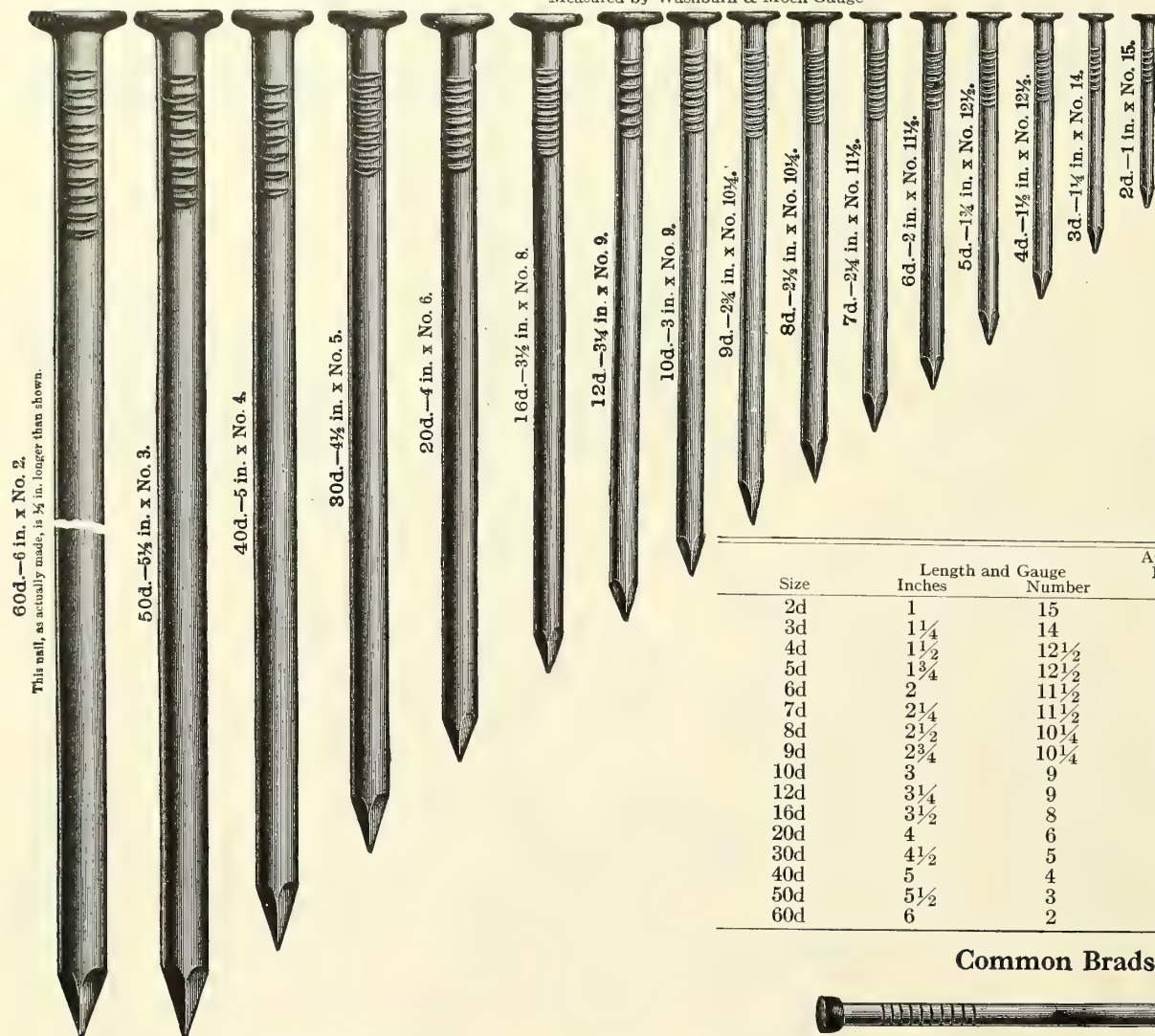
Tinned

Length, inch	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1 pound packages.....	\$22.00	18.00	17.50	17.00	16.00	15.50
Length, inches.....	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	
1 pound packages.....	\$15.50	15.50	15.50	15.50	15.50	

For 25 or 50 pound boxes, deduct \$1.00 per 100 pounds from above list. For 100 pound kegs, deduct \$2.00 per 100 pounds from above list.

Common Wire Nails

Measured by Washburn & Moen Gauge



Illustrations are actual size

Size	Length and Gauge Number Inches	Approximate Number to Pound	Advance Over Base Price
2d	1	15	876 \$.70
3d	1 1/4	14	568 .45
4d	1 1/2	12 1/2	316 .30
5d	1 3/4	12 1/2	271 .30
6d	2	11 1/2	181 .20
7d	2 1/4	11 1/2	161 .20
8d	2 1/2	10 1/4	106 .10
9d	2 3/4	10 1/4	96 .10
10d	3	9	69 .05
12d	3 1/4	9	63 .05
16d	3 1/2	8	49 .05
20d	4	6	31 Base
30d	4 1/2	5	24 Base
40d	5	4	18 Base
50d	5 1/2	3	14 Base
60d	6	2	11 Base

Common Brads



Size	Length and Gauge Number Inches	Approximate Number to Pound	Advance Over Base Price
2d	1	15	876 \$.70
3d	1 1/4	14	568 .45
4d	1 1/2	12 1/2	316 .30
5d	1 3/4	12 1/2	271 .30
6d	2	11 1/2	181 .20
7d	2 1/4	11 1/2	161 .20
8d	2 1/2	10 1/4	106 .10
9d	2 3/4	10 1/4	96 .10
10d	3	9	69 .05
12d	3 1/4	9	64 .05
16d	3 1/2	8	49 .05
20d	4	6	31 Base
30d	4 1/2	5	24 Base
40d	5	4	18 Base
50d	5 1/2	3	16 Base
60d	6	2	11 Base

Finishing Nails



Size	Length and Gauge Number Inches	Approximate Number to Pound	Advance Over Base Price
2d	1	16 1/2	1351 \$1.15
3d	1 1/4	15 1/2	807 .85
4d	1 1/2	15	584 .65
5d	1 3/4	15	500 .65
6d	2	13	309 .45
7d	2 1/4	13	238 .45
8d	2 1/2	12 1/2	189 .35
9d	2 3/4	12 1/2	172 .35
10d	3	11 1/2	121 .25
12d	3 1/4	11 1/2	113 .25
16d	3 1/2	11	90 .25
20d	4	10	62 .25

Flooring Brads



Size	Length and Gauge Number Inches	Approximate Number to Pound	Advance Over Base Price
6d	2	11	157 \$.20
7d	2 1/4	11	139 .20
8d	2 1/2	10	99 .10
9d	2 3/4	10	90 .10

Size	Length and Gauge Number Inches	Approximate Number to Pound	Advance Over Base Price
10d	3	9	69 \$.05
12d	3 1/4	8	54 .05
16d	3 1/2	7	43 .05
20d	4	6	31 Base

Above Nails and Brads furnished barbed in all sizes at advance of \$.15 net on list per 100 pounds over smooth

Wire Nails

Measured by Washburn & Moen Gauge

Smooth Box



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15½	1010	\$1.00
3d	1¼	14½	635	.70
4d	1½	14	473	.50
5d	1¾	14	406	.50
6d	2	12½	236	.35
7d	2¼	12½	210	.35
8d	2½	11½	145	.25
9d	2¾	11½	132	.25
10d	3	10½	94	.15
12d	3¼	10½	88	.15
16d	3½	10	71	.15
20d	4	9	52	.15
30d	4½	9	46	.15
40d	5	8	35	.15

Barbed Box



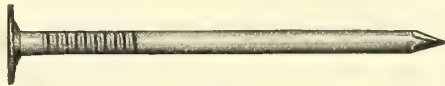
Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15½	1010	\$1.15
3d	1¼	14½	635	.85
4d	1½	14	473	.65
5d	1¾	14	406	.65
6d	2	12½	236	.50
7d	2¼	12½	210	.50
8d	2½	11½	145	.40
9d	2¾	11½	132	.40
10d	3	10½	94	.30
12d	3¼	10½	88	.30
16d	3½	10	71	.30
20d	4	9	52	.30
30d	4½	9	46	.30
40d	5	8	35	.30

Casing



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15½	1010	\$1.00
3d	1¼	14½	635	.70
4d	1½	14	473	.50
5d	1¾	14	406	.50
6d	2	12½	236	.35
7d	2¼	12½	210	.35
8d	2½	11½	145	.25
9d	2¾	11½	132	.25
10d	3	10½	94	.15
12d	3¼	10½	87	.15
16d	3½	10	71	.15
20d	4	9	52	.15
30d	4½	9	46	.15
40d	5	8	35	.15

Tobacco



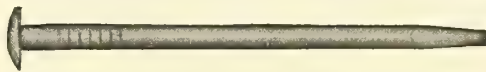
Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
4d	1½	12	274	\$.30
5d	1¾	12	235	.30
6d	2	11	157	.20
7d	2¼	11	139	.20
8d	2½	10	99	.10
9d	2¾	10	90	.10
10d	3	9	69	.05

Also furnished in needle point, 15c advance.

Clinch

Bright or Annealed

Bright clinch nails will be furnished unless otherwise ordered



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
5d	1¾	10	142	\$.30
6d	2	10	124	.20
7d	2¼	9	92	.20
8d	2½	9	82	.10
9d	2¾	8	62	.10
10d	3	7	50	.05
12d	3¼	6	40	.05
16d	3½	5	30	.05
20d	4	4	23	Base

Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	14	710	\$1.05
3d	1¼	13	429	.85
4d	1½	12	274	.65
5d	1¾	12	235	.65
6d	2	11	157	.55
7d	2¼	11	139	.55
8d	2½	10	99	.45
9d	2¾	10	90	.45
10d	3	9	69	.35
12d	3¼	9	62	.35
16d	3½	8	49	.35
20d	4	7	37	.35

Shingle



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
3d	1¼	13	429	\$.45
3½d	1¾	12½	345	.40
4d	1½	12	274	.30
5d	1¾	12	235	.30
6d	2	12	204	.20
7d	2¼	11	139	.20
8d	2½	11	125	.10
9d	2¾	11	114	.10
10d	3	10	83	.05

Slating



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	12	411	\$.80
3d	1¼	10½	225	.60
4d	1½	10½	187	.40
5d	1¾	10	142	.40
6d	2	9	103	.30

All nails on this page are furnished barbed in all sizes at advance of \$.15 per 100 pounds over smooth

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Wire Nails

Measured by Washburn & Moen Gauge

Barbed Roofing



Size Inches	Length and Gauge Inches Number	Approximate Number to Pound	Advance Over Base Price
$\frac{3}{4}$	$\frac{3}{4}$ 13	714	\$.75
$\frac{7}{8}$	$\frac{3}{4}$ 12	469	.65
1	1 12	411	.60
$1\frac{1}{8}$	$1\frac{1}{8}$ 12	365	.60
$1\frac{1}{4}$	$1\frac{1}{4}$ 11	251	.55
$1\frac{3}{8}$	$1\frac{3}{8}$ 11	230	.55
$1\frac{1}{2}$	$1\frac{1}{2}$ 10	176	.45
$1\frac{3}{4}$	$1\frac{3}{4}$ 10	151	.45
2	2 9	103	.35

Berry Box



Diamond or Needle Point, Barbed. Flat Head

Size Inches	Length and Gauge Inches Number	Approximate Number to Pound	Advance Over Base Price
$\frac{3}{4}$	$\frac{3}{4}$ 16	1,500	\$1.35
$\frac{7}{8}$	$\frac{7}{8}$ 16	1,300	1.25
1	1 16	1,150	1.15
$1\frac{1}{8}$	$1\frac{1}{8}$ 16	1,010	1.15
$1\frac{1}{4}$	$1\frac{1}{4}$ 16	910	1.00

American Felt Roofing

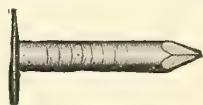


A large head nail especially designed for use in laying prepared roofing material. This nail, having an extra large head and thin shank, meets admirably the requirements for placing all prepared roofing. The head is reinforced on the shank so that it will not easily pull or break off.

Length Inch	Gauge Number	Diameter of Heads Inch	Approximate Number to Pound
1	12	$\frac{5}{8}$	180
$\frac{7}{8}$	12	$\frac{5}{8}$	195

Price on application

Plaster Board



A smooth nail with diamond point and $\frac{1}{2}$ -inch flat head.

Number	9	10	11
Size head, inch	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{7}{16}$
1 inch long, advance over base	\$.75	.85	.95
$1\frac{1}{4}$ inch long, advance over base	.65	.75	.85
$1\frac{1}{2}$ inch long, advance over base	.50	.60	.70

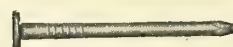
All above nails are furnished barbed in all sizes at advance of \$.15 per 100 pounds over smooth.

Barrel



Size Inches	Length and Gauge Inches Number	Approximate Number to Pound	Advance Over Base Price
$\frac{5}{8}$	$\frac{5}{8}$ $15\frac{1}{2}$	1615	\$1.35
$\frac{3}{4}$	$\frac{3}{4}$ $15\frac{1}{2}$	1346	1.00
$\frac{7}{8}$	$\frac{7}{8}$ $14\frac{1}{2}$	906	.85
1	1 $14\frac{1}{2}$	775	.70
$1\frac{1}{8}$	$1\frac{1}{8}$ $14\frac{1}{2}$	700	.60
$1\frac{1}{4}$	$1\frac{1}{4}$ 14	568	.50
$1\frac{3}{8}$	$1\frac{3}{8}$ 13	400	.40
$1\frac{1}{2}$	$1\frac{1}{2}$ 13	367	.30

Fine



Size Inches	Length and Gauge Inches Number	Approximate Number to Pound	Advance Over Base Price
2d	1 $16\frac{1}{2}$	1351	\$1.00
3d	$1\frac{1}{8}$ 15	778	.50
4d	$1\frac{1}{2}$ 14	473	.50
2d extra fine	1 17	1560	1.10
3d extra fine	$1\frac{1}{8}$ 16	1015	.65

3d fine and 3d extra fine for lathing purposes usually furnished blued.

Sterilized Blued Lath



Lathers carry the nails in the mouth while at work, and it is therefore from the standpoint of health sanitation necessary to have the nails free from all injurious substances. Polished or bright nails cannot be made or kept entirely clean owing to process of manufacture as well as the effect of atmospheric conditions.

Size	Length and Gauge Inches Number	Approximate Number to Pound	Advance Over Base Price
2d	1 $16\frac{1}{2}$	1351	\$1.25
2d light	1 17	1560	1.35
3d	$1\frac{1}{8}$ 15	778	.75
3d light	$1\frac{1}{8}$ 16	1015	.90

Lining



Size Inch	Length and Gauge Inch Number	Approximate Number to Pound	Advance Over Base Price
$\frac{3}{4}$	$\frac{3}{4}$ 17	2077	\$1.20
$\frac{7}{8}$	$\frac{7}{8}$ 17	1781	1.00
1	1 17	1558	.80

Barbed Dowel Pins

No. 8 Standard



Size Inches	Length and Gauge Inches Number	Approximate Number to Pound	Advance Over Base Price
$\frac{5}{8}$	$\frac{5}{8}$ 8	290	\$1.25
$\frac{3}{4}$	$\frac{3}{4}$ 8	250	1.00
$\frac{7}{8}$	$\frac{7}{8}$ 8	210	.85
1	1 8	190	.70
$1\frac{1}{8}$	$1\frac{1}{8}$ 8	165	.60
$1\frac{1}{4}$	$1\frac{1}{4}$ 8	150	.60
$1\frac{3}{8}$	$1\frac{3}{8}$ 8	130	.60
$1\frac{1}{2}$	$1\frac{1}{2}$ 8	120	.60

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Wire Nails

Measured by Washburn & Moen Gauge

Hinge Nails

Diamond or chisel point. Will be furnished with chisel point unless diamond point is specified.
In ordering hinge nails specify whether oval or countersunk head, light or heavy, annealed or bright.

Oval Head
Heavy



Countersunk Head
Heavy



Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	¼	50	\$.80
6d	2	⅜	38	.70
8d	2½	⅜	30	.60
10d	3	⅜	12	.50
12d	3¼	⅜	11	.50
16d	3½	⅜	10	.50
20d	4	⅜	9	.50

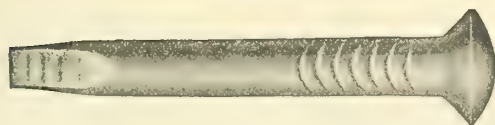
Light



Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	⅜	82	\$.80
6d	2	⅜	62	.70
8d	2½	⅜	50	.60
10d	3	⅜	25	.50
12d	3¼	⅜	23	.50
16d	3½	⅜	22	.50
20d	4	⅜	19	.50

Boat Nails

Light



Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	⅜	82	\$1.05
6d	2	⅜	62	.95
8d	2½	⅜	50	.85
10d	3	⅜	22	.75
12d	3¼	⅜	20	.75
16d	3½	⅜	18	.75
20d	4	⅜	16	.75

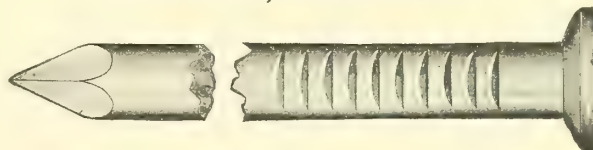
Heavy

Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	¼	44	\$1.05
6d	2	¼	32	.95
8d	2½	¼	26	.85
10d	3	⅜	14	.75
12d	3¼	⅜	13	.75
16d	3½	⅜	12	.75
20d	4	⅜	10	.75

Spikes

Made only in flat head, diamond point and oval head, chisel point.

Flat Head, Diamond Point



Oval Head, Chisel Point



Size	Length Inches	Gauge Number	Approximate Number to Pound	Advance Over Base Price
10d	3	6	41	\$.10
12d	3¼	6	38	.10
16d	3½	5	30	.10
20d	4	4	23	.10
30d	4½	3	17	.10
40d	5	2	13	.10
50d	5½	1	10	.10
60d	6	1	9	.10
Inches	7	Inch		
7	7	⅝	7	.10
8	8	⅝	4	.10
9	9	⅝	3½	.10
10	10	⅝	3	.25
12	12	⅝	2½	.25

Special Gauges, 10c. additional.

Barbed Car Nails

In ordering car nails be sure to specify whether light or heavy, annealed or bright, oval or flat head.

Flat Head



Oval Head



Heavy

Size	Length Inches	Gauge Number	Approximate Number to Pound	Advance Over Base Price
4d	1½	10	165	\$.45
5d	1¾	9	118	.45
6d	2	9	103	.35
7d	2¼	8	76	.35
8d	2½	8	69	.25
9d	2¾	7	54	.25
10d	3	7	50	.20
12d	3¼	6	42	.20
16d	3½	6	35	.20
20d	4	5	26	.15
30d	4½	5	24	.15
40d	5	4	18	.15
50d	5½	3	15	.15
60d	6	3	13	.15

Light

Size	Length Inches	Gauge Number	Approximate Number to Pound	Advance Over Base Price
4d	1½	12	274	\$.45
5d	1¾	12	142	.45
6d	2	10	124	.35
7d	2¼	9	92	.35
8d	2½	9	82	.25
9d	2¾	8	62	.25
10d	3	8	57	.20
12d	3¼	7	50	.20
16d	3½	7	43	.20
20d	4	6	31	.15
30d	4½	6	28	.15
40d	5	5	21	.15
50d	5½	4	17	.15
60d	6	4	15	.15

Miscellaneous Nail List

Applying to regular wire nails and brads, also all other nails and brads to which list of extras apply, except standard nails in kegs. Per pound for 1, 5 and 10-pound packages. In ordering state if flat heads or brad heads are wanted. Measured by Washburn & Moen gauge. Revised February, 1910.

$\frac{3}{16}$ -inch		$\frac{5}{8}$ -inch		1-inch		2-inch	
No. 20.....	\$1.80	Nos. 12, 13, 14.....	\$.43	Nos. 7 to 12.....	\$.30	Nos. 3 to 10.....	\$.27
No. 21.....	2.00	No. 15.....	.45	No. 13.....	.31	No. 11.....	.28
No. 22.....	2.20	No. 16.....	.50	No. 14.....	.32	No. 12.....	.28
No. 23.....	2.40	No. 17.....	.52	No. 15.....	.33	No. 13.....	.28
No. 24.....	2.55	No. 18.....	.58	No. 16.....	.36	No. 14.....	.29
$\frac{1}{4}$ -inch		No. 19.....	.65	No. 17.....	.40	No. 15.....	.30
No. 19.....	1.00	No. 20.....	.75	No. 18.....	.43	No. 16.....	.35
No. 20.....	1.25	No. 21.....	.85	No. 19.....	.53	$2\frac{1}{4}$ -inch	
No. 21.....	1.55	No. 22.....	1.10	No. 20.....	.64	Nos. 3 to 10.....	.27
No. 22.....	1.90	No. 23.....	1.45	$1\frac{1}{8}$ -inch		No. 11.....	.28
No. 23.....	2.15	No. 24.....	1.65	Nos. 7 to 12.....	.30	No. 12.....	.28
No. 24.....	2.35	$\frac{3}{4}$ -inch		No. 13.....	.31	No. 13.....	.28
No. 25.....	2.55	Nos. 10, 11, 12.....	.36	No. 14.....	.32	No. 14.....	.29
No. 26.....	3.10	No. 13.....	.38	No. 15.....	.32	$2\frac{1}{2}$ -inch	
$\frac{3}{8}$ -inch		No. 14.....	.38	No. 16.....	.35	Nos. 3 to 10.....	.26
No. 18.....	.80	No. 15.....	.42	No. 17.....	.40	No. 11.....	.27
No. 19.....	.90	No. 16.....	.43	No. 18.....	.43	No. 12.....	.27
No. 20.....	1.00	No. 17.....	.46	No. 19.....	.53	No. 13.....	.28
No. 21.....	1.25	No. 18.....	.52	$1\frac{1}{4}$ and $1\frac{3}{8}$ -inch		$2\frac{3}{4}$ -inch	
No. 22.....	1.55	No. 19.....	.60	Nos. 6 to 12.....	.29	Nos. 3 to 10.....	.26
No. 23.....	1.95	No. 20.....	.70	No. 13.....	.30	No. 11.....	.27
No. 24.....	2.15	No. 21.....	.85	No. 14.....	.31	No. 12.....	.27
No. 25.....	2.40	$\frac{7}{8}$ -inch		No. 15.....	.32	3-inch	
No. 26.....	2.80	Nos. 8, 9.....	.33	No. 16.....	.34	Nos. 3 to 10.....	.25
$\frac{1}{2}$ -inch		Nos. 10, 11, 12.....	.33	No. 17.....	.39	No. 11.....	.26
Nos. 14, 15, 16.....	.55	No. 13.....	.34	$1\frac{1}{2}$ and $1\frac{5}{8}$ -inch		No. 12.....	.27
No. 17.....	.60	No. 14.....	.35	Nos. 4 to 13.....	.29	$3\frac{1}{4}$ -inch	
No. 18.....	.65	No. 15.....	.36	No. 14.....	.30	Nos. 3 to 10.....	.25
No. 19.....	.75	No. 16.....	.39	No. 15.....	.31	No. 11.....	.26
No. 20.....	.85	No. 17.....	.43	No. 16.....	.33	No. 12.....	.27
No. 21.....	1.00	No. 18.....	.45	No. 17.....	.38	$3\frac{1}{2}$ -inch	
No. 22.....	1.25	No. 19.....	.56	$1\frac{3}{4}$ -inch		Nos. 3 to 10.....	.25
No. 23.....	1.65	No. 20.....	.67	Nos. 4 to 13.....	.28	No. 11.....	.26
No. 24.....	1.90			No. 14.....	.29	4-inch	
				No. 15.....	.30	Nos. 3 to 10.....	.25
				No. 16.....	.32	No. 11.....	.26
				No. 17.....	.38		

Extras Which Must Be Added to List

2 cents per pound for barbing; 2 cents for special heads or headless; 2 cents for needle points or any special points; 2 cents per pound for annealing. For sizes not listed, use list price for same gauge in nearest shorter length. For fractional gauge nails, use the list price for same length applying on the next finest full gauge. Nails heavier than listed, at special net prices, according to quantity. Tinned, galvanized, blued or coppered nails at special prices.

Rebates from list prices: Rebate for 25 and 50-pound boxes, 1 cent per pound; rebate for nails in 100-pound kegs, 2 cents per pound.

Approximate Number of Wire Nails Per Pound

Number of Gauge *	Length, Inches																												
	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	9	10	11	12	
$\frac{3}{8}$	33	27	23	20	18	16	15	14	12	10	9	8	7	6	5	$4\frac{1}{2}$	4	$3\frac{3}{4}$	$3\frac{1}{4}$	
0	34	29	25	21	19	17	16	15	13	11	10	9	8	7	$5\frac{1}{2}$	5	$4\frac{1}{4}$	4	$3\frac{1}{2}$	
$\frac{1}{8}$	57	50	45	38	32	28	25	23	21	19	16	14	13	11	10	8	7	$6\frac{1}{2}$	6	$5\frac{1}{2}$	
2	65	58	52	44	37	32	29	26	24	22	19	16	14	13	11	9	8	7	$7\frac{1}{2}$	7	$6\frac{1}{2}$	
3	67	60	50	43	38	34	30	28	25	22	19	17	15	13	11	10	8	7	$8\frac{1}{2}$	8	$7\frac{1}{2}$	
4	100	80	72	60	51	45	40	36	33	30	26	23	20	18	15	13	11	10	9	8	$9\frac{1}{2}$	
5	120	106	94	85	71	60	53	47	42	39	35	30	26	24	21	18	15	13	11	10	$10\frac{1}{2}$	
6	141	121	106	94	85	71	60	53	47	42	39	35	30	26	24	21	18	15	13	11	$11\frac{1}{2}$	
7	164	141	123	111	99	82	71	62	55	50	45	41	35	31	28	25	21	18	15	13	$12\frac{1}{2}$	
8	197	164	141	123	111	99	82	71	62	55	50	45	41	35	31	28	25	21	18	15	$13\frac{1}{2}$	
9	229	200	171	149	133	120	100	85	75	67	60	54	50	43	37	33	30	25	22	19	$14\frac{1}{2}$	
10	299	239	200	171	149	133	120	100	85	75	67	60	54	50	43	37	33	30	25	22	$15\frac{1}{2}$	
11	345	275	229	197	172	153	137	115	98	86	76	69	62	57	49	43	39	35	29	25	$16\frac{1}{2}$	
12	414	331	276	236	207	184	165	138	118	103	92	82	75	69	59	52	46	41	35	30	$17\frac{1}{2}$	
13	496	397	333	283	248	220	198	165	142	124	110	99	90	83	71	62	55	50	43	37	$18\frac{1}{2}$	
14	663	528	448	383	333	291	257	225	197	173	155	139	125	114	105	90	79	70	61	52	$19\frac{1}{2}$	
15	837	628	502	418	359	314	279	251	209	179	157	139	125	114	105	90	79	70	61	52	$20\frac{1}{2}$	
16	1096	822	658	548	469	411	365	329	274	235	204	182	164	149	137	117	103	90	80	71	$21\frac{1}{2}$	
17	1429	1072	857	714	613	536	476	429	357	306	268	238	214	195	178	153	133	117	103	90	$22\frac{1}{2}$	
18	1893	1420	1136	947	811	710	631	568	473	406	350	315	284	258	236	214	195	178	153	133	$23\frac{1}{2}$	
19	2304	1752	1402	1168	1001	876	778	701	584	500	438	389	350	315	284	258	236	214	195	178	$24\frac{1}{2}$	
20	2880	2280	1828	1523	1305	1143	1015	913	761	653	571	508	450	400	360	320	280	240	200	180	$25\frac{1}{2}$	
21	3552	2784	2248	1872	1616	1416	1256	1116	956	826	726	646	576	516	466	416	376	336	306	276	$26\frac{1}{2}$	
22	4416	3456	2816	2304	2000	1760	1560	1384	1216	1072	944	832	744	664	594	534	484	444	414	384	$27\frac{1}{2}$	
23	5472	4224	3456	2880	2496	2184	1920	1680	1488	1312	1168	1048	948	858	788	728	678	638	608	578	$28\frac{1}{2}$	
24	6768	5232	4288	3600	3120	2736	2400	2112	1856	1632	1448	1304	1184	1084	1004	934	874	824	784	754	$29\frac{1}{2}$	
25	8304	6432	5248	4416	3840	3360	2976	2608	2288	2016	1784	1600	1456	1336	1240	1160	1090	1030	980	940	$30\frac{1}{2}$	
26	10224	7968	6592	5568	4912	4320	3840	3376	3008	27312	25008	23088	21440	20080	18920	18000	17120	16320	15600	15000	$31\frac{1}{2}$	
27	12864	102912	87504	77760	69472	62544	56672	51760	47312	43344	40000	37040	34480	32240	30200	28320	26560	24960	23520	22240	$32\frac{1}{2}$	
28	167136	133712	114608	102240	91328	81792	73504	66464	60576	55840	51440	47440	44000	41040	38400	36000	33600	31360	29280	27360	$33\frac{1}{2}$	
29	217248	173792	149696	133440	120096	108576	98784	90000	82336	75840	70640	65840	61600	58000	54800	51600	48560	45680	42960	40400	$34\frac{1}{2}$	
30	285120	228384	198656	177600	160032	145376	132576	121440	111776	103488	96576	90944	85584	80496	75680	71136	66816	62720	58840	55160	$35\frac{1}{2}$	
31	370848	296704	257376	229440	206880	188672	173760	161184	150720	141376	133136	126000	120000	115104	110320	105648	101088	96736	92592	88656	84928	$36\frac{1}{2}$
32	488640	391680	338624	304320	275520	250880	230080	213024	198720	186080	175008	165504	157456	150000	143136	136848	131136	126000	121520	117704	113544	$37\frac{1}{2}$
33	641184	513024	444224	400320	361280	327040	297696	272064	250080	230720	213984	200000	188800	179200	171136	163600	156608	150144	144256	138944	134208	$38\frac{1}{2}$
34	841728	673440	588224	534720	485824	441440	401504	366016	334976	307360	283104	261200	241600	224176	208800	195488	183136	171744	161312	151840	143328	$39\frac{1}{2}$
35	1100160	888384	778624	706560	641280	582720	530080	482496	439952	401440	366976	335504	306900	280160	255200	232032	210464	190400	171840	154784	139232	$40\frac{1}{2}$
36	1456256	1165056	1024256	932160	848960	774720	708480	649184	595840	547424	502944	462400	424800	390144	358400	329536	303584	279520	257344	237056	218672	$41\frac{1}{2}$
37	1944000	1555200	1366720	1252800	1152640	1066240	982400	909952	838880	769184	701840	646880	594300	544000	496000	450304	406784	365344	325984	288704	253512	$42\frac{1}{2}$
38	2592000	2073600	1830400	1687680	1564800	1450560	1344000	1245184	1152000	1064320	981120	901440	825200	751400	679920	610736	543856	479280	416912	357648	301488	$43\frac{1}{2}$
39	3456000	2764800	2438400	2252160	2094400	1954560	1831200	1714304	1602880	1496800	1396160	1300960	1211200	1126900	1048000	974400	906112	843136	785472	733024	685792	$44\frac{1}{2}$
40	4608000	3686400	3251200	3002880	2777600	2574720	2392800	2231040	2089280	1956480	1832640	1717840	1612000	1515200	1427440	1348640	1277808	1214912	1158880	1108704	1064384	$45\frac{1}{2}$
41	6048000	4838400	4268800	3959040	3667200	3392800	3134400	2891040	2661760	2446400	2244960	2057440	1882800	1721000	1572000	1435840	1312416	1200640	1099584	1009216	929536	$46\frac{1}{2}$
42	8064000	6451200	5696000	5287680	4892800	4510400	4150400	3811840	3486080	3173120	2872960	2585440	2310400	2057800	1827600	1620000	1434912	1271328	1129216	1008576	908448	$47\frac{1}{2}$
43	10752000	8601600	7616000	7042880	6483200	5936800	5403840	4883200	4374080	3877440	3393280	2920640	2460400	2119200	1806400	1612800	1447936	1302752	1177216	1070304	981824	$48\frac{1}{2}$
44	14144000	11315200	10022400	9298560	8584800	7880000	7184160	6496320	5816480	5144640	4490880	3855040	3237200	2736800	2355200	2001600	1775936	1578352	1407872	1263424	1144096	$49\frac{1}{2}$
45	18560000	14848000	13168000	12242880	11323200	10408800	9500000	8596160	7697280	6803440	5914560	5030720	4261800	3616800	3096000	2600000						

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Miscellaneous Nails

We illustrate below some of the more common styles other than Flat Head Nails and Brads on which the Miscellaneous Nail list prices and extra apply. (See preceding page.)

Needle Point



Has a very fine needle-point and is used in basket making, etc. Generally used in lengths $\frac{1}{4}$ to $1\frac{1}{4}$ inches; in gauges 17 to 21.

Headless



Generally used in lengths from $\frac{3}{8}$ to $1\frac{1}{4}$ inches; in gauges 17 to 21.

Checked Head Shade Nails



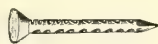
For use in putting up shade brackets, etc. In 1-inch lengths of 12 and 13 gauge and $1\frac{1}{4}$ inch length 13 gauge.

Oval Head Barbed Lock Nails



For use in attaching small locks, etc. $\frac{5}{8}$ inch long, 13 gauge.

Countersunk Head Barbed Nails



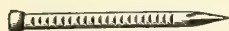
$\frac{3}{4}$ inch long, 14 gauge.

Barbed Caster Nails



For attaching small-sized casters. 1 inch long, 13 gauge; $1\frac{1}{4}$ inches long, 13 gauge.

Special Barbed Brad



For parquet flooring. $1\frac{1}{8}$ inches long, 15 gauge.

Cigar Box Nails



Cigar Box Nails are usually made with short square point, or if so ordered with short round point. Bright, barbed or smooth. Made in sizes $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ or $\frac{3}{8}$ -inch, of either 18, 19 or 20 gauge.

Flat or oval heads as ordered.

Oval head, 15 cents per 100 pounds extra.

All Gauges referred to in above listings are Washburn and Moen Standard

Cut Copper Nails

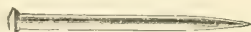
For Boat Work, Etc.



These Nails are rounded under the head, allowing the wood to contract above the flare, and preventing them from working loose. Sizes $\frac{1}{2}$ inch to 6 inches long, in 5-pound papers and 50-pound boxes. Price on application.

Furrier Pins

These Pins are made of brass, have long sharp points and are used for stretching skins.



$1\frac{1}{8}$ inches long, 18 gauge.

$1\frac{1}{4}$ inches long, 15 gauge.

Price on application.

Pocket Nail Boxes

Containing an assortment of nails. Very handy for use about the house.

Put up in illuminated tin display boxes, $2\frac{1}{2} \times 3\frac{1}{2}$ inches. Weight of nails and box, 7 ounces.

Price on application.



Coated Wire Nails

The coating on these nails gives a greatly increased holding power over bright nails, making them especially suitable for all purposes where strength of construction is necessary. These nails are sold by count only—the number of nails in each keg being guaranteed. This system is advantageous to the buyer and user, as they are naturally more interested in the number of nails than in the weight of metal. Gauged by Washburn & Moen Standard. Sold in full kegs only.

Coolers and Sinkers

These nails are listed together, as they are identical in dimensions, price and count, differing only in the heads. They excel in box and crate work, for framing, boarding in, clap-boarding and all the everyday uses of common nails.

The Cooler head is flat and of good size, preferred by many for machine driving and in work where large diameter is desired. It is perfectly satisfactory for hand driving in soft wood.



Sevenpenny Cooler

The Sinker head is reinforced by a slight counter-sinking, which reduces the diameter. It will not break or pull off, and is recommended for hand driving in hard wood. It can be used in automatic nailing-machines.



Sevenpenny Sinker

The Sinker type of head is used on Coolers larger than twelpenny; the larger sizes are therefore identical in every particular.

Box



Sixpenny

Box Nails are necessarily lighter in wire than Coolers and Sinkers, but where conditions permit of their use are economical because of the larger count.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	96,200	1	16½	74	\$1.00
3d	64,600	1½	16	68	.70
4d	45,500	1¾	15½	64	.50
5d	39,700	1⅝	15	74	.50
6d	23,600	1¾	13½	77	.35
7d	19,300	2¼	13½	72	.35
8d	14,000	2⅝	12½	75	.25
9d	13,100	2⅝	12½	78	.25
10d	8,900	2⅞	11½	75	.15
12d	8,700	3⅝	11½	80	.15
16d	7,100	3⅝	11	78	.15
20d	5,200	3⅞	10	83	.15
30d	4,600	4⅝	10	81	.15
40d	3,500	4⅞	9	84	.15

Corkers



Eightpenny

The base price for Corkers is higher than that of other coated nails and special quotation should be secured before orders are placed.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	85,700	1	16	79	\$.70
3d	54,300	1¼	15	80	.45
4d	29,800	1½	13½	76	.30
5d	25,500	1¾	13½	70	.30
6d	17,900	1¾	12½	77	.20
7d	15,300	2¼	12½	72	.20
8d	10,100	2⅝	11	78	.10
9d	8,900	2⅝	11	77	.10
10d	6,600	2⅞	10	78	.05
12d	6,200	3⅝	10	80	.05
16d	4,900	3⅝	9	82	.05
20d	3,100	3⅞	7	85	Base
30d	2,400	4⅝	6	86	Base
40d	1,800	4⅞	5	84	Base
50d	1,300	5⅝	4	80	Base
60d	1,100	5⅞	3	86	Base

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	85,700	1	16	79	\$.70
3d	54,300	1¼	15½	64	.45
4d	29,800	1½	14	61	.30
5d	25,500	1¾	13½	70	.30
6d	17,900	1¾	13	65	.20
7d	15,300	2¼	12½	72	.20
8d	10,100	2⅝	11½	71	.10
9d	8,900	2⅝	11½	68	.10
10d	6,600	2⅞	11	63	.05
12d	6,200	3⅝	10	80	.05
16d	4,900	3⅝	9	80	.05
20d	3,100	3⅞	7	83	Base
30d	2,400	4⅝	6	84	Base
40d	1,800	4⅞	5	82	Base
50d	1,300	5⅝	4	79	Base
60d	1,100	5⅞	3	82	Base

Fence



Eightpenny

Coated Fence Nails have the double advantage of increased holding power, and, as with all coated nails, extreme resistance to the action of moisture.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
5d	12,200	1¾	11	70	\$.30
6d	10,500	2	11	70	.20
7d	7,800	2¼	10	70	.20
8d	7,000	2½	10	70	.10
9d	5,000	2¾	9	70	.10
10d	3,500	3	8	70	.05
12d	2,900	3¼	7	70	.05
16d	2,400	3½	6	70	.05
20d	1,750	4	5	70	Base

Finishing



Sixpenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	90,000	1	16½	70	\$1.15
3d	55,000	1¼	15½	70	.85
4d	42,000	1½	15	70	.65
5d	35,000	1¾	15	70	.65
6d	20,000	2	13½	70	.45
7d	16,500	2¼	13	70	.45
8d	12,600	2½	12½	70	.35
9d	11,800	2¾	12½	70	.35
10d	8,300	3	11½	70	.25
12d	7,700	3¼	11½	70	.25
16d	6,100	3½	11	70	.25
20d	4,500	3⅞	10	70	.25

Barrel



1 1/8 inch

Size, Inch	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
¾	95,000	¾	15½	70	\$1.00
⅞	67,200	⅞	14½	70	.85
1	55,000	1	14½	70	.70
1¼	48,000	1¼	14½	70	.60
1½	37,000	1½	14	70	.50
1¾	26,000	1¾	13	70	.40
1½	24,500	1½	13	70	.30

For remainder of listing of Coated Wire Nails, see next page

Coated Wire Nails

(Continued from preceding page)

Fine



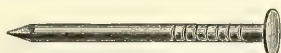
Threepenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	120,000	1	17½	70	\$1.00
3d	64,600	1½	16	68	.50

Shingle

These nails will hold the shingles firmly to place and thus prevent damage through warping, blowing off, or the entrance of moisture to the nails or roofing boards.

NOTE—In ordering, specify whether Light or Heavy.



Fourpenny Light

Size	Light Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
3d	36,500	1¼	14	70	\$.45
4d	26,000	1½	13	70	.30
5d	21,700	1¾	13	70	.30
6d	17,900	1¾	13	65	.20



Fourpenny Heavy

Size	Heavy Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
3d	32,500	1¼	13½	70	\$.45
4d	22,500	1½	12½	70	.30
5d	17,800	1¾	12½	70	.30
6d	16,600	2	12½	70	.20

Leaders

The Perfect Flooring Nails



Eightpenny

The features are a blunt point, to avoid splitting, and a high cone head to overcome the necessity for a nail set. The shoulder on the under side of the head does not go through the board, but catches it, so that each blow of the hammer assists in drawing the board closely to place. The great holding power removes all necessity of spikes and wedges for drawing purposes.

NOTE—The length of Leaders is measured under, and does not include, the head.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
6d	12,300	1¾	11½	69	\$.35
7d	9,000	2	11	65	.35
8d	8,000	2¼	10½	69	.25
9d	6,400	2½	10	68	.25
10d	5,100	2¾	9½	66	.15
12d	4,200	3	9	64	.15
16d	3,200	3¼	8	67	.15
20d	2,100	3¾	7	65	.15

The count per keg of Leaders is guaranteed to equal the count per one hundred pounds of Standard Cut Flooring Nails.

Flooring Brads

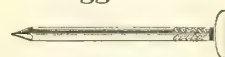


Eightpenny

Coated Flooring Brads are exactly the same in style as standard wire floor brads, except that they are coated. Their advantage over the uncoated brads is that their holding power gives a much firmer floor, and that they draw closer.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
6d	14,500	2	12	70	\$.20
7d	12,500	2¼	12	70	.20
8d	9,000	2½	11	70	.10
9d	7,800	2¾	11	70	.10
10d	5,900	3	10	70	.05
12d	4,300	3¼	9	70	.05
16d	3,450	3½	8	70	.05
20d	2,600	4	7	70	Base

Egg Case



Threepenny

Endorsed by the carriers, and have every desirable feature for the use intended.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	73,500	1	16	70	\$.85
3d	51,700	1½	15	70	.60
4d	30,500	1¾	14	70	.45

Barbed Roofing



1¼ Inch

Size Inches	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
¾	61,000	¾	14	70	\$.75
7/8	34,100	7/8	12½	70	.65
1	30,000	1	12½	70	.60
1 1/8	28,000	1 1/8	12½	70	.60
1 1/4	21,500	1 1/4	12	70	.55
1 3/8	19,600	1 3/8	12	70	.55
1 1/2	18,200	1 1/2	12	70	.45
1 3/4	16,000	1 3/4	12	70	.45
2	10,900	2	11	70	.35

Slating



Threepenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	35,000	1	13	70	\$.80
3d	22,100	1¼	12	70	.60
4d	19,000	1½	12	70	.40
5d	12,200	1¾	11	70	.40
6d	8,400	2	10	70	.30

Casing



Sixpenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	82,500	1	16	70	\$1.00
3d	48,000	1¼	15	70	.70
4d	42,500	1½	15	70	.50
5d	36,000	1¾	15	70	.50
6d	19,000	2	13	70	.35
7d	16,300	2¼	13	70	.35
8d	11,800	2½	12	70	.25
9d	10,200	2¾	12	70	.25
10d	7,700	3	11	70	.15
12d	6,950	3¼	11	70	.15
16d	6,200	3½	11	70	.15
20d	4,400	4	10	70	.15
30d	3,900	4½	10	70	.15
40d	2,900	5	9	70	.15

Common Brads



Eightpenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	82,400	1	16	70	\$.70
3d	53,000	1½	15	70	.45
4d	30,000	1¾	13½	70	.30
5d	26,100	1¾	13½	70	.30
6d	17,200	1¾	12½	70	.20
7d	15,500	2½	12½	70	.20
8d	9,400	2¾	11	70	.10
9d	8,500	2¾	11	70	.10
10d	6,250	2¾	10	70	.05
12d	5,600	3½	10	70	.05
16d	4,200	3¾	9	70	.05
20d	2,625	3¾	7	70	Base
30d	2,040	4¾	6	70	Base
40d	1,540	4¾	5	70	Base
50d	1,190	5¾	4	70	Base
60d	910	5¾	3	70	Base

SINCE
1848

HAMMACHER SCHLEMMER & Co. NEW YORK

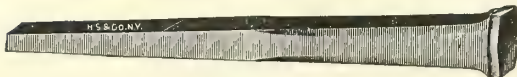
Steel Cut Nails

Prices Per 100 Pounds

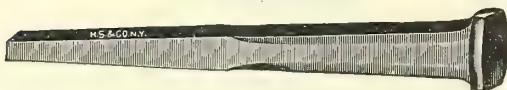
Common, Fence, Hookhead Brads and Sheathing



8d Common



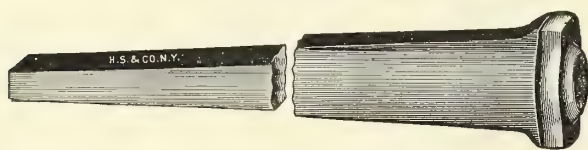
8d Fence



8d Sheathing

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	\$.75	10d	3	\$.05
3d	1 1/4	.45	12d	3 1/4	.05
4d	1 1/2	.30	16d	3 1/2	.05
5d	1 3/4	.30	20d	4	.00
6d	2	.20	30d	4 1/2	.00
7d	2 1/4	.20	40d	5	.00
8d	2 1/2	.10	50d	5 1/2	.00
9d	2 3/4	.10	60d	6	.00

Spikes



6-inch Spike (full size in diameter, but reduced in length).
All sizes, 10 cents advance over Base Price.

Clinch, Car, Boat, Chute, Clout, Hoop and Hinge



1 1/4-inch Clout



2 1/2-inch Boat



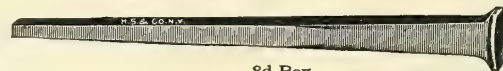
2 1/2-inch Clinch

Size Inches	Advance Over Base Price	Size Inches	Advance Over Base Price
3/4	\$1.45	1 1/2 and 1 3/4	\$.75
7/8	1.30	2 and 2 1/4	.65
1	1.15	2 1/2 and 2 3/4	.55
1 1/8	1.05	3 and larger	.45
1 1/4	.95		

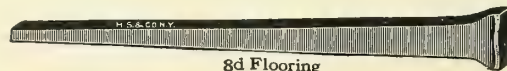
Tobacco Warehouse

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
4d	1 1/2	\$.40	7d	2 1/4	\$.20
5d	1 3/4	.40	8d	2 1/2	.10
6d	2	.20			

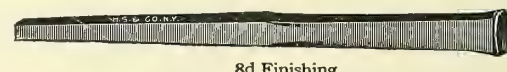
Casing, Box, Flooring, Stout Flooring, Parquet Flooring
and Finishing (New York Pattern)



8d Box



8d Flooring



8d Finishing



8d Parquet Flooring

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	\$1.00	8d	2 1/2	\$.25
3d	1 1/4	.70	9d	2 3/4	.25
4d	1 1/2	.50	10d	3	.15
5d	1 3/4	.50	12d	3 1/4	.15
6d	2	.35	16d	3 1/2	.15
7d	2 1/4	.35			

Fine Finishing

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	\$1.15	8d	2 1/2	\$.35
3d	1 1/4	.85	9d	2 3/4	.35
4d	1 1/2	.65	10d	3	.25
5d	1 3/4	.65	12d	3 1/4	.25
6d	2	.45	16d	3 1/2	.25
7d	2 1/4	.45			

Fine Nails

Size	Length Inches	Advance Over Base Price
2d	1	\$1.00
3d	1 1/4	.75
3d (light)	1 1/4	1.25
4d	1 1/2	.50

Light Barrel and Lining



1-inch Light Barrel

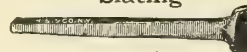
Inches.....	3/4	7/8	1	1 1/8
Advance over base price.....	\$1.20	1.00	.85	.75

Common Barrel, Roofing and Cooper



Size Inches	Advance Over Base Price	Size Inches	Advance Over Base Price
3/4	\$1.00	1 1/4	\$.50
7/8	.85	1 3/8	.40
1	.70	1 1/2	.30
1 1/8	.60		

Slating



3d Slating

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	\$.80	5d	1 3/4	\$.40
3d	1 1/4	.60	6d	2	.30
4d	1 1/2	.40			

For Count on Steel Cut Nails see next page

Approximate Number of Steel Cut Nails to a Pound

Common

Size	Length Inches	Number to a Pound
2d	1	740
3d	1 $\frac{1}{4}$	460
4d	1 $\frac{1}{2}$	280
5d	1 $\frac{3}{4}$	210
6d	2	160
7d	2 $\frac{1}{4}$	120
8d	2 $\frac{1}{2}$	88
9d	2 $\frac{3}{4}$	72
10d	3	60
12d	3 $\frac{1}{4}$	46
16d	3 $\frac{1}{2}$	33
20d	4	22
30d	4 $\frac{1}{2}$	16 $\frac{1}{2}$
40d	5	12
50d	5 $\frac{1}{2}$	10
60d	6	8

Brads

Size	Length Inches	Number to a Pound
6d	2	120
7d	2 $\frac{1}{4}$	94
8d	2 $\frac{1}{2}$	74
9d	2 $\frac{3}{4}$	62
10d	3	50
12d	3 $\frac{1}{4}$	40
16d	3 $\frac{1}{2}$	27

Shingle

Size	Length Inches	Number to a Pound
3	1 $\frac{1}{4}$	296
3 $\frac{1}{2}$	1 $\frac{3}{8}$	220
4	1 $\frac{1}{2}$	192
8d	2 $\frac{1}{2}$	90
9d	2 $\frac{3}{4}$	72
10d	3	60

Slating

Size	Length Inches	Number to a Pound
2d	1	340
3d	1 $\frac{1}{4}$	280
4d	1 $\frac{1}{2}$	220
5d	1 $\frac{3}{4}$	180

Lining

Length Inches	Number to a Pound
$\frac{3}{4}$	1462
$\frac{7}{8}$	1300

Spikes

Length Inches	Number to a Pound
3 $\frac{1}{2}$	17
4	14
4 $\frac{1}{2}$	11
5	9
5 $\frac{1}{2}$	7 $\frac{1}{2}$
6	6
6 $\frac{1}{2}$	5 $\frac{1}{2}$
7	5

Fine Finishing

Size	Length Inches	Number to a Pound
2d	1	1100
3d	1 $\frac{1}{4}$	900
4d	1 $\frac{1}{2}$	600
5d	1 $\frac{3}{4}$	350
6d	2	300
7d	2 $\frac{1}{4}$	220
8d	2 $\frac{1}{2}$	178
9d	2 $\frac{3}{4}$	160
10d	3	150
12d	3 $\frac{1}{4}$	140
16d	3 $\frac{1}{2}$	110
20d	4	90

Fencing

Size	Length Inches	Number to a Pound
5d	1 $\frac{3}{4}$	100
6d	2	80
7d	2 $\frac{1}{4}$	60
8d	2 $\frac{1}{2}$	52
9d	2 $\frac{3}{4}$	38
10d	3 $\frac{3}{4}$	26
12d	3 $\frac{3}{4}$	20
16d	3 $\frac{1}{2}$	18
20d	4	16

Light Barrel

Length Inches	Number to a Pound
1 $\frac{1}{8}$	400
1 $\frac{1}{4}$	304
1 $\frac{1}{2}$	224

Barrel

Length Inches	Number to a Pound
$\frac{5}{8}$	750
$\frac{3}{4}$	600
$\frac{7}{8}$	500
1	450
1 $\frac{1}{8}$	310
1 $\frac{1}{4}$	280
1 $\frac{3}{8}$	210
1 $\frac{1}{2}$	190

Casing and Box

Size	Length Inches	Number to a Pound
4d	1 $\frac{1}{2}$	420
5d	1 $\frac{3}{4}$	300
6d	2	210
7d	2 $\frac{1}{4}$	180
8d	2 $\frac{1}{2}$	130
9d	2 $\frac{3}{4}$	107
10d	3	88
12d	3 $\frac{1}{4}$	70
16d	3 $\frac{1}{2}$	52
20d	4	38
30d	4 $\frac{1}{2}$	30
40d	5	26
50d	5 $\frac{1}{2}$	20
60d	6	16

Clinch

Size	Length Inches	Number to a Pound
2d	1	400
3d	1 $\frac{1}{4}$	260
4d	1 $\frac{1}{2}$	180
5d	1 $\frac{3}{4}$	125
6d	2	100
7d	2 $\frac{1}{4}$	80
8d	2 $\frac{1}{2}$	68
9d	2 $\frac{3}{4}$	52
10d	3	48
12d	3 $\frac{1}{4}$	40
16d	3 $\frac{1}{2}$	34
20d	4	24

Tobacco

Size	Length Inches	Number to a Pound
5d	1 $\frac{3}{4}$	130
6d	2	97
7d	2 $\frac{1}{4}$	85
8d	2 $\frac{1}{2}$	68
9d	2 $\frac{3}{4}$	58
10d	3	48

Fine

Size	Length Inches	Number to a Pound
2d	1	1100
3d	1 $\frac{1}{8}$	800
4d	1 $\frac{3}{8}$	650

Boat, Dock and Wharf Spikes



Diamond Head



Button Head



Nail Head

Square Inch	Length Inches	Net Advance Over Base Price
$\frac{3}{4}$	12 to 24	\$.15
$\frac{5}{8}$	8 to 16	.15
$\frac{1}{2}$	6 to 16	.15
$\frac{7}{16}$	6 to 12	.20
$\frac{3}{8}$	4 to 12	.30
$\frac{5}{16}$	4 to 8	.45
$\frac{1}{4}$	4 to 8	.75
$\frac{1}{4}$	3 to $3\frac{1}{2}$	1.00

When ordering specify which style head is wanted.
 $\frac{3}{8}$ and $\frac{5}{16}$ inch shorter than 4 inches, 25 cents extra per 100 pounds.
 Spikes $\frac{1}{2}$ inch and larger can be furnished with Goldie Point for 10 cents extra.

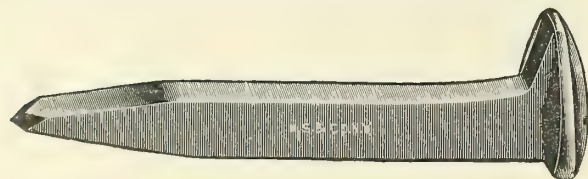
Approximate Number of Boat Spikes to a Keg of 200 Pounds

Square	Length Inches												
Inch	3	4	5	6	7	8	9	10	11	12	14	16	
$\frac{5}{8}$	....	....	....	....	...	260	240	220	205	190	175	160	
$\frac{1}{2}$	....	....	....	450	375	335	300	275	260	240			
$\frac{7}{16}$	....	....	....	600	590	510	400	360	320	230			
$\frac{3}{8}$	1,320	1,140	940	800	650	600	525	475					
$\frac{5}{16}$	1,660	1,360	1,230	1,175	990	880							
$\frac{1}{4}$	3,000	2,375	2,050	1,825									

Railroad Spikes



Common Standard



Goldie Patent Perfect Standard



Pennsylvania R.R. Standard (Rolled Point)

	Net Advance Over Base Price
Common Standard, $5\frac{1}{2} \times \frac{9}{16}$ inches	....
Common Standard, $5 \times \frac{9}{16}$ inches	....
Common, $3\frac{1}{2}$, 4, $4\frac{1}{2}$ and $5 \times \frac{1}{2}$ inches	\$.05
Common, $3\frac{1}{2}$, 4 and $4\frac{1}{2} \times \frac{7}{16}$ inches	.20
Common, 3, $3\frac{1}{2}$, 4 and $4\frac{1}{2} \times \frac{3}{8}$ inches	.30
Common, $2\frac{1}{2} \times \frac{3}{8}$ inches	.40
Common, $2\frac{1}{2}$, 3 and $3\frac{1}{2} \times \frac{5}{16}$ inches	.60
Common, $2 \times \frac{5}{16}$ inches	.80
Goldie Patent Perfect Standard, $5\frac{1}{2} \times \frac{9}{16}$ inches	.10
Goldie Patent Perfect, $4\frac{1}{2}$ and $5 \times \frac{9}{16}$ inches	.10
Goldie Patent Perfect, 4, $4\frac{1}{2}$ and $5 \times \frac{1}{2}$ inches	.10
Penn. R. R. Standard, $5\frac{1}{2} \times \frac{9}{16}$ inches	.10
Penn. R. R., $4\frac{1}{2}$ and $5 \times \frac{9}{16}$ inches	.10
Penn. R. R., 4, $4\frac{1}{2}$ and $5 \times \frac{1}{2}$ inches	.10

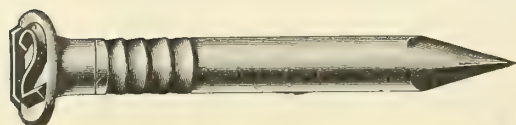
Rolled Points, add 10 cents to above prices.

Reverse Points (smallest $3 \times 3\frac{3}{8}$ inches), add 25 cents per 100 pounds to above prices.

Size, Measured Under Head Inches	Average Number Per Keg of 200 Pounds	Ties 2 feet between center 4 spikes per tie, makes Per Mile	Rail Used, Weight Per Yard
$5\frac{1}{2} \times \frac{9}{16}$	360	5920	29 $\frac{1}{8}$
$5 \times \frac{9}{16}$	405	5230	26
$4\frac{1}{2} \times \frac{9}{16}$	460	4606	23
$5 \times \frac{1}{2}$	475	4460	22 $\frac{3}{10}$
$4\frac{1}{2} \times \frac{1}{2}$	518	4080	20 $\frac{2}{5}$
$4 \times \frac{1}{2}$	605	3515	17 $\frac{1}{2}$
$3\frac{1}{2} \times \frac{1}{2}$	670	3180	15 $\frac{7}{8}$
$4\frac{1}{2} \times \frac{7}{16}$	690	3090	15 $\frac{1}{2}$
$4 \times \frac{7}{16}$	780	2730	13 $\frac{3}{8}$
$3\frac{1}{2} \times \frac{7}{16}$	890	2377	12
$4\frac{1}{2} \times \frac{3}{8}$	780	2730	13 $\frac{3}{8}$
$4 \times \frac{3}{8}$	1025	2044	10 $\frac{1}{5}$
$3\frac{1}{2} \times \frac{3}{8}$	1250	1740	8 $\frac{1}{2}$
$3 \times \frac{3}{8}$	1380	1592	8
$2\frac{1}{2} \times \frac{3}{8}$	1650	1280	6 $\frac{2}{5}$
$3 \times \frac{5}{16}$	1880	1152	5 $\frac{3}{4}$
$2\frac{1}{2} \times \frac{5}{16}$	2230	948	4 $\frac{3}{4}$

Tie or Pole Dating or Marking Nails

Furnished with raised or depressed figures



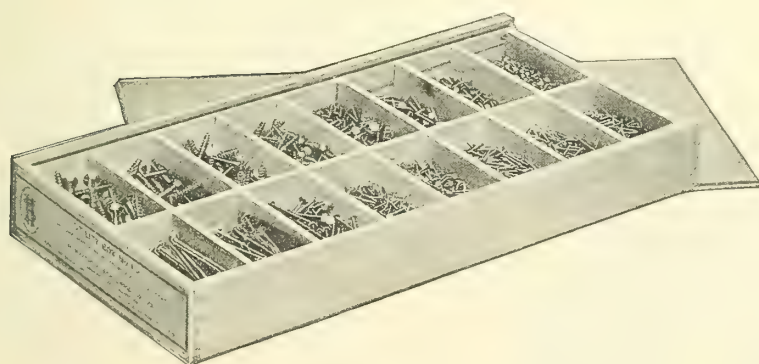
	Count per Pound Bright	Galvanized
Standard size, round, $2\frac{1}{2}$ inches, No. 3 Gage	30	27
Standard size, square, $2\frac{1}{2} \times \frac{1}{4}$ inches	23	20
Bright, galvanized or tinned.		

Prices on application

Utility Boxes

These outfits have been carefully designed to meet the requirements of the "Odd Job Man," as well as those who like to make their own repairs. Both boxes are so constructed that each compartment keeps its contents intact and there is a sufficient supply of each item to last the average man a long time.

Utility Box No. 10



This box is 15 inches long, 7 inches wide and $1\frac{3}{4}$ inches deep, outside measurements; with slide cover and has 16 compartments, containing the following assortment:

Wire Brads. $\frac{5}{8}$, $\frac{7}{8}$ and $1\frac{1}{4}$ inches long.

Wire Nails. $\frac{5}{8}$, 1, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ inches long.

Flat Head Iron Screws. $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches long.

Upholsterers tacks. $1\frac{1}{2}$, 4 and 8 ounce.

Dozen boxes.....	\$9.50
Each.....	.95

Utility Box No. 20

This box is made of hardwood and has hinged cover. It is $15\frac{1}{4}$ inches long, $9\frac{3}{4}$ inches wide and 2 inches deep, outside measurements. It has 24 compartments, containing the following assortments:

Wire Brads. $\frac{5}{8}$, $\frac{7}{8}$ and $1\frac{1}{4}$ inches long.

Wire Nails. $\frac{5}{8}$, 1, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ inches long.

Flat Head Iron Screws. $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches long.

Upholsterers Tacks. $1\frac{1}{2}$, 4 and 8-ounce.

Assorted Brass Cup and Screw Hooks.

Assorted Bright Wire Screw Eyes.

Assorted Brass Capped Picture Nails.

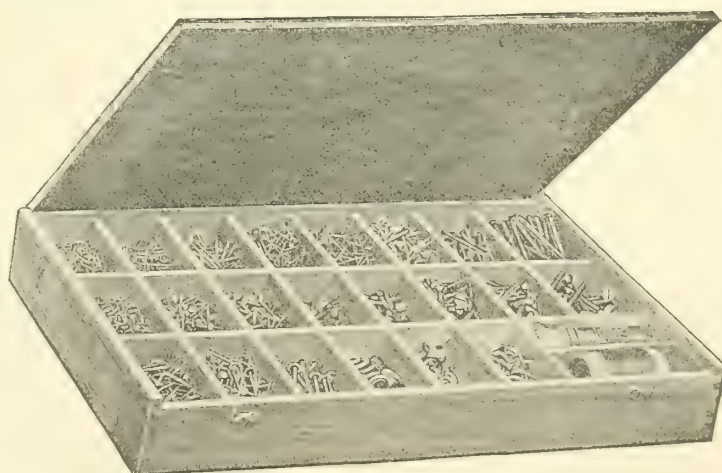
Carton of Gilt Nails.

Package of Double Pointed Tacks.

Tube of Le Page Liquid Glue.

Spool of Copper Wire.

Dozen boxes.....	\$19.00
Each.....	1.90



SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Taper Pins

Morse No. 136

Special attention is called to the fact that these Taper Pins are highly polished and finely finished



Taper $\frac{1}{4}$ inch to the foot. If ordering sizes other than those included in the list, specify the length and the size at the large end

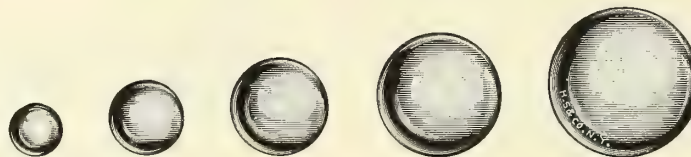
List Per 100

	Number										
	0	1	2	3	4	5	6	7	8	9	10
	Diameter at Large End Inch										
	.156	.172	.193	.219	.250	.289	.341	.409	.492	.591	.706
	Approximate Fractional Sizes										
Length Inches	$\frac{5}{32}$	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{19}{64}$	$\frac{11}{32}$	$\frac{13}{32}$	$\frac{1}{2}$	$\frac{19}{32}$	$\frac{23}{32}$
$\frac{3}{4}$	\$1.80	\$2.00	\$2.10	\$2.30	\$2.50	\$2.75	\$3.00				
1	2.05	2.25	2.35	2.55	2.75	3.00	3.25	\$3.75			
$1\frac{1}{4}$	*2.30	2.50	2.60	2.80	3.00	3.25	3.50	4.00	\$4.65		
$1\frac{1}{2}$	2.55	*2.75	2.85	3.05	3.25	3.50	3.75	4.25	5.00	\$7.00	\$9.00
$1\frac{3}{4}$	2.80	3.00	*3.10	3.30	3.50	3.75	4.00	4.50	5.40	7.50	9.50
2	3.05	3.25	3.35	*3.55	3.75	4.05	4.35	4.75	5.80	8.00	10.00
$2\frac{1}{4}$	3.30	3.50	3.60	3.80	*4.00	4.40	4.75	5.25	6.25	8.60	10.75
$2\frac{1}{2}$	3.55	3.75	3.85	4.05	4.25	*4.75	5.20	5.75	6.75	9.20	11.50
$2\frac{3}{4}$	3.80	4.00	4.10	4.30	4.50	5.10	5.70	6.25	7.25	9.80	12.25
3	4.05	4.25	4.35	4.55	4.75	5.45	6.25	6.75	7.80	10.50	13.25
$3\frac{1}{4}$	.....	.....	4.60	4.80	5.00	5.80	*6.75	7.25	8.40	11.20	14.25

	Number				
	6	7	8	9	10
	Diameter at Large End Inches				
	.341	.409	.492	.591	.706
	Approximate Fractional Siz				
Length Inches	$\frac{11}{32}$	$\frac{13}{32}$	$\frac{1}{2}$	$\frac{19}{32}$	$\frac{23}{32}$
$3\frac{1}{2}$	\$7.25	\$7.75	\$9.00	\$11.90	\$15.25
$3\frac{3}{4}$	7.75	8.25	9.60	12.60	16.25
4	8.25	*8.75	10.20	13.30	17.25
$4\frac{1}{4}$	8.75	9.25	10.80	14.00	18.25
$4\frac{1}{2}$	9.25	9.75	11.40	14.70	19.25
$4\frac{3}{4}$	9.75	10.25	12.00	15.40	20.25
5	10.25	10.75	12.60	16.10	21.25
$5\frac{1}{4}$	....	....	....	16.80	22.25
$5\frac{1}{2}$	....	....	....	17.50	23.25
$5\frac{3}{4}$	....	....	....	18.20	24.25
6	....	....	....	18.90	25.25

* Pins marked with * are too long for use with regular Taper Pin Reamers of corresponding numbers. Special attention is called to the fact that our Taper Pins are highly polished and finely finished.

Hardened Steel Balls



These Balls are made from high-grade tool steel, are accurate in shape and size, carefully hardened and polished, suitable for the best of machinery or instruments.

List Per 100

Diameter Inch	Price	Diameter Inch	Price	Diameter Inch	Price	Diameter Inches	Price
$\frac{1}{16}$	\$2.50	$\frac{1}{4}$	\$2.70	$\frac{5}{8}$	\$24.00	$1\frac{1}{2}$	\$250.00
$\frac{3}{32}$	1.70	$\frac{9}{32}$	4.40	$\frac{11}{16}$	35.00	$1\frac{3}{4}$	420.00
$\frac{7}{64}$	1.40	$\frac{5}{16}$	4.60	$\frac{3}{4}$	44.00	2	900.00
$\frac{1}{8}$	1.10	$\frac{3}{8}$	7.00	$\frac{7}{8}$	70.00	$2\frac{1}{4}$	1,300.00
$\frac{5}{32}$	1.50	$\frac{7}{16}$	12.00	1	110.00	$2\frac{1}{2}$	2,100.00
$\frac{3}{16}$	1.70	$\frac{1}{2}$	16.00	$1\frac{1}{8}$	130.00	$2\frac{3}{4}$	2,700.00
$\frac{7}{32}$	2.40	$\frac{9}{16}$	22.00	$1\frac{1}{4}$	190.00	3	4,300.00

Brass and Bronze Balls



We are prepared to promptly furnish solid, finished brass or bronze balls. The Solid Brass Balls are regular in sizes $\frac{1}{16}$ inch to 2 inches in diameter, inclusive; Hollow Brass from 2 inches to 3 inches in diameter, inclusive, and solid bronze from $\frac{1}{8}$ inch to $1\frac{1}{2}$ inches, inclusive.

Steel Music Wire

We are sole agents in the United States and Canada for the celebrated Felten & Guillaume Steel Music Wire, which for strength, uniformity, tone-quality and every other known requisite for an absolutely perfect wire

Has No Equal

It is made by Messrs. Felten & Gilleaume at their famous plant in Germany, and as produced to-day, is the result of years of experience, by the most exacting processes, conducted by men whose skill in the manufacture of wire and kindred goods is of world-wide repute.

Aside From Its Use in Pianos

We guarantee its reliability for use in electrical work, calculating machines, automatic machines of all kinds, typewriters, knitting and weaving machinery, carpet sweepers, toys; in brick making, soap making, cheese making, in fact, anywhere where a positively safe wire must be used.

Made in three distinct grades, known as Black, Red and Green Label, and herewith is shown a reduced fac-simile of the Black Label.

For very delicate work we recommend the best grade, the genuine Black Label; this has greatest tensile strength and is therefore very hard and is used in very high-grade pianos. Where other wires have failed in certain trying positions, as in very delicate springs, the F. & G. Black Label has been found most satisfactory.

The Red Label grade will be found especially satisfactory in making springs. It also runs very uniform, has exceptional tensile strength and is dependable in every way. We have sold it for years to manufacturers of calculating machines, typewriters, autos and motor cycles and for brick and soap cutting, etc.

The Green Label grade is recommended where a very high-grade wire is required, but which need not have the extreme tensile strength. It is a thoroughly reliable wire, far superior to any ordinary steel wire, and is also largely used by piano manufacturers.



Net Prices Per Pound
(In 1 or 5 pound coils)

Size.....	00	0	1	2	3	4	5	6
Black Label.....	\$5.00	\$4.25	\$3.60	\$3.00	\$2.50	\$2.15	\$1.75	\$1.05
Red Label.....	4.00	3.00	2.40	1.60	1.35	1.10	.90	.72
Green Label.....	3.00	2.65	2.20	1.40	1.20	1.00	.75	.60
Size.....	7	8	9	10	11	12	13 to 32*	
Black Label.....	\$.90	\$.85	\$.85	\$.80	\$.80	\$.80	\$.75	
Red or Blue Label.....	.67	.60	.55	.53	.52	.52	.50	
Green Label.....	.55	.52	.50	.48	.45	.45	.42	

*With half numbers from 12½ to 18½, inclusive.

We also supply this wire in a patented clamp, holding ¼ lb., at an advance over above prices of 10 cents per pound, net.
Special prices for large import orders

Measurements by Fractions of Inches and Millimeters

Number.....	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Inches.....	.0087	.0093	.0098	.0106	.0114	.0122	.0138	.0157	.0177	.0197	.0216	.0236	.0260	.0283	.0303	.0323	.0342	.0362
Millimeters.....	.22	.235	.25	.27	.29	.31	.35	.40	.45	.50	.55	.60	.66	.72	.77	.82	.87	.92
Number.....		17	18	19	20	21	22	23		24	25	26	27	28	29	30	31	32
Inches.....		.0382	.04	.042	.044	.046	.048	.051		.055	.059	.063	.067	.071	.074	.078	.082	.086
Millimeters.....		.97	1.02	1.07	1.12	1.17	1.22	1.30		1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20

Approximate Number of Feet to the Pound

Number.....						00	0	1	2	3	4	5	6	7	8	9	10	11	12	
Feet.....						5,138	4,564	3,973	3,415	2,955	2,581	2,026	1,553	1,221	995	755	690	571	479	
Number....	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Feet.....	415	368	328	292	263	240	217	197	180	168	148	128	108	95	85	75	69	62	56	49

Wire

For the convenience of those who are unfamiliar with the terms peculiar to the wire trade, the following definitions and explanations are given:

Market Wire

Market wire is made of Bessemer steel, and is the kind of wire used for most commercial purposes. It will stand a moderate amount of punishment, and is generally satisfactory except where the material is subjected to some severe test. It is made in the following finishes—Bright, Coppered, Tinned and Galvanized.

Annealed and Cleaned Wire

This is made chiefly of Bessemer steel, and is annealed and cleaned after drawing. It is softer than ordinary market wire, and will stand severer tests. It is adapted especially for flattening, bending, twisting, etc.

Tensile Strength

The tensile strength of wire is a very variable quantity, and no exact values can be tabulated. Each variety of wire shows a different elasticity; and variation in the manipulation of any one variety of wire in process produces a variation in the tensile strength of the finished product.

As an aid in determining the kind or size of wire best suited to any particular purpose, however, the following average values of a few standard stocks are given:

Wire	Breaking Strain
Annealed Bessemer.....	50,000-60,000 pounds square inch
Soft-drawn Bessemer.....	80,000-90,000 pounds square inch
Hard-drawn Bessemer.....	100,000-120,000 pounds square inch

Table of Sizes, Weights and Lengths

Diameter Inch	W. & M. Gauge	Diameter Inch	Area Square Inch	Pounds Per 100 Feet	Feet Per Pound
1/8		.1250	.012272	4.168	24.00
	11	.1205	.011404	3.873	25.82
	12	.1055	.0087417	2.969	33.69
3/32		.09375	.0069029	2.344	42.66
	13	.0915	.0065755	2.233	44.78
	14	.0800	.0050266	1.707	58.58
	15	.0720	.0040715	1.383	72.32
1/16		.0625	.0030680	1.042	95.98
	17	.0540	.0022902	0.7778	128.6
	18	.0475	.0017721	0.6018	166.2
	19	.0410	.0013203	0.4484	223.0
	20	.0348	.00095115	0.3230	309.6
	21	.0317	.00078924	0.2680	373.1
1/32		.03125	.00076699	0.2605	383.9
	22	.0286	.00064242	0.2182	458.4
	23	.0258	.00052279	0.1775	563.3

Diameter Inches	W. & M. Gauge	Diameter Inch	Area Square Inch	Pound Per 100 Feet	Feet Per Pound
..	24	.0230	.00041548	0.1411	708.7
..	25	.0204	.00032685	0.1110	900.9
..	26	.0181	.00025730	0.08738	1144.
..	27	.0173	.00023506	0.07983	1253.
..	28	.0162	.00020612	0.07000	1429.
..	29	.0150	.00017671	0.06001	1666.
..	30	.0140	.00015394	0.05228	1913.
..	31	.0132	.00013685	0.04647	2152.
..	32	.0128	.00012868	0.04370	2288.
..	33	.0118	.00010936	0.03714	2693.
..	34	.0104	.000084949	0.02885	3466.
..	35	.0095	.000070882	0.02407	4154.
..	36	.0090	.000063617	0.02160	4629.

Square wire weighs 1.273 times as much as round wire, the diameter of which is the same as the thickness of the square, and hexagonal wire weighs 1.103 times as much as round wire in the same way.

Measured by Washburn & Moen Gauge.

List Prices Per Pound

All wire listed herewith is in approximately 50 pound bundles, except stone wire which weighs about 12 pounds

Number	*Bright Market Wire	Galvanized Market Wire	Annealed Stone Wire Bright or Black	Tinned Market Wire	Tinned Stone Wire
0000 to 9	\$.10	\$.10	....	\$ .15	
10 & 11	.11	.11	....	.16	
12	.11 1/2	.11 1/2	....	.17	
13 & 14	.12 1/2	.12 1/2	....	.17	
15	.14	.14	....	.17 1/2	
16	.14	.14	\$.14	.17 1/2	
17	.15	.15	.15	.18	
18	.16	.16	.16	.18 1/2	\$.18 1/2
19	.19	.19	.19	....	.19
20	.20	.20	.20	....	.19
21	.21	.21	.21	....	.20
22	.22	.22	.22	....	.20
23	.23	.23	.23	....	.21

Number	* Bright Market Wire	Galvanized Market Wire	Annealed Stone Wire Bright or Black	Tinned Market Wire	Tinned Stone Wire
24	\$.24	\$.24	\$.24	\$.	\$.21
25	.25	.25	.25	.	.22
26	.26	.26	.26	.	.23
27	.28	.28	.28	.	.24
28	.29	.29	.29	.	.25
29	.30	.30	.30	.	.26
30	.32	.32	.32	.	.27
31	.33	.33	.33	.	.28
32	.35	.35	.35	.	.32
33	.37	.37	.37	.	.33
34	.40	.40	4.0	.	.34
35	.45	.45	.45	.	.40
36	.55	.55	.55	.	.48

* Coppered Market Wire and Coppered Bessemer Spring Wire take same list prices as Bright Market Wire.

Steel Springs

In lengths of 2 feet. Open or closed. Odd numbers are closed; even are open

Per pound 40 cents



	Open										Closed									
	Made of Oil-Tempered Wire																			
Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Outside diameter, inches.....	1 1/16	1 1/8	1 1/4	1 1/2	7/8	7/8	3/4	3/4	1 1/8	1 1/4	1 1/2	1 3/4	1 7/8	2	2 1/8	2 1/4	2 1/2	2 3/4	3	3 1/4
Number of wire,	9	9	11	11	12	12	13	13	14	14	16	16	18	18	19	19	20	20	20	20
Weight, each) Pounds.....	2		1		1		1				3		4 1/10	1 1/2	3 1/3	1	2 1/3	2		3
Weight, each) Ounces.....	10 3/4	15 3/4	14 1/2	10 1/4	6 1/4	8 3/4		6 1/4	12 1/4	5 1/2	8 1/4		4 1/10	1 1/2	3 1/3	1	2 1/3	2		3

Brass and Copper Wire

In 25-Pound Coils

All Brass and Copper Wire to No. 21, inclusive, is numbered by Stubs' Gauge; No. 22 and finer, by London Gauge. All orders where the gauge is not stated will be filled accordingly.

When ordering Brass Wire, state whether Soft or Hard or Spring Wire is wanted.

The terms "High" and "Low" refer to quality of the brass and not the temper.

Low Brass contains a smaller percentage of zinc.

If parties ordering wire have no gauge, a small piece may be sent which will answer for the gauge number.

Stubs Gauge Up to Number	Old English or London Gauge Up to Number	Soft and Hard High Brass Per Pound	Copper Per Pound	Stubs Gauge Up to Number	Old English or London Gauge Up to Number	Soft and Hard High Brass Per Pound	Copper Per Pound	Stubs Gauge Up to Number	Old English or London Gauge Up to Number	Soft and Hard High Brass Per Pound	Copper Per Pound	Stubs Gauge Up to Number	Old English or London Gauge Up to Number	Soft and Hard High Brass Per Pound	Copper Per Pound
10	12	\$.23	\$.28	25½	28	\$.35	\$.43	18	19	\$.24	\$.32	33	36	\$.59	\$.82
11	13	.23½	.28½	26	29	.35	.43	19	20	.25	.33	34	37	.64	.95.
12	14	.23½	.28½	27	30	.38	.46	20	21	.25	.33	35	38	.70	1.30
13	15	.23½	.28½	28	31	.42	.51	21	22	.26	.34	36	39	.76	1.50
14	16	.23½	.28½	29	32	.45	.54	21½	23	.27	.35	37	40	1.00	1.70
15	17	.23½	.28½	30	33	.48	.62	22	24	.27	.35	38	..	1.30	2.00
16	18	.23½	.28½	31	35	.51	.67	23	25	.28	.36	39	..	2.00	3.25
17	18½	.24	.32	32	35½	.55	.73	24	26	.30	.38	40	..	2.60	5.75
								25	27	.32	.40				

All Wire between gauges takes price of next smaller gauge.

Flat, Square and Half-round Wire, 4 cents advance on Round Wire, gauged the thin way after finishing.

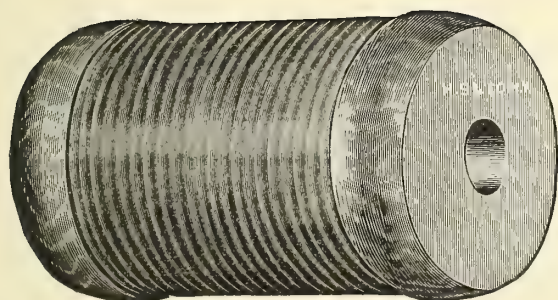
Spring Wire, 2 cents per pound advance.

Whitened Wire, 3 cents per pound advance

Wire on Spools

List per dozen spools

Washburn & Moen Gauge Number	Number of Feet to Spool		Annealed Steel		Soft Brass, Spring Brass, Soft Copper	
	Medium Spools	Large Spools	Medium Spools	Large Spools	Medium Spools	Large Spools
16	35	65	\$1.58	\$2.46	\$3.90	\$7.50
17	44	91	1.60	2.56	3.90	7.50
18	55	126	1.64	2.64	3.90	7.50
19	77	169	1.66	2.68	3.90	7.50
20	111	226	1.68	2.76	3.90	7.50
21	128	283	1.74	2.86	4.20	8.00
22	158	324	1.80	2.96	4.40	8.20
23	201	418	1.86	3.05	4.60	8.50
24	254	528	1.94	3.15	4.70	8.60
25	328	700	2.00	3.20	4.80	9.00
26	386	897	2.04	3.30	4.90	9.20
27	431	966	2.06	3.53	5.52	10.34
28	494	1067	2.13	3.65	6.12	11.48
29	575	1242	2.21	3.78	6.48	12.14
30	656	1418	2.35	4.03	7.44	13.94
31	750	1607	2.43	4.16	8.04	15.08
32	788	1701	2.57	4.41	8.76	16.40
33	934	2012	2.72	4.66	9.84	18.44
34	1194	2578	2.94	5.04	11.40	21.38
35	1440	3092	3.31	5.67	15.60	29.24
36	1593	3442	3.94	6.73	18.00	33.76



German Silver Wire

Measured by Brown & Sharpe Gauge. Eighteen per cent nickel, spring temper. In small spools, approximately ¼ pound each.

Gauge.....	18	20	22	24	26	28
Price, dozen spools.....	\$4.20	4.35	5.20	5.55	5.80	7.05

Aluminum Wire

Measured by English Standard gauge in large spools approximately 1 pound each.

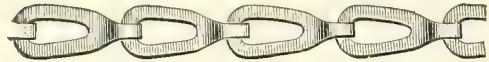
Gauge.....	18	20	22	24
Price, spool.....	\$1.20	1.25	1.30	2.40

Chain

Safety



Regular Type, No. 00



Plumbers Type, No. 0

Number.....	000	00	0	1	2	3	4
Brass, per dozen yards.....	\$1.15	1.25	1.50	1.85	2.30	3.15	3.65

Nickel-plated. Add to net price of Brass, Nos. 000 to 1, 8 cents, and Nos. 2 to 4 15 cents per dozen yards, net.

On Reels of 500 Feet

Numbers.....	000	00	0	1	2	3	4
Brass, per 100 feet.....	\$3.30	3.60	4.30	5.20	6.40	9.00	10.30

Nickel-plated. Add to net price of Brass, Nos. 000 to 1, 15 cents, and Nos. 2 to 4, 30 cents per 100 feet, net.

Ladder



Numbers.....	17	18	19	20
Brass, per dozen yards.....	\$1.20	1.10	.90	.80

Nickel-plated. Add to net price of Brass 10 cents per dozen yards, net.

Proof Coil

Made of selected stock, but being a low priced machine made chain, it is not guaranteed and is recommended for unimportant uses only.



Straight Link



Twisted Link

It is not possible to proof test twisted link chain, as proof test of any value would be sufficient to stretch the twist out of the links.

Size, inch.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$
Approximate weight, per 100 feet, lbs..	46	75	110	155	200	260	325
Straight link proof test, lbs.....	1,000	1,500	2,600	3,600	4,500	6,500	8,000
Average safe working load, lbs.....	500	750	1,300	1,800	2,750	3,250	4,000

Size, inch.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Approximate weight per 100 feet, lbs.....	400	590	800	1,000	1,300	1,500
Straight link proof test, pounds.....	9,500	13,500	18,500	24,000	29,000	39,000
Average safe working load, pounds.....	4,750	6,750	9,250	12,000	14,500	19,500
Black, per pound.....	} Prices on application					
Galvanized, per pound.....						

German Type Coil



Number.....	6-0	5-0	4-0	3-0	2-0
American gauge.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	1	1 $\frac{1}{2}$
Weight per 100 feet, pounds.....	66	50	43	33	28
Proof test, pounds.....	1,200	1,000	900	600	550
Per 100 feet.....	\$18.00	15.50	13.00	11.00	10.00

Numbers.....	1-0	1	2	3	4	5	6
American gauge.....	7	8	9	10	11	12	
Weight per 100 feet, pounds.....	23	19	16	13	10	8	6
Proof test, pounds.....	500	400	350	300			
Per 100 feet.....	\$8.80	7.80	7.20	6.80	6.60	6.60	6.50

Jack

Single

Double



No. 24



No. 24



No. 20



No. 20



No. 18



No. 18



No. 15



No. 15

List Per Dozen Yards

Number	Iron	Single	Brass	Iron	Double	Brass
5	\$1.60		\$10.00			
6	1.30		8.00			
7	1.05		6.35			
8	.95		5.25			
9	.90		4.25			
10	.80		3.50			
11	.55		2.55	\$.95		\$4.25
12	.44		2.05	.75		3.45
13	.42		1.70	.65		3.00
14	.40		1.35	.60		2.15
15	.35		1.00	.55		1.90
16	.30		.86	.43		1.50
17	.30		.82	.38		1.20
18	.28		.60	.34		1.00
19	.27		.54	.33		.75
20	.26		.50	.33		.65
21	.25		.45	.33		.62
22	.25		.40	.33		.60
23	.25		.40	.33		.60
24	.25		.40	.33		.60

German Type Machine



Number.....	6-0	5-0	4-0	3-0	2-0
American gauge.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	1	$1\frac{1}{2}$
Weight per 100 feet, pounds.....	77	54	51	39	35
Proof test, pounds.....	1,750	1,200	1,000	700	600
Per 100 feet.....	\$21.00	18.00	15.00	14.00	13.00
Number.....		1-0		2	3
American gauge.....		7	8	9	10
Weight per 100 feet, pounds.....		27	23	20	17
Proof test, pounds.....		550	450	350	300
Per 100 feet.....		\$12.50	12.00	11.50	11.00

Universal Double Jointed



$\frac{3}{16}$ Inch



$\frac{1}{4}$ Inch



$\frac{5}{16}$ Inch

Universal Chain is as flexible as a piece of twine, can never kink, and is always free and pliable in any position. Where strength is required, the retinned chain should be used, as the process of retinning solders each joint into a solid link

Inch.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
Plain steel, per 100 feet.....	\$3.00	3.50	4.00	5.00	7.00
Retinned, per 100 feet.....	\$3.50	4.00	5.00	6.00	9.00

100 feet in a box, or 500 feet on a reel, as specified.

Chain

Sash



Red Metal

(A Red Bronze)

Number	For Sash Weighing	Per Foot
A	Not over 300 pounds.....	\$.13
1	Not over 225 pounds.....	.10
2	Not over 150 pounds.....	.08
0	Not over 100 pounds.....	.06

Coppered Steel

Number	For Sash Weighing	Per Foot
1	Not over 250 pounds.....	\$.08
2	Not over 150 pounds.....	.06
0	Not over 100 pounds.....	.04

Fastenings for Hanging Windows

For use with above chains.

Per dozen sets..... \$1.50

Triumph



Number	List per 100 Feet	Weight per 100 Feet Pounds	Decimal Size of Wire Inch	Approximate Safe Working Load Pounds	Approximate Tensile Strength Pounds
00	\$4.50	21.5	.133	330	1,650
0	4.00	17	.118	300	1,500
1	3.50	13	.105	220	1,100
2	3.10	10.5	.094	180	900
3	2.90	8	.083	150	750
4	2.75	6	.072	110	550
5	2.65	5.25	.067	100	500
6	2.55	4	.057	80	400
7	2.50	3	.050	60	300

Brass Open Link

Used for display purposes.



2-inch links, 1/4-inch diameter wire.

No. 235 Per foot..... \$.24

Cable



No. 110

For a sash not over 400 pounds.



No. 10

For a sash not over 250 pounds.

Copper

No. 110	Per foot.....	\$.23
No. 10	Per foot.....	.17

Steel

No. 110	Per foot.....	\$.17
No. 10	Per foot.....	.14

Fastenings for Hanging Windows

For use with above chains.

Per dozen sets..... \$2.60

Hammock

Brown

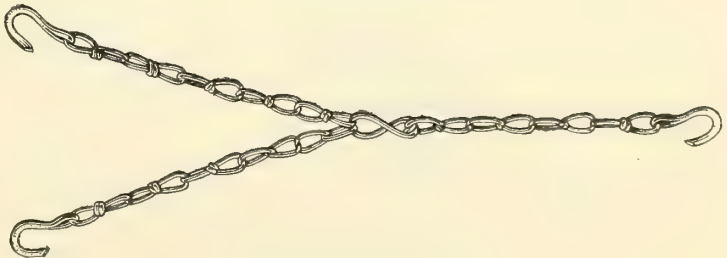


Made of 2-0 chain, hot galvanized finish.

Length, feet.....	3	6
Weight, pounds.....	15	27
Per dozen pairs.....	\$4.00	8.00

Porch Swing—Galvanized

Triumph Pattern



Each set consists of two chains, two ceiling hooks and two "S" hooks.

No. 380 8 feet long, made of 3-0 chain and 2-0 chain, weight about 5 1/2 pounds per set, set..... \$.98

Twines

Stitching

No. 252	Elm, medium, in ½-pound balls, per pound	In 3 lb. Packages \$.64	Less .70
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Mattress

No. 47	Elm, in ½-pound balls, per pound	In 3 lb. Packages \$.70	Less .76
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Tufting

No. 5A	Elm, in ¼-pound balls, per pound	In 3 lb. Packages \$.66	Less .72
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Spring

Best Russia, three-ply, per pound	In quantities of 10 lbs. or more \$.18	Less .20
No. 208 English, per pound	.31	.34

Packing

No. 18 B.C. Light, in ½-pound balls, per pound	In 3 lb. Packages \$.24½	Less .29
No. 24 B.C. Medium, in ½-pound balls, per pound	.24	.27
No. 36 B.C. Heavy, in ½-pound balls, per pound	.23	.26
No. 36 A.B. Heavy, best quality, in ½-pound balls, per pound	.27½	.30

Miscellaneous

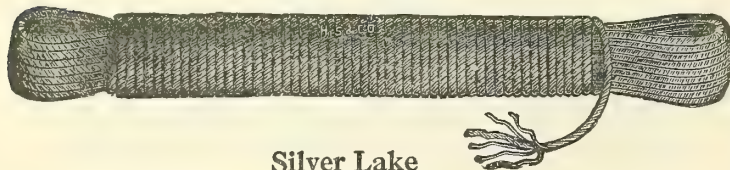
Wool Four-ply, per pound	In quantities of 10 lbs. or more \$.13	Less .15
Cotton Four-ply, per pound	.29	.32
Jute Four-ply, per pound	.16½	.18

Waxed Thread

For rubber mat ends

On reels (6 reels to the pound), per dozen reels	\$3.50
Per reel	.35

Sash Cord



Silver Lake

White Braided. Hanks contain 100 feet

Number	6	7	8	9	10
Diameter, inch	⅜	7/32	1/4	9/32	5/16
In lots of one dozen hanks, per pound	\$.40½	.39½	.39	.39	.39
Less than one dozen hanks, per pound	.45	.44	.43	.43	.43

Eureka

White Braided

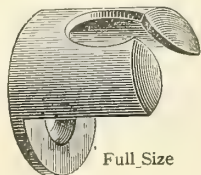
Number	7	8
Diameter, inch	7/32	1/4
In dozen hank lots, pound	\$.30	.30
Less than dozen hank lots, pound	.33	.33

India Twist

No. 8, ¼-inch diameter

In dozen hank lots, pound	\$.20
Less than dozen hank lots, pound	.22

Sash Cord Fixtures



Full Size

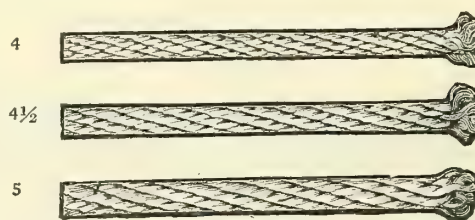
No. 0 Cast iron, gross	\$.90
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Bell Cord

Galvanized Wire Center

Made of the best Samson Sash Cord, with center of galvanized steel wire cable. Put up in coils of about 1200 feet, mahogany color.				
Inch	3/16	1/4	5/16	3/8
Per 100 feet	\$3.00	3.50	4.25	5.00

Cotton Shade Line



Braided

		Drab	White	Dark Green
No. 4	48 feet in a hank, per dozen hanks	\$2.25	2.00	2.25
No. 4½	48 feet in a hank, per dozen hanks	2.75	2.50	2.75
No. 5	100 feet in a hank, per dozen hanks	7.50		

Twisted

		Dozen Hanks	Less
No. 48 thread.	White, 95 yards in a hank, pound	\$.36½	.40
No. 72 thread.	White, 100 yards in a hank, pound	.36½	.40
No. 108 thread.	White, 115 yards in a hank, pound	.36½	.40

Awning Rope

		Coil	Less
⅜-inch, twisted (coil weighs about 30 pounds), per pound.		\$.26	.29

White Cotton Rope

Diameter, inch	⅝	1/2	5/8
Approximate number of feet to pound	35	14	9
Approximate weight of coil, pounds	40	50	60

Prices upon application.

White Braided Cotton Rope

Diameter, inch	1/2	5/8
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Prices upon application.

Manila Rope

3-Strand, Regular Laid

Diameter, inches	1/4	5/16	3/8	1/2	5/8	3/4	1	1¼	1½
Circumference, inches	¾	1	1½	1½	2	2¼	3	3¾	4½
Approximate number feet to pound	55	41	27	13½	7½	6	3¾	2½	1¾
Tensile strength, pounds	625	1,000	1,280	2,400	4,000	4,700	7,600	12,500	17,000

Prices upon application.

Wire Rope

Wire Rope should not be coiled or uncoiled like hemp or Manila rope, but should be unwound or wound from a reel by rolling on the ground or floor, or by blocking up the reel to revolve like a wheel. Avoid kinks or twists. Serve ends with soft binding wire on each side of the portion to be cut off, so that ends will not untwist.

Galvanized Iron



Suitable for Ship or Yacht rigging, or guy rope.

5 strands with 7 wire to the strand—hemp core

Approximate Circumference Inch	Diameter Inch	Weight per Foot Pound	Approximate Breaking Strain in Tons of 2,000 Pounds	Per Foot
1/2	3/16	.040	0.61	\$.02
3/4	1/4	.090	0.99	.02½

6 strands with 7 wires to the strand—hemp core

1	5/16	.150	1.42	\$.03½
1 1/8	3/8	.220	1.95	.04½
1 1/2	1/2	.390	3.39	.06

Sash Cords

6 strands with 7 fine wires to the strand—cotton core

Number	Diameter Inch	Weight per Foot Pound	Approximate Breaking Strain in Pounds	Per Foot
28	1/8	.025	465	\$.02¼

Larger sizes than listed quoted on application.

High-Speed Steel

Notwithstanding the fact that a good brand of High-Speed Steel costs several times as much as the best plain Carbon Steel, it is well known that the use of High-Speed Steel for all cutting and hot forming tools is far more economical.

To increase the shop output and to decrease the operating cost is the constant aim of all manufacturers—High-Speed Steel is so far the most effective agent in bringing about that result.

The friction caused by operating tools at a high rate of speed, and at the same time making deep cuts, generates a degree of heat that will draw the temper of carbon steels, but tools made of High-Speed Steel, as its name implies, owing to the use of certain elements in its makeup, will permit fast and heavy cuts to be made without such consequences as impair the life of tempering steels.

Nor does the forging, hardening and dressing of good brands of High-Speed Steel involve complicated treatment. Any good tool maker can develop the maximum efficiency of tools made from such steels without special knowledge.

Rex AA

Forges easily. Anneals and machines readily. Responds perfectly to heat treatment. Possesses a maximum of hardness, toughness, endurance and strength. Has great cutting power, both in ability to make a deep cut and in retaining its cutting edge under the greatest stress and speed. Specially recommended and exclusively used for:

Lathe Tools,	Taps,	End Mills,	Blanking and Screw Cutting Dies,
Planer Tools,	Reamers,	Slotting Cutters,	Insert Reamer Blades,
Boring Tools,	Twist and Straight Drills,	Threading Cutters,	Segmental Taps,
Rail and other Drills,	Milling Cutters,	Dies,	Formed Milling Tools,
etc., etc.		Gear Cutters,	Intricate Special Cutters, etc., etc.

It is also being used extensively for Dies for forming hot iron and steel, such as Bolt and Rivet Dies, Gripping Dies, Domino or Heading Tools, Nut Piercers, Nut Boxes, Crowning Tools, Shear Blades, Cut-Offs, Swedging Dies, Spike Cutters and Dies, etc., etc.

It is excellent for certain classes of Tools for stone work, machine wood-working knives, and for forming tools in tin and sheet metal, rubber, glass, etc.

We will furnish bars in any length, annealed or unannealed. Rounds, Squares, Octagons, Flats, Blocks, Blanks, Cut and Forged Discs, also Small Squares with single and double bevels, in three (3) foot lengths, hardened ready for use.

Standard Sizes and Lengths for Tool Holders

These sizes are adaptable to all the standard makes of tool holders and may also be used for any other purpose. It is not necessary to heat this steel, but it can be nicked on a sharp emery wheel, broken off to length desired, and then ground to the required cutting shape.

$\frac{1}{4}$ -inch square, $2\frac{1}{2}$ inches long.
$\frac{5}{16}$ -inch square, $2\frac{1}{2}$ inches long.
$\frac{3}{8}$ -inch square, 3 inches long.
$\frac{7}{16}$ -inch square, $3\frac{1}{2}$ inches long.
$\frac{1}{2}$ -inch square, 4 inches long.
$\frac{9}{16}$ -inch square, 4 inches long.
$\frac{5}{8}$ -inch square, $4\frac{1}{2}$ inches long.
$\frac{3}{4}$ -inch square, $4\frac{1}{2}$ inches long.

The above lengths (with 30 degree bevel) will be furnished unless otherwise specified. They are put up in five (5) and ten (10) pound boxes.

Standard Sizes of Hardened Bevels for Cutting-off Tools

$\frac{5}{8} \times \frac{3}{4}$ inch	$1\frac{3}{8} \times 1\frac{1}{4}$ inch
$\frac{3}{4} \times \frac{1}{8}$ inch	$1\frac{1}{8} \times \frac{3}{16}$ inch
$1 \times \frac{3}{16}$ inch	$1\frac{1}{4} \times \frac{1}{4}$ inch
$\frac{7}{8} \times \frac{1}{8}$ inch	

This steel is beveled about $\frac{1}{32}$ inch on each side for clearance.

Octagon Shapes

We can supply all standard or special sizes which are used for beading tools.

Annealed Special Forgings

We can furnish annealed special forgings to order for particular purposes. Sketches and full details should accompany all inquiries.

Continued on following page

High Speed Steel Rex AA

(Continued from preceding page)

Bright Polished Drill Rods

Morse Twist Drill Gauge

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$	5	$5\frac{1}{4}$	$5\frac{1}{2}$	$5\frac{3}{4}$	6	$6\frac{1}{4}$	$6\frac{1}{2}$	$6\frac{3}{4}$	7	$7\frac{1}{4}$	$7\frac{1}{2}$	$7\frac{3}{4}$	8	$8\frac{1}{4}$	$8\frac{1}{2}$	$8\frac{3}{4}$	9	$9\frac{1}{4}$	$9\frac{1}{2}$	$9\frac{3}{4}$	10	$10\frac{1}{4}$	$10\frac{1}{2}$	$10\frac{3}{4}$	11	$11\frac{1}{4}$	$11\frac{1}{2}$	$11\frac{3}{4}$	12	$12\frac{1}{4}$	$12\frac{1}{2}$	$12\frac{3}{4}$	13	$13\frac{1}{4}$	$13\frac{1}{2}$	$13\frac{3}{4}$	14	$14\frac{1}{4}$	$14\frac{1}{2}$	$14\frac{3}{4}$	15	$15\frac{1}{4}$	$15\frac{1}{2}$	$15\frac{3}{4}$	16	$16\frac{1}{4}$	$16\frac{1}{2}$	$16\frac{3}{4}$	17	$17\frac{1}{4}$	$17\frac{1}{2}$	$17\frac{3}{4}$	18	$18\frac{1}{4}$	$18\frac{1}{2}$	$18\frac{3}{4}$	19	$19\frac{1}{4}$	$19\frac{1}{2}$	$19\frac{3}{4}$	20	$20\frac{1}{4}$	$20\frac{1}{2}$	$20\frac{3}{4}$	21	$21\frac{1}{4}$	$21\frac{1}{2}$	$21\frac{3}{4}$	22	$22\frac{1}{4}$	$22\frac{1}{2}$	$22\frac{3}{4}$	23	$23\frac{1}{4}$	$23\frac{1}{2}$	$23\frac{3}{4}$	24	$24\frac{1}{4}$	$24\frac{1}{2}$	$24\frac{3}{4}$	25	$25\frac{1}{4}$	$25\frac{1}{2}$	$25\frac{3}{4}$	26	$26\frac{1}{4}$	$26\frac{1}{2}$	$26\frac{3}{4}$	27	$27\frac{1}{4}$	$27\frac{1}{2}$	$27\frac{3}{4}$	28	$28\frac{1}{4}$	$28\frac{1}{2}$	$28\frac{3}{4}$	29	$29\frac{1}{4}$	$29\frac{1}{2}$	$29\frac{3}{4}$	30	$30\frac{1}{4}$	$30\frac{1}{2}$	$30\frac{3}{4}$	31	$31\frac{1}{4}$	$31\frac{1}{2}$	$31\frac{3}{4}$	32	$32\frac{1}{4}$	$32\frac{1}{2}$	$32\frac{3}{4}$	33	$33\frac{1}{4}$	$33\frac{1}{2}$	$33\frac{3}{4}$	34	$34\frac{1}{4}$	$34\frac{1}{2}$	$34\frac{3}{4}$	35	$35\frac{1}{4}$	$35\frac{1}{2}$	$35\frac{3}{4}$	36	$36\frac{1}{4}$	$36\frac{1}{2}$	$36\frac{3}{4}$	37	$37\frac{1}{4}$	$37\frac{1}{2}$	$37\frac{3}{4}$	38	$38\frac{1}{4}$	$38\frac{1}{2}$	$38\frac{3}{4}$	39	$39\frac{1}{4}$	$39\frac{1}{2}$	$39\frac{3}{4}$	40	$40\frac{1}{4}$	$40\frac{1}{2}$	$40\frac{3}{4}$	41	$41\frac{1}{4}$	$41\frac{1}{2}$	$41\frac{3}{4}$	42	$42\frac{1}{4}$	$42\frac{1}{2}$	$42\frac{3}{4}$	43	$43\frac{1}{4}$	$43\frac{1}{2}$	$43\frac{3}{4}$	44	$44\frac{1}{4}$	$44\frac{1}{2}$	$44\frac{3}{4}$	45	$45\frac{1}{4}$	$45\frac{1}{2}$	$45\frac{3}{4}$	46	$46\frac{1}{4}$	$46\frac{1}{2}$	$46\frac{3}{4}$	47	$47\frac{1}{4}$	$47\frac{1}{2}$	$47\frac{3}{4}$	48	$48\frac{1}{4}$	$48\frac{1}{2}$	$48\frac{3}{4}$	49	$49\frac{1}{4}$	$49\frac{1}{2}$	$49\frac{3}{4}$	50	$50\frac{1}{4}$	$50\frac{1}{2}$	$50\frac{3}{4}$	51	$51\frac{1}{4}$	$51\frac{1}{2}$	$51\frac{3}{4}$	52	$52\frac{1}{4}$	$52\frac{1}{2}$	$52\frac{3}{4}$	53	$53\frac{1}{4}$	$53\frac{1}{2}$	$53\frac{3}{4}$	54	$54\frac{1}{4}$	$54\frac{1}{2}$	$54\frac{3}{4}$	55	$55\frac{1}{4}$	$55\frac{1}{2}$	$55\frac{3}{4}$	56	$56\frac{1}{4}$	$56\frac{1}{2}$	$56\frac{3}{4}$	57	$57\frac{1}{4}$	$57\frac{1}{2}$	$57\frac{3}{4}$	58	$58\frac{1}{4}$	$58\frac{1}{2}$	$58\frac{3}{4}$	59	$59\frac{1}{4}$	$59\frac{1}{2}$	$59\frac{3}{4}$	60	$60\frac{1}{4}$	$60\frac{1}{2}$	$60\frac{3}{4}$	61	$61\frac{1}{4}$	$61\frac{1}{2}$	$61\frac{3}{4}$	62	$62\frac{1}{4}$	$62\frac{1}{2}$	$62\frac{3}{4}$	63	$63\frac{1}{4}$	$63\frac{1}{2}$	$63\frac{3}{4}$	64	$64\frac{1}{4}$	$64\frac{1}{2}$	$64\frac{3}{4}$	65	$65\frac{1}{4}$	$65\frac{1}{2}$	$65\frac{3}{4}$	66	$66\frac{1}{4}$	$66\frac{1}{2}$	$66\frac{3}{4}$	67	$67\frac{1}{4}$	$67\frac{1}{2}$	$67\frac{3}{4}$	68	$68\frac{1}{4}$	$68\frac{1}{2}$	$68\frac{3}{4}$	69	$69\frac{1}{4}$	$69\frac{1}{2}$	$69\frac{3}{4}$	70	$70\frac{1}{4}$	$70\frac{1}{2}$	$70\frac{3}{4}$	71	$71\frac{1}{4}$	$71\frac{1}{2}$	$71\frac{3}{4}$	72	$72\frac{1}{4}$	$72\frac{1}{2}$	$72\frac{3}{4}$	73	$73\frac{1}{4}$	$73\frac{1}{2}$	$73\frac{3}{4}$	74	$74\frac{1}{4}$	$74\frac{1}{2}$	$74\frac{3}{4}$	75	$75\frac{1}{4}$	$75\frac{1}{2}$	$75\frac{3}{4}$	76	$76\frac{1}{4}$	$76\frac{1}{2}$	$76\frac{3}{4}$	77	$77\frac{1}{4}$	$77\frac{1}{2}$	$77\frac{3}{4}$	78	$78\frac{1}{4}$	$78\frac{1}{2}$	$78\frac{3}{4}$	79	$79\frac{1}{4}$	$79\frac{1}{2}$	$79\frac{3}{4}$	80	$80\frac{1}{4}$	$80\frac{1}{2}$	$80\frac{3}{4}$	81	$81\frac{1}{4}$	$81\frac{1}{2}$	$81\frac{3}{4}$	82	$82\frac{1}{4}$	$82\frac{1}{2}$	$82\frac{3}{4}$	83	$83\frac{1}{4}$	$83\frac{1}{2}$	$83\frac{3}{4}$	84	$84\frac{1}{4}$	$84\frac{1}{2}$	$84\frac{3}{4}$	85	$85\frac{1}{4}$	$85\frac{1}{2}$	$85\frac{3}{4}$	86	$86\frac{1}{4}$	$86\frac{1}{2}$	$86\frac{3}{4}$	87	$87\frac{1}{4}$	$87\frac{1}{2}$	$87\frac{3}{4}$	88	$88\frac{1}{4}$	$88\frac{1}{2}$	$88\frac{3}{4}$	89	$89\frac{1}{4}$	$89\frac{1}{2}$	$89\frac{3}{4}$	90	$90\frac{1}{4}$	$90\frac{1}{2}$	$90\frac{3}{4}$	91	$91\frac{1}{4}$	$91\frac{1}{2}$	$91\frac{3}{4}$	92	$92\frac{1}{4}$	$92\frac{1}{2}$	$92\frac{3}{4}$	93	$93\frac{1}{4}$	$93\frac{1}{2}$	$93\frac{3}{4}$	94	$94\frac{1}{4}$	$94\frac{1}{2}$	$94\frac{3}{4}$	95	$95\frac{1}{4}$	$95\frac{1}{2}$	$95\frac{3}{4}$	96	$96\frac{1}{4}$	$96\frac{1}{2}$	$96\frac{3}{4}$	97	$97\frac{1}{4}$	$97\frac{1}{2}$	$97\frac{3}{4}$	98	$98\frac{1}{4}$	$98\frac{1}{2}$	$98\frac{3}{4}$	99	$99\frac{1}{4}$	$99\frac{1}{2}$	$99\frac{3}{4}$	100	$100\frac{1}{4}$	$100\frac{1}{2}$	$100\frac{3}{4}$	101	$101\frac{1}{4}$	$101\frac{1}{2}$	$101\frac{3}{4}$	102	$102\frac{1}{4}$	$102\frac{1}{2}$	$102\frac{3}{4}$	103	$103\frac{1}{4}$	$103\frac{1}{2}$	$103\frac{3}{4}$	104	$104\frac{1}{4}$	$104\frac{1}{2}$	$104\frac{3}{4}$	105	$105\frac{1}{4}$	$105\frac{1}{2}$	$105\frac{3}{4}$	106	$106\frac{1}{4}$	$106\frac{1}{2}$	$106\frac{3}{4}$	107	$107\frac{1}{4}$	$107\frac{1}{2}$	$107\frac{3}{4}$	108	$108\frac{1}{4}$	$108\frac{1}{2}$	$108\frac{3}{4}$	109	$109\frac{1}{4}$	$109\frac{1}{2}$	$109\frac{3}{4}$	110	$110\frac{1}{4}$	$110\frac{1}{2}$	$110\frac{3}{4}$	111	$111\frac{1}{4}$	$111\frac{1}{2}$	$111\frac{3}{4}$	112	$112\frac{1}{4}$	$112\frac{1}{2}$	$112\frac{3}{4}$	113	$113\frac{1}{4}$	$113\frac{1}{2}$	$113\frac{3}{4}$	114	$114\frac{1}{4}$	$114\frac{1}{2}$	$114\frac{3}{4}$	115	$115\frac{1}{4}$	$115\frac{1}{2}$	$115\frac{3}{4}$	116	$116\frac{1}{4}$	$116\frac{1}{2}$	$116\frac{3}{4}$	117	$117\frac{1}{4}$	$117\frac{1}{2}$	$117\frac{3}{4}$	118	$118\frac{1}{4}$	$118\frac{1}{2}$	$118\frac{3}{4}$	119	$119\frac{1}{4}$	$119\frac{1}{2}$	$119\frac{3}{4}$	120	$120\frac{1}{4}$	$120\frac{1}{2}$	$120\frac{3}{4}$	121	$121\frac{1}{4}$	$121\frac{1}{2}$	$121\frac{3}{4}$	122	$122\frac{1}{4}$	$122\frac{1}{2}$	$122\frac{3}{4}$	123	$123\frac{1}{4}$	$123\frac{1}{2}$	$123\frac{3}{4}$	124	$124\frac{1}{4}$	$124\frac{1}{2}$	$124\frac{3}{4}$	125	$125\frac{1}{4}$	$125\frac{1}{2}$	$125\frac{3}{4}$	126	$126\frac{1}{4}$	$126\frac{1}{2}$	$126\frac{3}{4}$	127	$127\frac{1}{4}$	$127\frac{1}{2}$	$127\frac{3}{4}$	128	$128\frac{1}{4}$	$128\frac{1}{2}$	$128\frac{3}{4}$	129	$129\frac{1}{4}$	$129\frac{1}{2}$	$129\frac{3}{4}$	130	$130\frac{1}{4}$	$130\frac{1}{2}$	$130\frac{3}{4}$	131	$131\frac{1}{4}$	$131\frac{1}{2}$	$131\frac{3}{4}$	132	$132\frac{1}{4}$	$132\frac{1}{2}$	$132\frac{3}{4}$	133	$133\frac{1}{4}$	$133\frac{1}{2}$	$133\frac{3}{4}$	134	$134\frac{1}{4}$	$134\frac{1}{2}$	$134\frac{3}{4}$	135	$135\frac{1}{4}$	$135\frac{1}{2}$	$135\frac{3}{4}$	136	$136\frac{1}{4}$	$136\frac{1}{2}$	$136\frac{3}{4}$	137	$137\frac{1}{4}$	$137\frac{1}{2}$	$137\frac{3}{4}$	138	$138\frac{1}{4}$	$138\frac{1}{2}$	$138\frac{3}{4}$	139	$139\frac{1}{4}$	$139\frac{1}{2}$	$139\frac{3}{4}$	140	$140\frac{1}{4}$	$140\frac{1}{2}$	$140\frac{3}{4}$	141	$141\frac{1}{4}$	$141\frac{1}{2}$	$141\frac{3}{4}$	142	$142\frac{1}{4}$	$142\frac{1}{2}$	$142\frac{3}{4}$	143	$143\frac{1}{4}$	$143\frac{1}{2}$	$143\frac{3}{4}$	144	$144\frac{1}{4}$	$144\frac{1}{2}$	$144\frac{3}{4}$	145	$145\frac{1}{4}$	$145\frac{1}{2}$	$145\frac{3}{4}$	146	$146\frac{1}{4}$	$146\frac{1}{2}$	$146\frac{3}{4}$	147	$147\frac{1}{4}$	$147\frac{1}{2}$	$147\frac{3}{4}$	148	$148\frac{1}{4}$	$148\frac{1}{2}$	$148\frac{3}{4}$	149	$149\frac{1}{4}$	$149\frac{1}{2}$	$149\frac{3}{4}$	150	$150\frac{1}{4}$	$150\frac{1}{2}$	$150\frac{3}{4}$	151	$151\frac{1}{4}$	$151\frac{1}{2}$	$151\frac{3}{4}$	152	$152\frac{1}{4}$	$152\frac{1}{2}$	$152\frac{3}{4}$	153	$153\frac{1}{4}$	$153\frac{1}{2}$	$153\frac{3}{4}$	154	$154\frac{1}{4}$	$154\frac{1}{2}$	$154\frac{3}{4}$	155	$155\frac{1}{4}$	$155\frac{1}{2}$	$155\frac{3}{4}$	156	$156\frac{1}{4}$	$156\frac{1}{2}$	$156\frac{3}{4}$	157	$157\frac{1}{4}$	$157\frac{1}{2}$	$157\frac{3}{4}$	158	$158\frac{1}{4}$	$158\frac{1}{2}$	$158\frac{3}{4}$	159	$159\frac{1}{4}$	$159\frac{1}{2}$	$159\frac{3}{4}$	160	$160\frac{1}{4}$	$160\frac{1}{2}$	$160\frac{3}{4}$	161	$161\frac{1}{4}$	$161\frac{1}{2}$	$161\frac{3}{4}$	162	$162\frac{1}{4}$	$162\frac{1}{2}$	$162\frac{3}{4}$	163	$163\frac{1}{4}$	$163\frac{1}{2}$	$163\frac{3}{4}$	164	$164\frac{1}{4}$	$164\frac{1}{2}$	$164\frac{3}{4}$	165	$165\frac{1}{4}$	$165\frac{1}{2}$	$165\frac{3}{4}$	166	$166\frac{1}{4}$	$166\frac{1}{2}$	$166\frac{3}{4}$	167	$167\frac{1}{4}$	$167\frac{1}{2}$	$167\frac{3}{4}$	168	$168\frac{1}{4}$	$168\frac{1}{2}$	$168\frac{3}{4}$	169	$169\frac{1}{4}$	$169\frac{1}{2}$	$169\frac{3}{4}$	170	$170\frac{1}{4}$	$170\frac{1}{2}$	$170\frac{3}{4}$	171	$171\frac{1}{4}$	$171\frac{1}{2}$	$171\frac{3}{4}$	172	$172\frac{1}{4}$	$172\frac{1}{2}$	$172\frac{3}{4}$	173	$173\frac{1}{4}$	$173\frac{1}{2}$	$173\frac{3}{4}$	174	$174\frac{1}{4}$	$174\frac{1}{2}$	$174\frac{3}{4}$	175	$175\frac{1}{4}$	$175\frac{1}{2}$	$175\frac{3}{4}$	176	$176\frac{1}{4}$	$176\frac{1}{2}$	$176\frac{3}{4}$	177	$177\frac{1}{4}$	$177\frac{1}{2}$	$177\frac{3}{4}$	178	$178\frac{1}{4}$	$178\frac{1}{2}$	$178\frac{3}{4}$	179	$179\frac{1}{4}$	$179\frac{1}{2}$	$179\frac{3}{4}$	180	$180\frac{1}{4}$	$180\frac{1}{2}$	$180\frac{3}{4}$	181	$181\frac{1}{4}$	$181\frac{1}{2}$	$181\frac{3}{4}$	182	$182\frac{1}{4}$	$182\frac{1}{2}$	$182\frac{3}{4}$	183	$183\frac{1}{4}$	$183\frac{1}{2}$	$183\frac{3}{4}$	184	$184\frac{1}{4}$	$184\frac{1}{2}$	$184\frac{3}{4}$	185	$185\frac{1}{4}$	$185\frac{1}{2}$	$185\frac{3}{4}$	186	$186\frac{1}{4}$	$186\frac{1}{2}$	$186\frac{3}{4}$	187	$187\frac{1}{4}$	$187\frac{1}{2}$	$187\frac{3}{4}$	188	$188\frac{1}{4}$	$188\frac{1}{2}$	$188\frac{3}{4}$	189	$189\frac{1}{4}$	$189\frac{1}{2}$	$189\frac{3}{4}$	190	<
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Tool Steel

Champion, Non-Changeable

A high-grade oil-hardening steel, which remains practically unchanged in shape and dimensions in the hardening process. Suitable for the satisfactory production of intricate dies, gauges and similar tools, in which absolute accuracy of dimension is of prime importance. The tendency to crack has also been minimized. It is furnished so thoroughly annealed that it is readily machined in an automatic, and being an alloy steel, its cutting qualities are much superior to those of a straight carbon steel.

The results attained through the use of this steel, when used for forming tools, dies, gauges, cutters, taps, reamers and other intricate tools, where accuracy, endurance and cutting qualities are essential, have been most satisfactory in every respect.

Black Diamond Hollow Drill

Made in round and hexagon, with holes running clear through. The holes are practically in the center of the bars, are uniform in size and have a clean, smooth inside finish. The steel has no tendency to crack around the hole in the working end of the drill. Made specially for the manufacture of drills where it is desired to use lubricant or water at the actual working point.

Crescent Special Polished Drill Rods

Round

These Rods are made of Crescent Special Carbon Tool Steel, as described on preceding page, and are recommended for small **fine tools**, where satisfactory and enduring results are desired.

For taps, reamers, punches, twist drills, dental tools, watch parts, electrical work, etc. Regular lengths 1 foot and 3 feet.

Stubs Steel Wire Gauge														
Size, in decimals of an inch.....	1.5	1.4843	1.4687	1.4531	1.4375	1.4218	1.4062	1.3906	1.375	1.3593	1.3437	1.3281	1.3125	1.2968
Nearest size in fractions of inches.....	1½	1¼	1⅓	1⅔	1⅕	1⅔	1½	1⅔	1⅓	1¼	1⅓	1¼	1⅕	1⅔
Price per pound.....	\$.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
Size in decimals of an inch.....	1.2812	1.2656	1.250	1.2343	1.2187	1.2031	1.1875	1.1718	1.1562	1.1406	1.125	1.1093	1.093	1.078
Nearest size in fractions of inches.....	1⅝	1⅔	1¼	1⅓	1⅔	1⅔	1⅕	1⅓	1⅕	1⅔	1¼	1⅕	1⅓	1⅔
Price per pound.....	\$.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
Size in decimals of an inch.....	1.062	1.046	1.031	1.015	1	.984	.969	.953	.937	.921	.906	.89	.875	.859
Nearest size in fractions of inches.....	1⅕	1⅔	1⅓	1⅔	1	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞
Price per pound.....	\$.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
Size in decimals of an inch.....	.844	.828	.812	.796	.781	.765	.75	.734	.719	.703	.687	.671	.656	.64
Nearest size in fractions of an inch.....	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞
Price per pound.....	\$.50	.50	.50	.50	.50	.50	.55	.55	.55	.55	.55	.55	.55	.55
Size.....								Z		Y	X		W	V
Size in decimals of an inch.....	.562	.546	.531	.515	.5	.484	.469	.453	.437	.425	.421	.413	.406	.404
Nearest size in fractions of an inch.....	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Price per pound.....	\$.55	.55	.55	.55	.60	.60	.60	.60	.60	.75	.75	.75	.75	.75
Size.....	T	S		R	Q		P	O		N		M	L	K
Size in decimals of an inch.....	.358	.348	.344	.339	.332	.328	.323	.316	.312	.302	.297	.295	.29	.281
Nearest size in fractions of an inch.....	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Price per pound.....	\$.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75
Size.....		D	C	B	A	1	2	3	4	5		6	7	8
Size in decimals of an inch.....		.246	.242	.238	.234	.227	.219	.212	.207	.204	.203	.201	.199	.197
Nearest size in fractions of an inch.....		⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Price per pound.....		\$.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75
Size.....	15	16	17	18	19	20	21	...	22	23	24	25	26	27
Size in decimals of an inch.....	.178	.175	.172	.168	.164	.161	.157	.156	.155	.153	.151	.148	.146	.143
Size in fractions of an inch.....		⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Price per pound.....	\$.75	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83
Size.....	32	33	34	...	35	36	37	38	39	40	41	...	42	43
Size in decimals of an inch.....	.115	.112	.110	.109	.108	.106	.103	.101	.099	.097	.095	.094	.092	.088
Size in fractions of an inch.....		⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Price per pound.....	\$.90	.90	.90	.90	.90	.90	.90	.90	1.05	1.05	1.05	1.05	1.05	1.05
Size.....	49	50	51	52	...	53	54	55	...	56	57	58	59	60
Size in decimals of an inch.....	.072	.069	.066	.063	.0625	.058	.055	.05	.0468	.045	.042	.041	.04	.039
Size in fractions of an inch.....		⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Price per pound.....	\$1.20	1.20	1.45	1.45	1.45	1.45	1.45	1.80	1.80	1.80	1.80	2.10	2.10	2.10
Size.....		67	68	69	70		71	72	73	74		75	76	77
Size in decimals of an inch.....		.031	.030	.029	.027		.026	.024	.023	.022		.020	.018	.016
Size in fractions of an inch.....		⅝	⅝	⅝	⅝		⅝	⅝	⅝	⅝		⅝	⅝	⅝
Price per pound.....		\$3.00	3.00	3.30	3.30		3.60	3.60	3.60	3.90		4.05	4.20	4.50

Square

Size in decimals of an inch.....	.5	.4687	.4375	.4062	.375		.344	.3125	.281	.25	.219	.1875	.156	.125
Size in fractions of an inch.....	½	⅞	⅞	⅞	⅞		⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞
Price per pound.....	\$1.60	1.60	1.60	1.60	1.60		1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60

For list of Tool Steel Classification Extras, see page 724

Tool Steel Classification Extras

Applying to all grades of American made tool steel. All dimensions are inclusive and intermediate sizes take the next higher extra.

Round, Square and Octagon

Base sizes are $\frac{5}{8}$ inch to 2 inches. Following sizes are extra in round square and octagon shapes.

Inches	Extra Per Pound	Inches	Extra Per Pound	Inches	Extra Per Pound	Inches	Extra Per Pound
$\frac{5}{8}$ to 2	Base	$\frac{9}{16}$ to $\frac{1}{2}$	\$.00 $\frac{1}{2}$	$5\frac{1}{8}$ to 6	.02 $\frac{1}{2}$	$\frac{3}{16}$	.05
$2\frac{1}{8}$ to 3	\$.01	$\frac{1}{16}$ to $\frac{3}{8}$	.01	$6\frac{1}{8}$ to 7	.03	$\frac{3}{8}$	.10
$3\frac{1}{8}$ to 4	.01 $\frac{1}{2}$	$\frac{1}{8}$ to $\frac{11}{32}$	.02	$7\frac{1}{8}$ to 8	.03 $\frac{1}{2}$	$\frac{7}{8}$	.18
$4\frac{1}{8}$ to 5	.02	$\frac{1}{4}$ to $\frac{9}{32}$	.03				

Flat

Base sizes are $\frac{5}{8}$ inch to 2 inches thick by $\frac{1}{8}$ inch to 2 inches wide. Following sizes are extra in flat shapes.

Inches	Extra Per Pound	Inches	Extra Per Pound	Inches	Extra Per Pound
$\frac{1}{8}$ x $\frac{3}{16}$	\$.20	$\frac{3}{16}$ x $7\frac{1}{4}$ to 8	\$.02	$\frac{1}{16}$ to 2x $\frac{5}{8}$ to 2	Base
$\frac{1}{8}$ x $\frac{1}{4}$	.15	$\frac{1}{4}$ x $\frac{1}{16}$ to $\frac{3}{8}$	.02	$\frac{3}{8}$ to 2x $2\frac{1}{8}$ to 7	\$.01
$\frac{1}{8}$ x $\frac{5}{16}$	.08	$\frac{1}{4}$ x $\frac{1}{8}$ to $\frac{5}{8}$	.01 $\frac{1}{2}$	$\frac{3}{8}$ to $1\frac{3}{4}$ x $7\frac{1}{4}$ to 8	.01
$\frac{1}{8}$ x $\frac{3}{8}$	.04	$\frac{1}{4}$ x $\frac{1}{2}$ to $\frac{7}{8}$	.01 $\frac{1}{2}$	$1\frac{1}{8}$ to 2x $7\frac{1}{4}$ to 8	.01 $\frac{1}{2}$
$\frac{1}{8}$ x $\frac{1}{2}$ to $1\frac{1}{2}$	.03	$\frac{1}{4}$ x $\frac{3}{4}$ to 2	.01	$2\frac{1}{8}$ to 3x $2\frac{1}{8}$ to 5	.01
$\frac{1}{8}$ x $\frac{3}{4}$ to 7	.02	$\frac{1}{4}$ x $2\frac{1}{8}$ to 7	.02	$2\frac{1}{8}$ to 3x $5\frac{1}{8}$ to 8	.01 $\frac{1}{2}$
$\frac{1}{8}$ x $\frac{7}{8}$ to 8	.03	$\frac{1}{4}$ x $7\frac{1}{8}$ to 8	.01 $\frac{1}{2}$	$3\frac{1}{8}$ to 4x $3\frac{1}{8}$ to 6	.01 $\frac{1}{2}$
$\frac{1}{16}$ x $\frac{1}{4}$	.05	$\frac{1}{8}$ x $\frac{3}{8}$ to $\frac{9}{8}$	.01	$3\frac{1}{8}$ to 4x $6\frac{1}{8}$ to 8	.02
$\frac{1}{16}$ x $\frac{5}{16}$	.04	$\frac{1}{8}$ x $\frac{1}{2}$ to 8	.01	$4\frac{1}{8}$ to 5x $4\frac{1}{8}$ to 7	.02
$\frac{1}{16}$ x $\frac{3}{8}$	.03	$\frac{1}{8}$ x $\frac{3}{4}$ to 8	.01	$4\frac{1}{8}$ to 5x $7\frac{1}{8}$ to 8	.02 $\frac{1}{2}$
$\frac{1}{16}$ x $\frac{1}{2}$ to $\frac{5}{8}$	.02	$\frac{1}{8}$ x $1\frac{1}{2}$ to 8	.01	$5\frac{1}{8}$ to 6x $5\frac{1}{8}$ to 8	.02 $\frac{1}{2}$
$\frac{1}{16}$ x $\frac{3}{4}$ to 2	.01 $\frac{1}{2}$	$\frac{1}{8}$ x $2\frac{1}{8}$ to 8	.01	$6\frac{1}{8}$ to 7x $6\frac{1}{8}$ to 7	.03
$\frac{1}{16}$ x $2\frac{1}{8}$ to 7	.01	$\frac{1}{2}$ x $\frac{1}{16}$ to 8	.01	$6\frac{1}{8}$ to 8x $7\frac{1}{8}$ to 8	.03 $\frac{1}{2}$

Cutting to specified single and multiple lengths.

24 inches or over, pound.....	\$.00 $\frac{1}{2}$	18 to 24 inches, pound.....	\$.01
12 to 18 inches, pound.....	.01 $\frac{1}{2}$	6 to 12 inches, pound.....	.02

Less than 6 inches or over 18 feet, at special price.

Tool Steel

Round Bright



In 13-Inch Lengths

Numbers.....	1-5	6-15	16-30	31-38	39-46	47-50	51-54	55-57	58-60
Pound.....	\$1.10	1.10	1.25	1.35	1.55	1.80	2.10	2.60	3.00

In 3-Foot Lengths

$\frac{1}{8}$ and $\frac{3}{8}$ -inch diameter, pound.....	\$1.10
$\frac{1}{16}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$ or $\frac{1}{2}$ -inch.....	1.10

Stubs

Square Black



In 3-Foot Lengths

Inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Pound.....	\$.75	.66	.60	.60	.42	.42	.42

Octagon Black



In 3-Foot Lengths

Inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
Pound.....	\$.84	.66	.42	.42	.42	.42

Jessop

We can furnish all grades and sizes of Jessop tool steel, including self-hardening cast, annealed, etc. Prices will be quoted upon receipt of quantity specifications.

Bessemer Steel Rod

Straightened and Cut in 6-Foot Lengths

Bright

	100 Pound Lots	10 Pound Lots
$\frac{1}{8}$ -inch diameter, pound.....	\$.04	\$.05
$\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$ or $\frac{1}{2}$ -inch diameter, pound.....	.03 $\frac{3}{4}$	.04 $\frac{3}{4}$

Coppered

	100 Pound Lots	10 Pound Lots
$\frac{1}{8}$ -inch diameter,.....	\$.04 $\frac{1}{2}$	.06
$\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$ or $\frac{1}{2}$ -inch diameter, pound.....	.04	.05

Threaded Rods

Iron and Brass

Threads	Lengths	List Per 100 feet	
		Iron	Brass
6-32	1 foot	\$3.50	\$5.00
8-32	1 foot	3.75	5.50
10-32	1 foot	4.00	7.00
10-24	1 foot	4.00	7.00
12-24	2 feet	5.00	8.50
14-20	2 feet	6.00	10.00
14-24	2 feet	6.00	10.00
$\frac{1}{4}$ -20	2 feet	6.00	10.00
$\frac{1}{2}$ -18	2 feet	7.50	18.00

Brass and Commercial Bronze Rods

Prices are for 100 pounds or more per item in one order. Brown & Sharpe Gauge. Base prices and discounts from extras quoted upon application.

List Extras Over Base Prices, Cents per Pound

Size	No. 11 (.0907) to $\frac{1}{8}$ inch	Inc. $\frac{1}{8}$ inch to $\frac{1}{4}$ inch	Inc. $\frac{1}{4}$ inch to $\frac{3}{8}$ inch	Inc. $\frac{3}{8}$ inch to 2 inches
Round.....	6 $\frac{1}{2}$	2	1 $\frac{1}{2}$	Base
Hexagon, Octagon and Square	9	4 $\frac{1}{2}$	3	2
Rectangular and Half Round	11	6 $\frac{1}{2}$	5	4

Sizes larger than 2 inches, special prices quoted upon application. Prices of Rectangular and Half Round are governed by the thinner dimension. Special Shaped Rods other than listed above, prices quoted upon application, not less than price of Rectangular and Half Round.

Rods cut to uniform specific lengths, add the following list advances:

Inc. 1 inch to 2 inches.....	12 cents	Inc. 9 inches to 12 inches.....	3 cents
Inc. 2 inches to 4 inches.....	8 cents	Inc. 12 inches to 24 inches.....	2 cents
Inc. 4 inches to 6 inches.....	5 cents	2 feet and over.....	1 cent
Inc. 6 inches to 9 inches.....	4 cents		

Shorter than 1 inch, special prices quoted upon application, not less than 12 cents list advance.

For sizes smaller than No. 11, consult Wire List.

Standard Lengths

When ordered in 12-foot lengths, no lengths less than 8 feet.
When ordered in 10-foot lengths, no lengths less than 6 feet.
When ordered in 8-foot lengths, no lengths less than 6 feet.
When ordered in 6-foot lengths, no lengths less than 4 feet.

This applies to all rods up to and including 1 inch diameter or thickness, whether round, rectangular, square or hexagonal. Above 1 inch, to and including 2 inches, the lengths will be random lengths from 4 feet to 10 feet. Above 2 inches, the lengths are special, but no length will be less than 4 feet.

Soft Sheet Copper

Hot Rolled

The longest dimension of any sheet shall be considered its length

Net Extras Over Base

Sizes of Sheets		64 oz. and over	32 oz. to 64 oz.	24 oz. to 32 oz.	16 oz. to 24 oz.	15 oz.	14 oz.	13 oz.	12 oz.	11 oz.	10 oz.	9 oz.	8 oz.	Lighter than 8 oz.
Widths	Lengths	Cents per pound				Cents per pound over base								
Not wider than 30 ins.	Not longer than 72 inches.....	Base	Base	Base	Base	½	1	1½	2	2½	3	4½	6	9
	Longer than 72 inches; not longer than 96 inches.....	Base	Base	Base	Base	½	1	2	3	4½	6	7½	9	
	Longer than 96 inches; not longer than 120 inches.....	Base	Base	½	1	2	3	5	7					
	Longer than 120 inches.....	Base	Base	1	1½									
Wider than 30 ins. but not wider than 36 ins.	Not longer than 72 inches.....	Base	Base	Base	Base	1	2	3	4	6	8	10	12	
	Longer than 72 inches; not longer than 96 inches.....	Base	Base	Base	Base	1	2	4	6	8	10			
	Longer than 96 inches; not longer than 120 inches.....	Base	Base	1	2	3	4							
	Longer than 120 inches.....	Base	1	2	3									
Wider than 36 ins. but not wider than 48 ins.	Not longer than 72 inches.....	Base	Base	1	2	3	4	6	8	9	11			
	Longer than 72 inches; not longer than 96 inches.....	Base	Base	1	3	4	5	7	9					
	Longer than 96 inches; not longer than 120 inches.....	Base	Base	2	4	6	9							
	Longer than 120 inches.....	Base	1	3	6									
Wider than 48 ins. but not wider than 60 ins.	Not longer than 72 inches.....	Base	Base	1	3	5	7	9	11					
	Longer than 72 inches; not longer than 96 inches.....	Base	Base	2	4	7	10							
	Longer than 96 inches; not longer than 120 inches.....	Base	1	3	6									
	Longer than 120 inches.....	1	2	4	8									
Wider than 60 ins. but not wider than 72 ins.	Not longer than 96 inches.....	Base	1	3	8									
	Longer than 96 inches; not longer than 120 inches.....	Base	2	5	10									
	Longer than 120 inches.....	1	3	8										
Wider than 72 ins. but not wider than 108 ins.	Not longer than 96 inches.....	1	3	6										
	Longer than 96 inches; not longer than 120 inches.....	2	4	7										
	Longer than 120 inches.....	3	5	9										
Wider than 108 ins. but not wider than 120 ins.	Not longer than 120 inches.....	4	6											
	Longer than 120 inches.....	5	8											
Wider than 120 ins. but not wider than 132 ins.	Not longer than 132.....	6	9											
	Longer than 132 inches.....	7												
Wider than 132 ins.		8												

Base price quoted on application

Roll and Sheet Brass and Commercial Bronze

Prices are for 100 pounds or more per item in one order. Base prices and discounts from extras quoted on application.

List Extras Over Base Prices, Cents per Pound

Wider than, inches.....	2	10	12	14	16	18	20	22	24	26	28	30	32	34	36
Up to and including, inches.....	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
No. 20 (.0319 inch) and thicker.....	Base	1/2	2	3	5	7	9	11	14	17	20	24	28	33	38
21 .0284	Base	1	2 1/2	4	6	8	10	12	15	18	21	25	29	34	39
22 .0253	Base	1	2 1/2	4	6	8	10	12	15	18	21	25	29	34	39
23 .0225	Base	1	2 1/2	4	6	8	10	12	15	18	21	25	29	34	39
24 .0201	Base	1	2 1/2	4	6	8	10	12	15	18	21	25	29	34	39
Brown & Sharpe	25 .0179	1	2	3 1/2	5	7	9	11	13	16	19	22			
Gauge	26 .0159	1	2	3 1/2	5	7	9	11	13	16	19	22			
	27 .0142	1	2 1/2	4	6	8	10	12	14	17					
	28 .0126	1	2 1/2	4	6	8	10	12	14	17					
(Second column is	29 .0112	1 1/2	3	4 1/2	6 1/2	8 1/2	10 1/2	12 1/2							
Decimal Equivalent	30 .0100	2	3 1/2	5	7	9	11	13							
of an Inch)	31 .0089	2 1/2	4	5 1/2	7 1/2										
	32 .0079	3	4 1/2	6	8										
	33 .0071	4	5 1/2	7											
	34 .0063	5	6 1/2	8											
	35 .0056	6 1/2	8												
	36 .0050	8	9 1/2												

Sheet Metal thinner or wider than listed above, special prices quoted upon application.

All Metal heavier than No. 4 Gauge, listed and charged as Sawed Metal whether sheared, slit, or sawed.

Metal between gauges takes price of nearest gauge.

Circles cut from above metal, over 6 inches and not exceeding 12 inches diameter, No. 10 gauge and thinner.....6 cents list advance

Circles cut from above metal, over 6 inches and not exceeding 12 inches diameter, thicker than No. 10 gauge.....10 cents list advance

Circles cut from above metal, 6 inches and smaller, and larger than 12 inches diameter, special prices quoted upon application.

Segments, Pattern Sheets and Irregular Shape Blanks, special prices quoted upon application.

Embossed Metal.....4 cents list advance

Polished Sheets from above metal, special prices quoted upon application.

Sheet Metal over 2 inches but not wider than 14 inches, cut to uniform specific lengths, add the following list advances:

Shorter than 12 inches.....Special prices, not less than 1 cent

1 foot to 4 feet inclusive.....1 cent

4 feet to 6 feet inclusive.....2 cents

6 feet to 8 feet inclusive.....4 cents

8 feet to 10 feet inclusive.....6 cents

10 feet and over.....Special prices, not less than 6 cents

Sheet Metal wider than 14 inches cut to uniform specific lengths, special prices quoted upon application, not less than the prices for cutting metal 14 inches wide.

For Standard Lengths, see next page.

Extras For Slitting

Brown & Sharpe Gauge. Discounts from extras quoted upon application.

List Extras Over Price of Sheet Metal of Corresponding Gauge, Cents per Pound

Slitting Metal from.....	No. 4 (.2043)	No. 16 (.0508)	No. 20 (.0319)	No. 29 (.0112)	No. 33 (.0071)
To and including.....	No. 15 (.5070)	No. 19 (.0358)	No. 28 (.0126)	No. 32 (.0079)	and thinner
Over 1/2 inch to 2 inches wide, inclusive.....	1	1	1	1 1/2	3
Over 1/4 inch to 1/2 inch wide, inclusive.....		2	2	3	6
1/4 inch wide and narrower.....			6	12	18

List Extras for Cutting Slit Metal to Uniform Specific Lengths, Cents per Pound

Width	Length	Inc. No. 20 (.0319) and thicker	Inc. No. 21 (.0284) Inc. No. 25 (.0179)	Inc. No. 26 (.0159) Inc. No. 30 (.0100)	Inc. No. 31 (.0089) Inc. No. 35 (.0056)	Inc. No. 36 (.0050) Inc. No. 38 (.0039)
Over 1/2 inch to 2 inches, inclusive	Inc. 2 to 6 feet..	2	3	4	6	10
	Inc. 6 to 8 feet..	4	5	6	8	12
	Inc. 8 to 10 feet..	6	7	8	10	14
Over 1/4 inch to 1/2 inch inclusive	Inc. 2 to 6 feet..	4	5	7	10	20
	Inc. 6 to 8 feet..	6	7	9	12	22
	Inc. 8 to 10 feet..	8	9	11	14	24

For cutting Slit Metal to length, other than noted above, special prices quoted upon application.

No Slit Metal thinner than No. 20 Gauge, 2 inches wide and narrower, furnished in flat random lengths, without the extra charge for cutting as shown above.

Drawn Strip, above price of Slit Metal, 4 cents list advance. Drawn Strip is metal drawn through dies, wider than 3/4 inch to 2 inches inclusive, thinner than 1/8 inch but not thinner than No. 20 B. & S. Gauge.

Extras For Sawing

Brown & Sharpe Gauge. Discounts from extras quoted upon application.

List Extras Over Price of Sheet Metal of Corresponding Width, Cents per Pound

	Cents per Pound		Cents per Pound
Over 6 inches, up to and including 40 inches.....	\$.02	Sawed Metal cut to uniform specific lengths, add the following list advances:	
Over 3 inches, up to and including 6 inches.....	.03	Inclusive, 1 inch to 2 inches.....	\$.12
Over 1 inch, up to and including 3 inches.....	.04	Inclusive, 2 inches to 4 inches.....	.10
Over 1/2 inch, up to and including 1 inch.....	.05	Inclusive, 4 inches to 6 inches.....	.09
1/2 inch and narrower.....	.08	Inclusive, 6 inches to 9 inches.....	.08
Shorter than 1 inch, special prices quoted upon application, not less than.....	12 cents list advance	Inclusive, 9 inches to 12 inches.....	.07
10 feet and over, special prices quoted upon application, not less than.....	10 cents list advance	Inclusive, 1 foot to 2 feet.....	.06
All metal heavier than No. 4 gauge, listed and charged as Sawed Metal, whether sheared, slit or sawed.		Inclusive 2 feet to 4 feet.....	.05
		Inclusive, 4 feet to 6 feet.....	.06
		Inclusive, 6 feet to 8 feet.....	.08
		Inclusive, 8 feet to 10 feet.....	.10

See next page for information regarding ordering, etc.

Drawn Brass and Commercial Bronze Angles and Channels

Prices are for 100 pounds or more per item in one order.

Angles, plain and of one angle; Channels, plain and of three sides only; Half Round and Half Oval only.

Brown & Sharpe's Gauge. Base prices and discounts from extras quoted upon application.

List Extras Over Base Prices, Cents per Pound

Width of Widest Dimension	Nos. 8 (.1285)	Nos. 10 (.1019)	Nos. 12 (.0808)	Nos. 14 (.0640)	No. 20 (.0319)	No. 21 (.0284)	No. 22 (.0253)	No. 23 (.0225)	No. 24 (.0201)
	and 9 (.1144)	and 11 (.0907)	and 13 (.0719)	to and inc. 19 (.0358)					
Inc. $\frac{3}{8}$ inch to $\frac{1}{2}$ inch.....	10	8	6	4	6	8	10	12	16
Inc. $\frac{1}{2}$ inch to $\frac{3}{4}$ inch.....	8	6	4	2	4	5	7	9	13
Inc. $\frac{3}{4}$ inch to 1 inch, inc.....	6	4	2	Base	1	3	5	7	10
Over 1 inch to 1 $\frac{1}{2}$ inches, inc.....	8	6	4	2	3	5	7	9	12

Thicker than No. 8, narrower than $\frac{3}{8}$ inch, or wider than 1 $\frac{1}{2}$ inches, special prices quoted upon application.

Angles and Channels between gauges takes price of nearest gauge.

Mouldings and Special Shapes other than listed, prices quoted upon application.

Angles and Channels cut to uniform specific lengths, add the following list advances:

Inclusive, 1 inch to 2 inches	6 cents	Inclusive, 6 inches to 12 inches	2 cents
Inclusive, 2 inches to 4 inches	4 cents	Inclusive, 12 inches to 96 inches	No Charge
Inclusive, 4 inches to 6 inches	3 cents	96 inches and over	1 cent

Shorter than 1 inch, special prices quoted upon application, not less than 6 cents list advance.

Standard Lengths Brass and Commercial Bronze Materials

Any of the materials named above ordered cut to uniform specific lengths will be subject to an extra charge, with the following exceptions:

When the length specified is 2 feet or over, no charge will be made for cutting provided either of the following phrases is added, viz:

"With end pieces included." "With random lengths included."

No sheet metal will be cut to lengths of less than 2 feet without an additional charge for cutting, except, that when the length specified is less than 2 feet, no charge will be made for cutting provided the following phrase is added, viz:

"Or cut to any multiple thereof."

Sheets and Strips

When orders call for stock lengths such as 6 feet, 8 feet, 10 feet, etc., the pieces shipped will be cut to the stated length as a maximum, and pieces shorter than this length will be shipped according to the following schedule, the percentages stated being taken by weight in any one shipment.

When ordered in 10-foot lengths—

40 per cent. may be 8 feet or over
30 per cent. may be 6 feet to 8 feet
20 per cent. may be 4 feet to 6 feet
10 per cent. may be 2 feet to 4 feet

Not more than 40 per cent. of any one shipment will be less than 10 feet long.

When ordered in 8-foot lengths—

30 per cent. may be 6 feet or over
20 per cent. may be 4 feet to 6 feet
10 per cent. may be 2 feet to 4 feet

Not more than 30 per cent. of any one shipment will be less than 8 feet long.

When ordered in 6-foot lengths—

20 per cent. may be 4 feet or over
10 per cent. may be 2 feet to 4 feet

Not more than 20 per cent. of any one shipment will be less than 6 feet long.

The foregoing applies to Sheets and Strips in Brass, Commercial Bronze and German Silver, in all widths up to and including 14 inches wide.

Drawn Brass and Commercial Bronze Angles and Channels

When no length is specified, will be shipped in stock lengths of 10 feet to 14 feet. When ordered as 6 feet, 8 feet, or other approximate lengths, will be shipped under the same schedule as Rods (see page 724).

Sheet Zinc

Gauge number.....	5	6	7	8	9	10	11
Weight per square foot.....	.37	.45	.52	.60	.67	.75	.90
Approximate decimal equivalent.....	.010	.012	.014	.016	.018	.020	.024

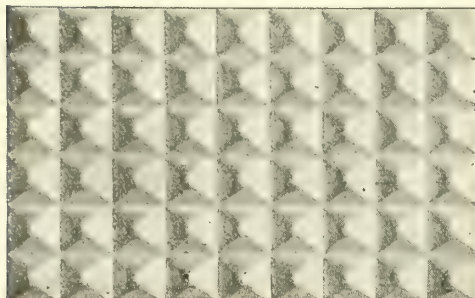
Size of Sheet Inches	Square Feet per Sheet	Approximate Weight per Sheet						
		5.2	6.3	7.3	8.4	9.4	10.5	12.6
24x84	14							
30x84	17.5	6.5	7.9	9.1	10.5	11.8	13.2	15.8
36x84	21	7.8	9.5	10.9	12.6	14.1	15.8	18.9
40x84	23.4	8.7	10.6	12.2	14.1	15.7	17.6	21
48x84	28	10.4	12.6	14.6	16.8	18.8	21	25.2

Prices on sheet zinc will be quoted upon receipt of quantity specifications. Sizes not listed can also be furnished.

Sheet Zinc in casks of about 600 pounds.

Prices upon application.

Pyramid Aluminum



This material does not rust, tarnish nor stain from the effects of oil, grease or gasoline, and it can always be restored to its original brightness by washing. It forms an excellent covering for automobile floors and running boards or for motor boat floors and all other places where there is severe wear.

In sheets, 14 inches wide and 84 inches long.

No. 20 Gauge $\frac{1}{4}$ inch squares, square foot \$.35
No. 24 Gauge $\frac{1}{8}$ inch squares, square foot28

Other sizes can be supplied on special orders.

Sheet Aluminum

99+ per cent. pure aluminum—tempered soft.

In sheets 12 x 72 inches, Brown & Sharpe Gauges 22, 24, 26 and 28.

22 or 24 Gauge, pound.....\$.50 26 Gauge, pound.....\$.52 28 Gauge, pound.....\$.55

When specially ordered, sheets, tempered half-hard, No. 16 B. & S. Gauge, made for automobile use, may be had 24, 30, 36, 40 or 48 inches wide by 144 inches long. Various gauges, tempers and sizes of sheets may be secured when specially ordered.

Sheet Tin

Standard Roof—IC Coating

Sheets 14 x 20 inches, 112 sheets in box, box..... \$6.00

Seamless Copper Tubing



Diameter is measured outside. All sizes under $\frac{3}{8}$ inch are measured according to Brown & Sharpe gauge. All sizes $\frac{3}{8}$ inch and over are measured according to Stubbs' gauge. Standard lengths are approximately 12 feet. Made soft, suitable for bending.

Diameter, inch.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Gauge.....	21	20	20	19	19	18

Prices on application.

(We stock up to $\frac{1}{2}$ -inch inclusive only, but can supply larger sizes on demand.)

Seamless Brass Tubing

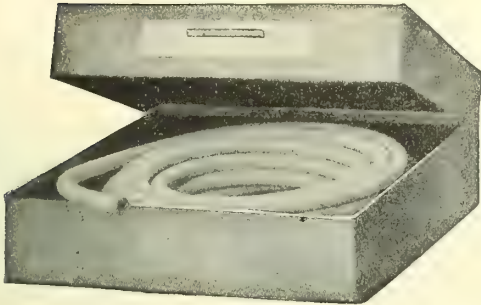
Tempered Hard



Diameter is measured outside. All sizes under $\frac{3}{8}$ inch are measured according to Brown & Sharpe gauge. All sizes $\frac{3}{8}$ inch and over are measured according to Stubbs' gauge. Standard lengths approximately 12 feet.

Diameter, inch.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
Gauge.....	21	20	20	19	19	18	18	17	16

Prices on application



Rubber Tubing

Machine-made, Plain White

Inside diameter, inch.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Thickness of wall, inch.....	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{3}{32}$	$\frac{3}{32}$
Per foot.....	\$.04 $\frac{1}{2}$.05 .06 .08 .11 $\frac{1}{2}$.16 $\frac{1}{2}$.25						

Pure Plain Red

Inside diameter $\frac{3}{16}$ inch, thickness of wall $\frac{1}{16}$ inch, per foot..... \$.12

Cloth Insertion—Red

Inside diameter $\frac{1}{2}$ inch, 3 ply, per foot28

Garden Hose

$\frac{3}{4}$ Inch—3 Ply

Spider



An old reliable brand. A good hose at moderate price. With couplings attached.

Length, feet	10	15	20	25	35	50
Per foot.....	\$.15					

Double Diamond

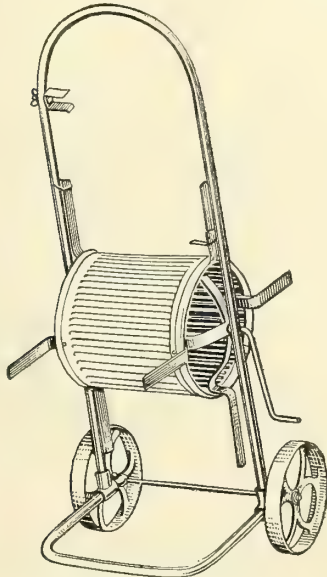


A high-quality hose; made of wrapped duck insertion and high grade rubber.

Lengths, feet	25	50
Per foot.....	\$.24	

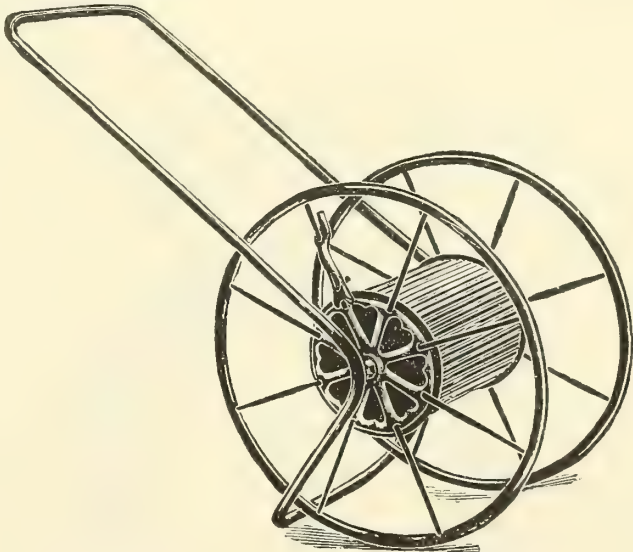
Hose Reels

All Metal, Strong Steel Tubular Frames



W. & K. No. 2 Reel is constructed entirely of metal. Best tubular steel in frame, strong, cast iron wheels 7 inches in diameter, solid steel reel arms and heavy galvanized iron drum. The drum is corrugated to allow circulation of air and prevent mildew on hose; the galvanizing insures freedom from rust; the 9-inch drum prevents injury to hose from tight winding. The reel is equipped with a crank for convenience in winding up the hose; the adjustable hose holder at top of frame holds the nozzle in any position while spraying. Frame enameled green, wheel and reel arms black, which, with the galvanized drum, makes a very attractive appearance. An exceptionally strong, serviceable reel and will outlast the best wooden reel made. Weight, 15 pounds, bundled for shipping. Capacity, 100 feet $\frac{3}{4}$ -inch rubber hose.

Each.....	\$2.00
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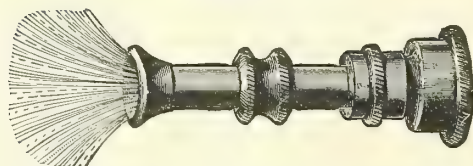


Wirt Style "B" Reels Nos. 10 and 20 are undoubtedly the best all-metal garden hose reels on the market, having features not possessed by any other type of reel. There are no exposed spokes to interfere with either reeling or unreeling the hose. They cannot tip over when unreeling, and the large rims of the wheels make the reel very easy to move about. There is no extra weight to carry, as the weight of the hose is borne upon the rims and is not carried on the handle as in other types of reels. Tubular steel rims and frame, steel spokes and malleable iron castings; corrugated galvanized drum. Neat in appearance and design. Frame and reel enameled green.

No. 10	Height of reel, 21 inches; weight, 18 pounds; capacity, 100 feet of $\frac{3}{4}$ -inch rubber hose. Each	\$3.50
No. 20	Height of reel, 24 inches; weight, 20 pounds; capacity, 150 feet of $\frac{3}{4}$ -inch rubber hose. Each	4.00

Nozzles

Gem



This nozzle is particularly adapted to general usage, the only action of the operator in changing from a solid stream to a fine mist or spray is the simple turning of the barrel.

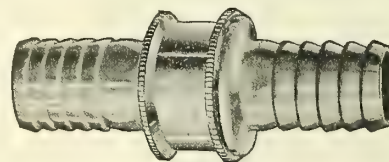
When the desired quality of stream or spray has been secured further attention is unnecessary, a feature of much value in the treatment of lawns or flower plots, when a fine spray is particularly advantageous.

This nozzle closes perfectly tight, making it unnecessary to turn off water supply at the valve when changing location of hose.

Brass finished, $\frac{3}{4}$ -inch, dozen \$6.00

Brass Hose Couplings

Sherman Finished



Being made from wrought brass, these couplings are free from sand holes and other defects. Double knurled flanges on nuts afford good grip for the hand. Full waterways, deep corrugations for imbedding into lining of hose. All seamless parts and fitted joints are other good features.

$\frac{3}{4}$ -inch size, dozen \$2.40

Brass Hose Menders

Cooper



For $\frac{3}{4}$ -inch hose, dozen \$1.50

Hose Clamps

Sherman

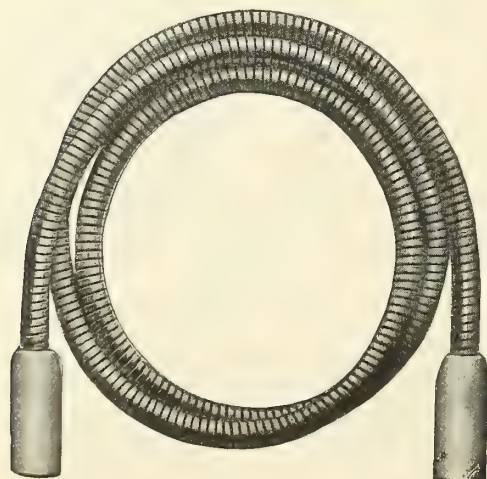


Illustration shows the clamp partly screwed together.

For $\frac{3}{4}$ -inch garden hose, dozen . . . \$.60

Metallic Gas Tubing

No. AG. 100 Rubber Packed



In lengths, feet. 4 6 8 10 12 14

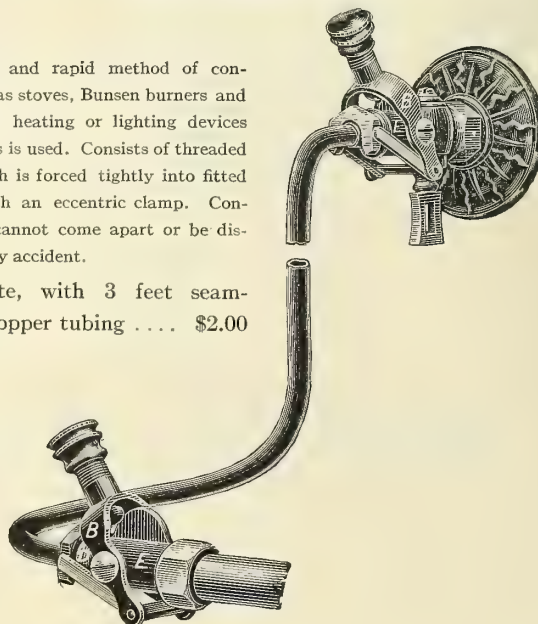
Complete with rubber ends,
dozen \$5.60 7.75 9.95 12.00 14.15 16.25

Rapid Safety Gas Connection

With Copper Tubing

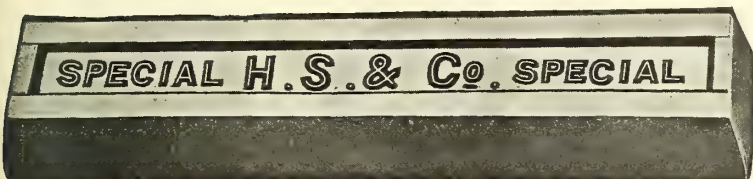
A safe and rapid method of connecting gas stoves, Bunsen burners and all other heating or lighting devices where gas is used. Consists of threaded cap which is forced tightly into fitted joint with an eccentric clamp. Connections cannot come apart or be dislodged by accident.

Complete, with 3 feet seamless copper tubing . . . \$2.00



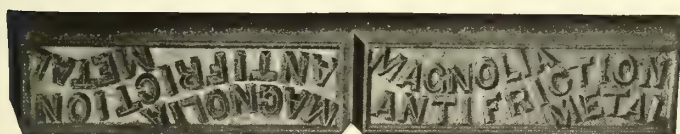
Babbitt Metal

H. S. & Co. Special



A high grade Babbitt Metal, fully recommended; suitable for lining all machinery bearings. It is made after our own formula and we guarantee it to run absolutely uniform and to stand up under the most severe pressure. It can be remelted many times and with proper treatment will always pour freely; never crumbles, as inferior metals do. In bars of about three and one-half pounds.

Prices on application.



Has lowest frictional coefficient of any known metal; wears longer, runs cooler; absorbs less power; stands heavy pressures and high speeds.

Prices on application.

Directions for Pouring Babbitt Metal

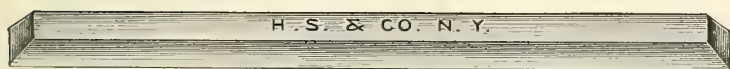
1. Melt in a clean ladle or pot, and when hot enough to brown a white pine stick is best time to pour, and metal should be poured as promptly as possible, but if poured too cold will not flow freely.
2. Stir frequently, bringing metal up from bottom.
3. If left in a fluid state any length of time without stirring, the constituent metals will begin to separate into layers, the lighter metals coming to the top, the heavier ones sinking to the bottom, and if poured in that condition, the bearings will have soft spots (lead), which will squash out, and hard spots (antimony), which will cut the shaft, and where the metal contains graphite it will separate from the mass, thereby losing the value of that lubricant.
4. If a babbitt is poured around a cold mandrel it will produce a thin chill upon the surface of the bearing, and as this chill does not adhere very tenaciously to its

comparatively soft backing, the grinding force of the shaft causes it to slough off in thin flakes. Heating the mandrel also burns off any moisture or grease which form gases that produce blow holes. Pouring a babbitt into a cold box checks its flow and produces a poor casting.

5. If a metal is peened before it becomes cool, it yields much more readily to the blow of the hammer, and there will be no danger of ever cracking metal.
6. As soon as a babbitt metal begins to change from a silvery to a yellowish tinge, it is an indication that a proper time is reached to check the heat, and in pouring metal any scum or oxide on surface should be held back and not be allowed to enter box.
7. Have your preparations all ready so that there will be no delay in pouring.
8. Hold ladle close to work to prevent air bubbles or chilling the metal.

Bar Tin

100 Per Cent Pure



Prices on application.

Solder

Bar



Market Half and Half.
Strictly Half and Half.

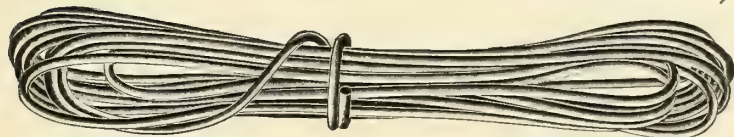
Prices on application.

Strip or Ribbon



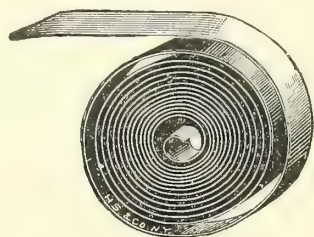
Prices on application.

Round Wire— $\frac{1}{8}$ Inch Diameter



Prices on application.

Silver Solder

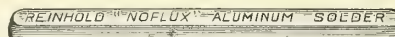


We carry only a superior grade of Silver Solder and can supply in any quantity from one ounce up. It is packed in a neat brass box, each box containing one ounce. (In strips $\frac{7}{8}$ inch wide, .004 inch thick.)

Prices on application.

Aluminum Solder

Rheinhold "Noflux"



Solders aluminum to aluminum

Prices on application.

Spelter Solder

No. 26. Extra Fine Grain

In case lots (50 pounds) } Prices on application.
In 10-pound lots }

No. 10. Gray (Quick Running)

In case lots (50 pounds) } Prices on application.
In 10-pound lots }

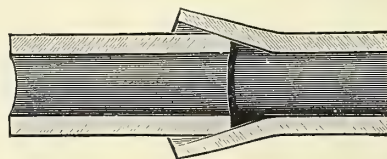
Tinol



Tinol is a complete solder in paste form. It is an alloy of tin and lead, finely granulated, then mixed with an oily flux, which gives it the consistency of soft paste.

Tinol is also made in hollow rods and wires, filled with the same oily flux, for use where this form is more convenient.

In using Tinol, no acid, rosin, or other flux is required. A thin coating of the paste is spread on the surface of the metal to be soldered, and then heated. The compound melts, the oily flux evaporates, and the solder hardens and adheres closely to the metal.



Easy Method of Soldering Lead Pipe with Tinol

One of the ends is spread open in the usual way, and the other end inserted. Then the space between is filled with Tinol paste, which is melted with the torch or iron.

Small cans, each.....	\$.25
Medium cans, each.....	.50
One pound cans, each.....	1.60
Sticks, each.....	.10

Bar Lead



Prices on application.

Pig Lead

Prices on application.

Shot

No. 5 In 25-pound bags, per pound.....	\$.10
In less than 25-pound bags, per pound.....	.11
No. 7 In 25-pound bags, per pound.....	.10
In less than 25-pound bags, per pound.....	.11

Can also furnish other sizes, and will quote prices upon receipt of quantity specifications.

Soldering Salts

Yager

Warranted to excel all other preparations for soldering tin, copper, brass, iron and steel. Is cheaper than acid and better than resin.

Is a dry salt in small bulk, and by simply adding a little water is instantly ready for use.

Is free from the disagreeable fumes and the injurious effects experienced by the use of acid.

Leaves the metal clean and bright, and causes the solder to flow more evenly.

Does not injure the irons like acid, and is unexcelled for tinning them.

Recommended for lead burning to prevent the lead from oxidizing in front of the flame of blow pipe.

Can be used on damp surfaces.

To solder steel, the metal should be heated enough to melt the solder. Iron must have clean surface, free from scale, rust and dirt. Makes a tight joint which will not heat up or corrode under the electrical current. The best flux for commutator windings. Gives a low resistance that saves current.

We are prepared to name very moderate prices for quantities.

In 1/2-pound bottles, each	\$.30
In 1-pound bottles, each	.40
In 5-pound bottles, each	2.00
In 10-pound bottles, each	4.00
In stick form, dozen	3.00

Caution—To preserve the Salts in granular form, it must not be exposed to strong sunlight or kept in a heated place, as exposure will form vapor between Salts and cork. This, condensing, dissolves the Salts which will then solidify.

Soldering Paste

Yagers

Same as salts described above but in paste form, especially adapted for electrical work.

2-ounce cans, each	\$.15
1/2-pound cans, each	.50
1-pound cans, each	.80
5-pound cans, each	3.70

Nokorode

Absolutely non-corrosive. Will solder all metals except aluminum—no work too delicate and none too rough. Always ready and convenient.

Case lots contain 3 dozen 2-ounce, or six 1-pound cans.

2-ounce cans, less than case lots, each	\$.25
2-ounce cans, 3 dozen (one case), each	2.00
1-pound cans, 1/2 dozen (one case), pound	1.00
10-pound cans, any quantity, pound	1.00
25-pound and 50-pound cans, pound	.90

Brazing Powder

Laffitte

Advantageously replaces borax—never swelling or blistering. One pound of this powder does the work of four pounds of borax.

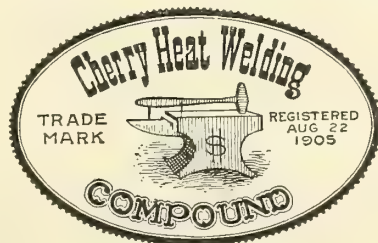
The Brazing Powder must be mixed with the Spelter, according to the kind of work to be done; about 15 pounds of Powder to 85 pounds of Spelter. This mixture is used dry, by preference, or in the form of a paste, lightly moistening the mass according to requirements. The completed braze is absolutely homogeneous and there is no trace of oxides which are so prejudicial to good brazing.

Packed in cans containing 2 1/2 pounds. Per pound \$.50

Welding Compound

Cherry Heat

Welds all kinds of steels as easily as iron. Iron to iron, steel to steel, malleable iron to steel.



Directions for Using

To weld tire—After the tire is scarfed and ready to weld (to get best results), apply the compound between the lap and on top; if not convenient to apply between the lap, then apply on top only.

Axles and Springs and all work that is in separate pieces should be heated separately and not fastened together, as is customary when using borax.

The pieces to be welded, after being scarfed, should be placed in fire and heated thoroughly (not hot enough to burn the steel), then apply the compound so that it will come between the lap when the weld is made. Keep the work lying in the fire with compound up until at a welding heat, then turn work over about five seconds before taking from the fire.

Important—When welding steel that is in separate pieces it is very important to keep the work lying in the fire with compound up until at a welding heat, then turn work over about five seconds before taking from the fire. If the compound is turned down to the blast for the entire heat it will become injured and will not make the weld so readily. In 5 pound boxes, pound \$.14

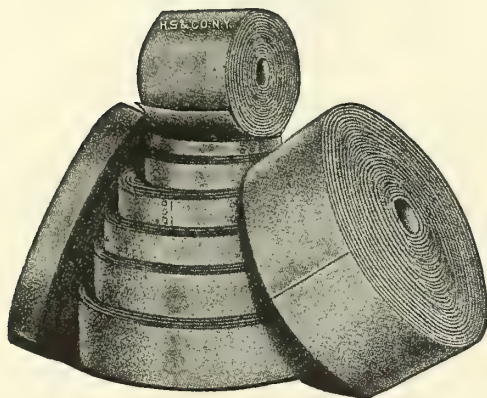
SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Leather Belting

Flat

Adopted November 21, 1906



Width Inches	Single Per Foot	Double Per Foot	Width Inches	Single Per Foot	Double Per Foot
1 1/2	\$.12	\$.24	14	\$3.36	\$6.72
5/8	.15	.30	15	3.60	7.20
3/4	.18	.36	16	3.84	7.68
7/8	.21	.42	17	4.08	8.16
1	.24	.48	18	4.32	8.64
1 1/4	.30	.60	19	4.56	9.12
1 1/2	.36	.72	20	4.80	9.60
1 3/4	.42	.84	21	5.04	10.08
2	.48	.96	22	5.28	10.56
2 1/4	.54	1.08	23	5.52	11.04
2 1/2	.60	1.20	24	5.76	11.52
2 3/4	.66	1.32	25	6.00	12.00
3	.72	1.44	26	6.24	12.48
3 1/4	.78	1.56	27	6.48	12.96
3 1/2	.84	1.68	28	6.72	13.44
3 3/4	.90	1.80	30	7.20	14.40
4	.96	1.92	32	7.68	15.36
4 1/2	1.08	2.16	34	8.16	16.32
5	1.20	2.40	36	8.64	17.28
5 1/2	1.32	2.64	40	9.60	19.20
6	1.44	2.88	44	10.56	21.12
6 1/2	1.56	3.12	48	11.52	23.04
7	1.68	3.36	52	12.48	24.96
8	1.92	3.84	56	13.44	26.88
9	2.16	4.32	60	14.40	28.80
10	2.40	4.80	64	15.36	30.72
11	2.64	5.28	68	16.32	32.64
12	2.88	5.76	72	17.28	34.56
13	3.12	6.24			

Cat Gut

In rolls of 20 running feet. Suitable for use as belting, etc., on light machines, as dentists' grinders, etc.

Number is Brown & Sharpe gauge.

Number.....	8	9	10	11	12
Per roll.....	\$1.75	1.40	1.20	.90	.70

Belt Cement

Le Page

This cement is a blend of the very best glue gelatine properly mixed with high grade fish glue, to secure the greatest penetration, strength and flexibility. With its use, the engineer can make as good a repair as the expert belt maker.

Packed in 1 and 2-pound cans; complete directions accompany each package.

In 1-pound cans, per dozen cans.....	\$6.00
In 2-pound cans, per dozen cans.....	12.00

Solid Round



Diameter, inch.....	1/8	3/16	1/4	5/16	3/8
Per 100 feet.....	\$3.00	3.80	5.75	8.70	15.50

Bar Belt Dressing

Stephenson



Stephenson Bar Belt Dressing comes in one-pound solid sticks. Is applied by holding the bar against the inner surface of the moving belt, the friction effecting an even distribution with no waste. Leaves the belts soft and pliable.

In ordering, specify Red Label for Leather Belts, and Green Label for Rubber and Canvas Belts, per pound..... \$.40

Belt Lacing

Cut Rawhide

$\frac{1}{4}$ inch, per 100 feet	\$1.25
$\frac{5}{16}$ inch, per 100 feet	1.50
$\frac{3}{8}$ inch, per 100 feet	1.75
$\frac{7}{16}$ inch, per 100 feet	2.00
$\frac{1}{2}$ inch, per 100 feet	2.25
$\frac{5}{8}$ inch, per 100 feet	3.00
$\frac{3}{4}$ inch, per 100 feet	3.75

Rawhide Lace Leather

By the side (about 20 square feet), per square foot..... \$.35



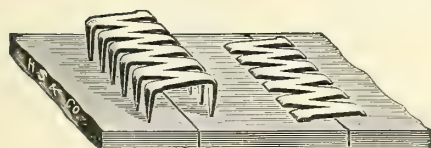
Kerr Improved Metallic

This Lacing makes a flexible joint that is no thicker than any other part of the belt, conforms itself perfectly to the pulley and prevents any lost contact of the belt to the pulley where it is joined. Belts may be made up of a number of small pieces (as many as there are laps in a belt), and each joint will round the pulley without any uneven motion, and as noiseless as the lap, as there is no overdraw or extra strain on the belt at the joint while rounding the pulley.

No. 00	For light single belts up to 1 inch.	Per 100 feet	\$2.00
No. 0	For single belts under 3 inches wide.	Per 100 feet	2.00
No. 1	For single belts 3 to 5 inches wide.	Per 100 feet	2.00
No. 2	For wide single and narrow double belts.	Per 100 feet	2.00
No. 3	For all double belts above 6 inches wide.	Per 100 feet	2.00

Bristols Steel

Staggered Points



Ready to Apply. Finished Joint

Packed regularly in assorted widths, but will also be furnished, packed to order, all one width, if so specified. Each box contains enough to lace 100 inches in width of belt.

Thickness and Kind of Belt

No. 1100	For all kinds of belts from $\frac{1}{16}$ to $\frac{1}{8}$ inch thick. Split leather and lightest rubber and cotton belts. Packed in assorted widths. List price per box 100 inches.....	\$.90
No. 110	For all kinds of belts from $\frac{1}{8}$ to $\frac{5}{32}$ inch thick. Split leather and light rubber and cotton belts. Packed in assorted widths. List price per box 100 inches.....	1.00
No. 110 $\frac{1}{2}$	For all kinds of belts from $\frac{5}{32}$ to $\frac{1}{4}$ inch thick. Ordinary single leather and two-ply rubber and cotton belts on small pulleys. Packed in assorted widths. List price per box 100 inches.....	1.25

No. 111	For all kinds of belts from $\frac{3}{16}$ to $\frac{1}{4}$ inch thick. Ordinary single leather belts and three-ply rubber and cotton belts. Packed in assorted widths or regular widths from 1 inch to 3 inches. List price per box 100 inches.....	\$1.50
No. 112	For all kinds of belts from $\frac{1}{4}$ to $\frac{5}{16}$ inch thick. Extra heavy and wide single leather belts and four-ply rubber and cotton belts. Packed in assorted widths. List price per box 100 inches.....	2.00
No. 113	For all kinds of belts from $\frac{5}{16}$ to $\frac{3}{8}$ inch thick. Double leather belts and five-ply rubber and cotton belts. Packed in assorted widths. List price per box 100 inches.....	2.50
No. 114	For all kinds of belts from $\frac{3}{8}$ to $\frac{7}{16}$ inch thick. Heavy double leather belts and six-ply rubber and cotton belts. Packed in assorted widths. List price per box 100 inches..	3.00
No. 115	For all kinds of belts from $\frac{7}{16}$ to $\frac{1}{2}$ inch thick. Extra heavy double leather belts and seven-ply rubber and cotton belts. Packed in assorted widths. List price per 100 inches.	3.50
No. 117	For all kinds of belts from $\frac{1}{2}$ to $\frac{5}{8}$ inch thick. Conveyor belts and extra double heavy rubber and cotton belts. Packed in assorted widths. List price per box 100 inches...	4.95
No. 119	For all kinds of belts from $\frac{5}{8}$ to $\frac{13}{16}$ inch thick. Ten-ply and extra heavy conveyor belts. Packed in assorted widths. List price per box 100 inches.....	6.05

Steel Belt Couplings

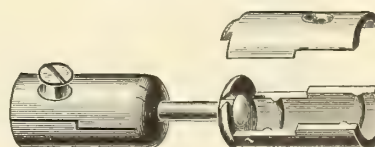


Measurements given are outside diameters

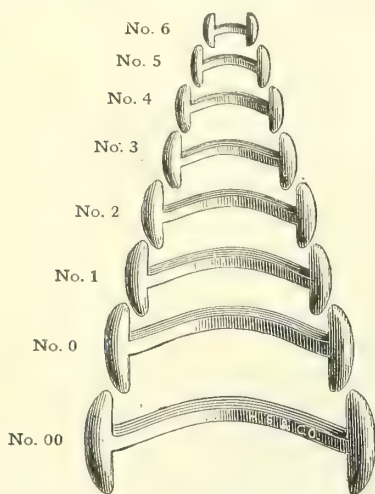
Inch...	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$
Dozen..	\$3.00	3.00	2.50	2.00	2.50	3.00	5.00	6.00	7.50	9.00	13.00

Rope Couplings

Malleable Iron



For $\frac{5}{8}$ -inch rope, dozen.....	\$3.20
For $\frac{3}{4}$ -inch rope, dozen.....	3.50



Belt Studs

Blake Improved

Shaped so that each head has a retaining or holding surface on the belt of $\frac{3}{8}$ to $\frac{5}{8}$ of an inch, so does not pull at ends of belt or tear out. Put up in boxes of 100, with full directions on box. No. 00 is for the heaviest double leather and 5 or 6 ply rubber belt; No. 6 is for the thinnest sewing machine belt which needs to run very smoothly. Intermediate sizes in proportion.

Numbers.....	00	0	1	2	3	4	5	6
Per 100.....	\$2.50	2.00	1.65	1.25	.90	.80	.70	.60



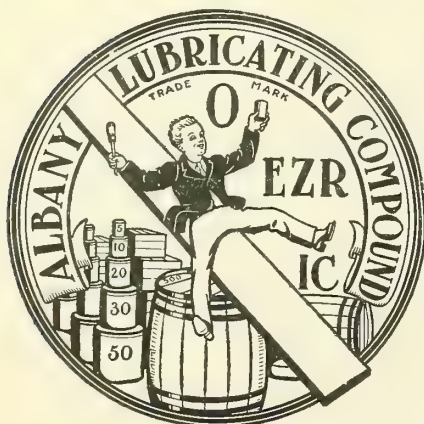
Sewing Machine Belt Hooks

Style B



No. 15 for $\frac{5}{16}$ inch belting, per 1000.....	\$2.50
No. 16 for $\frac{1}{4}$ inch belting, per 1000.....	2.25

Albany Grease



This Grease will not drip nor gum. Prevents hot boxes and will not freeze. All grades and numbers are the same quality—the differences being in the consistency—to make them suitable for various purposes and climates.

No. 0 is very soft. For use in extreme cold weather and on exposed journals.

No. 1 is harder than No. 0, and is for use on ordinary journals in cold weather, or on very cold or slow running journals, also elevator slides.

No. 2 is harder than No. 1, and is the grade ordinarily used in moderate and warm weather and general shafting.

No. 3 is adapted to the use of all stationary, marine and tug-boat engines; also shafting in warm weather, dynamos, general electrical and high-speed machinery.

No. X is a grade of extra hardness, which will lubricate journals with entire satisfaction, when no oil or lubricant of any other kind would work.

No. XX is a grade of extra hardness, and made to stand a higher degree of melting point than the X grade.

No. XXX is a grade made for unusual conditions of circumstances. Very hard, and will stand a higher degree of melting point than the XX grade.

In cans containing 5-10-25 pounds, per pound	\$.20
In cans containing 50 pounds .....	.18
In kegs containing about 125 pounds, per pound.....	.14
In half-barrels containing about 200 pounds, per pound.....	.13
In barrels containing about 400 pounds, per pound.....	.12



Flake Graphite

Dixon

Flake Graphite has many valuable applications as a lubricant for cylinders, valves and bearings, either alone or mixed with oils and greases. It is also nearly indispensable to engineers and mechanics for coating gaskets and packing, for pipe-fitting, etc.

Flake Graphite is the standard dry lubricant used in factories, engine rooms, locomotive and railroad work-shops, etc.

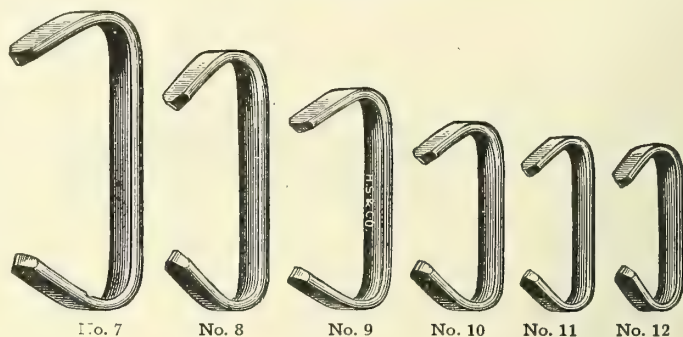
It coats all bearing surfaces, fills up all roughness or abrasions, and soon has the surfaces so smooth and shiny that they run together with almost no friction or heating.

Will lubricate wood as well as metal, and its uses are almost endless.

632	1-pound paper can (36 in case), per pound	\$.25
633	5-pound tin can (10 in case), per pound .....	.20
634	10-pound tin can (5 in case), per pound .....	.20
644	25-pound box, per pound .....	.15
645	50-pound box, per pound .....	.15
646	100-pound keg, per pound .....	.14½
646½	200-pound keg, per pound .....	.14
647	400-pound barrel, per pound .....	.12

Pointed Belt Hooks

Full Size Cuts



Bright Steel

Number.....	1	2	3	4	5	6	7
Per 100.....	\$3.00	2.00	1.60	1.40	1.10	.85	.60
Number.....	8	9	10	11	12	13	14
Per 100.....	\$.50	.40	.35	.30	.28	.26	.24

Waterproof Graphite Grease

Dixon



In all respects a high grade lubricant for loose, open bearings, gears, slides, etc. It possesses great adhesiveness and tenacity and will not be thrown from gears, chains, wire ropes, sprocket chains and the like, traveling at a high speed.

It contains no soluble ingredients and cannot be washed off by fresh salt or alkaline water or by acid. These properties highly commend its use upon wire ropes and chains, gears, cranes, derricks, dredges, steam shovels, pile drivers, winches, hoisting engines, quarrying and mining machinery, railroad switch and signal mechanism and every sort of machinery exposed to water or the weather.

5-pound tin can (10 in case), per pound	\$.18
10-pound firkin (6 in case), per pound .....	.15
25-pound firkin, per pound .....	.14
50-pound keg, per pound .....	.13
100-pound keg, per pound .....	.12
Half-barrel, per pound .....	.11
Barrel of about 400 pounds, per pound .....	.10

Glue

Genuine Peter Cooper

All Peter Cooper glue is carried in flake. Numbers 1¼, 1½ and 1⅝ are also carried ground.

Number	A Extra	1 Extra	1	1x	1¼
Per pound . .	\$.22	.19	.18	.16½	.16
Number	1⅝	1½	1⅝	1¾	1⅞
Per pound . .	\$.15	.14	.13	.12	.11½
				.10½	

Coignet

Imported French

Star Extra, pound.	\$.22
Coignet Extra, pound. . . . .	.19

Noodle Shape

No. D B 1, pound.	\$.23
No. 64 N. . . . .	.18

Cement

Ever-Ready

Is always ready for use, no heating being necessary and will not harden or deteriorate in the tube. Will mend glass, china, metal, wood, rubber, marble, ivory, leather, jewelry, paper mache, etc., and after drying will stand in any temperature—extreme heat or cold, and is not affected by water.

In small tubes, per dozen	\$.90
½ pint cans, each . . . . .	.45
1 pint cans, each . . . . .	.60
1 quart cans, each	1.15
1 gallon cans, each	4.15

Iron Cements

Smooth-On

In 1, 5, 10 and 25 Pound Tins

No. 1 is Quick Hardening

No. 2 is Slow Hardening and Hydraulic

Made in powder form for repairing leaks or breaks in castings and for making connections in steam or hydraulic work, withstands fire, water, steam or petroleum and very high pressures. Must be applied as paste or putty to cold metal.

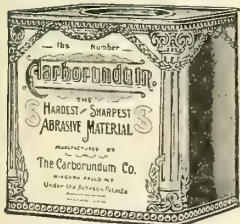
Pound	\$.50
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No. 3 for Engineers

Prepared in paste form to stop leaks on all seams of boilers or tanks; also for repairing fine cracks; making screw thread joints and for boiler patching, in combination with No. 1. Applied as paint, paste or putty to hot or cold metal.

Pound	\$.50
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Carborundum Grains and Powders



Produced by crushing and grinding the crude crystals, washing and separating by sieves into various sizes. These are numbered, the same as emery, in accordance with the number of threads per lineal inch of the sieve through which they have passed. Made in following numbers: 6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 40, 50, 60, 70, 80, 90, 100, 120, 150, 180, 220.

Powders are the grains too fine to size by ordinary sieving. They are graded by floating in water.

F, FF, FFF powders are graded in a stream of flowing water. They include in their numbers all grades of fineness from F, the next finest after No. 220, to FFF, which contains the very finest dust.

List

In 5-pound tin cans, per pound.	\$.25
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LePage Liquid

For manufacturers, carpenters and mechanics who require a first quality glue on large work.



In Bottles

1 ounce bottles, 1 dozen in box, gross.	\$12.75
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In Self-sealing Collapsible Tubes

Small size, 1 dozen in box, gross.	\$12.75
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In Tin Cans

Half gill, 1 dozen in box, dozen.	\$1.65
One gill, 1 dozen in box, dozen.	2.20

Tin Cans for Mechanics and Manufacturers

Half pints, 2 dozen in case, per dozen	\$3.25
Pints, 1 dozen in case, per dozen	5.40
Quarts, 1 dozen in case, per dozen	9.50
Half gallons, ½ dozen in case, per dozen	18.50
Gallons, ½ dozen in case, per dozen.	36.00
5 gallon cans, boxed, per gallon.	2.80

No. 4, Fine-Grained, for Foundry Men

In powder form, suitable for repairing blemishes blowholes or defects in fine grained iron or steel castings. Applied as a putty to cold metal.

Pound.	\$.50
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No. 4 B, Coarse Grained, for Foundry Men

Same as No. 4A, except for coarse-grained castings.

Pound.	\$.50
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Washington Mills Emery

We are agents, and are prepared to quote quantity prices upon receipt of specifications.

Number.	4 to 46	54 to 220	F and FF	Crocus
In kegs of about 350 pounds, per pound.	\$.5½	.06	.04	
In ½ kegs of about 150 pounds, per pound. . . . .	.05¾	.06¼	.04¼	
In ¼ kegs of about 90 pounds, per pound . . . . .	.06	.06½	.04½	
In 10 pound tin cans. . . . .	.09	.09	.07½	.09

Valve Grinding Compound

Carborundum



Is far superior to powdered glass or emery for all classes of valve-grinding, Carborundum being faster cutting, more uniform, harder and sharper than any other materials used for such work.

The coarser compound is used first in grinding the valve. It quickly removes all pits or masses of any foreign matter. The finer compound is then used in giving the valve seat a perfectly true, polished surface.

One-pound tin Carborundum Compound, coarse or fine.	\$.50
Three-pound tin Carborundum Compound, coarse or fine.	1.25
Five-pound tin Carborundum Compound, coarse or fine.	2.00
Tubes Carborundum Compound, coarse or fine . . . . .	.25

Wood Cements

(Stick Shellac)

The deterioration of American wood has made these Wood Cements in sticks practically indispensable.

These cements will not chip out or soften. Surfaces where blemishes have been remedied with our Wood Cements can be sanded, pumiced or polished, showing no defects in the original wood.

Light Oak, Antique Oak, Mahogany, Walnut, Ebony, Cherry, Mission.

Dozen sticks \$.90

Transparent, dozen sticks..... 1.00

Parafine Wax

White. 10 pound lots, pound..... \$.15

White. Less than 10 pound lots, pound..... .18

Polishing Wax

Genuine "Butcher"

Genuine "Butcher" is excellent for polishing floors, interior woodwork and furniture and will give equally good results when used on surfaces that have been treated with shellac or varnish.

In one-pound cans, per can.....\$.55

Pure Beeswax

Yellow. Full cakes, 1 to 4 pounds, pound..... \$.40

Yellow. Less than full cakes, pound..... .44

Ceresine Wax

Orange. Full cake, 15 to 20 pounds, pound..... \$.18

Orange. Less than full cake, pound..... .22

Rubbing and Polishing Felts

Mexican White, Hard

36x36 inches, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch thick, pound..... \$1.45

Mexican Gray, Hard

36x36 inch, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch thick, pound..... 1.25

Chamois Skins

No. B Small size, each..... \$.80

No. C Medium size, each..... 1.00

No. D Large size, each..... 1.20

In kips (30 skins), prices quoted on application.

Furniture Polish

"Ching Fow"

"Ching Fow" Furniture Polish is a superior renovator that contains no varnish and will not gum. It quickly restores the polish on old furniture and dries immediately after using. It removes finger marks, scratches, fly specks, etc. Full directions for applying accompany each bottle.

Eight-ounce bottles, dozen..... \$2.25

Half-gallon bottles, gallon..... 2.00

Hy-Pol

After years of experience Hy-Pol was placed on the market. A most perfect polish for furniture, pianos, floors, interior woodwork, automobiles, carriages, all varnished or waxed surfaces and all kinds of leather.

It is non-acid and may be used without fear of injury to the finest piano finish.

It brings a brilliant lustre to the finish, and is a perfect solvent for dirt and grease.

List

Each

One-gallon cans..... \$2.75

One-half-gallon cans..... 1.50

One-fourth-gallon cans..... 1.00

Twelve-ounce cans..... .50

Five-ounce cans..... .30

Paint and Varnish Remover

Ad-el-ite

This wonderful material will take off any thickness of paint, varnish, shellac or enamel, clean to the bare wood almost instantly and leave the wood in perfect condition for refinishing.

Ad-el-ite Remover is free of acids, alkalies or water, and will positively not bleach or raise the grain of the finest wood or veneer. It is the only remover manufactured from imported material, which is the principal reason why it possesses greater solvent properties than any other brand.

A practical test will demonstrate that it will take off more old finish per gallon and perform its mission cheaper and more satisfactorily than any other remover. Ad-el-ite Remover is also strongly recommended for cleaning old paint brushes, painted glass surfaces and for softening old putty.

List

Each

One-gallon cans..... \$2.50

Half-gallon cans..... 1.35

Quarter-gallon cans..... .70

Rubbing Cloth

54 inches Wide, $\frac{3}{16}$ inch Thick

No. 183 Gray, about 96 ounces to yard..... \$5.50

No. 184 Gray, about 104 ounces to yard..... 6.00

Where any particular quantity, finish or color is to be matched, it is necessary to submit a fair-sized sample (about 4 inches square) for examination and comparison.

We are prepared to furnish a great variety of Felts and Cloths and will quote prices upon receipt of samples.

Cotton Waste

We carry only the best qualities of white cotton waste. Prices on application.

Rust Preventive

Never-Rust

Never-Rust contains no acid or harmful ingredients. It is easily applied and removed. It is not inflammable and does not burn. It never gets hard, gums or becomes rancid. Rain, sun or dampness has no effect on metal coated with Never-Rust.

The merits of Never-Rust are well known among manufacturers of large and small machinery, polished bars and rod steels, shafting and tools of all description and is invaluable in preventing tarnish or corrosion on brass and nickel, polished surfaces, etc.

Barrels containing about 360 pounds, per pound	\$.07½
Half barrels containing about 200 pounds, per pound . . . . .	.09
Cans containing about 50 pounds, per pound . . . . .	.12½
Cans containing about 25 pounds, per pound . . . . .	.15
Cans containing about 10 pounds, per can	1.75
Cans containing about 5 pounds, per can	1.00

Liquid "B," the medium grade in liquid form, is used for small fine tools of all kinds, also used for piano wire.

Paste "X" (medium grade in paste form) is used extensively by cutlery, saw, tool, sewing machine manufacturers, etc. In fact for everything that is packed in boxes, or stored in a warehouse.

Polishing Compounds

Tripoli No. 1 XXX (T-5), per pound	\$.10
Red Rouge (SSS), per pound . . . . .	.20

Metal Polishes

For Brass, Nickel, Copper, etc.

Borsums Putz Liquid Color, Red

½ pint cans, per dozen cans	\$2.00
Gallon cans, per gallon	2.00

Mexoline Liquid Color, White

½ pint cans, per dozen cans	\$1.00
Gallon cans, per gallon	1.00

Universal Putz—Pomade or Paste Color, Red

Household, per dozen cans	\$.50
½ pound cans, per dozen cans	1.60
Pound cans, per dozen cans	3.00

United States Paste Color, Gray

3 oz. cans, per dozen cans . . . . .	.60
½-pound cans, per dozen cans	1.75

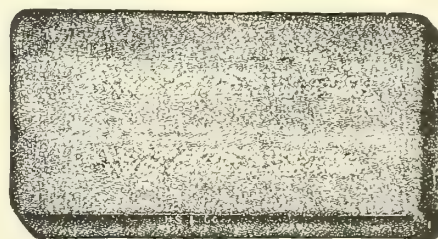
Argentala Paste Color, White

A high grade polish for silver

In glass jars, per dozen	\$2.50
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Steel Polish

H. S. & Co.



No. 1045 For removing rust from steel. Used as an ordinary rubber eraser, dozen \$1.00

Lubricating Oils

Pike

Pike Oil is perfectly pure, acidless, and non-drying. It will not gum, nor will it corrode the most highly polished metal. It is an oil that can be recommended with greatest safety for all purposes where a thin, pure oil is required as a lubricant or rust preventive. It is also used with a high degree of success for cleaning and polishing all kinds of wood and metal surfaces.

May be used for cleaning, polishing or lubricating any of the following articles:

Typewriters	Reels	Music Boxes
Guns	Sewing Machines	Adding Machines
Clocks	Knitting Machines	Addressing Machines
Bicycles	Coffee Mills	Musical Instruments
Revolvers	Golf Clubs	Tools of all kinds
Razors	Skates	Furniture
Razor Hones	Locks	Metal Surfaces
Cutlery	Hinges	Apple Parers
Oilstones	Phonographs	Potato Parers
	Monotype Machines	Linotype Machines

Two-ounce bottles, per dozen	\$ 1.20
Six-ounce bottles, per dozen	3.00
Six-ounce cans, per dozen	3.00

Three in One

A perfect lubricant and rust preventive for the finest and most delicate mechanism, instruments, cutlery, etc. A polish and cleaner for all smooth surfaces, such as glass, tile, metal, wood, etc. Excellent for use on hones and razor strops; restoring worn typewriter ribbons, etc.

Small size bottle containing 1 ounce, each	\$.10
Large size bottle containing 3 ounces, each . . . . .	.25
Factory size bottle containing 8 ounces, each . . . . .	.50
Handy oil can containing 3½ ounces, each . . . . .	.25



Boxes contain about 5 pounds each

Self-Lubricating Packing

Palmetto

Designed especially to meet the exacting conditions of high pressure super heated steam, air and ammonia pressures. It is made of a material that cannot char or burn and, owing to our peculiar method of lubrication, it does not get hard in service.

In Sizes

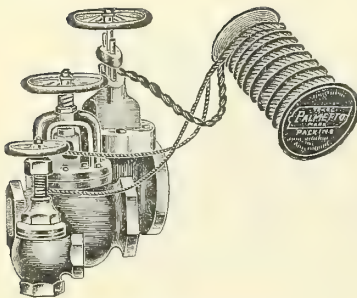
$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $\frac{15}{16}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$, $1\frac{5}{8}$, $1\frac{3}{4}$, $1\frac{7}{8}$ and 2 inches.

Square or Round, Per Pound, \$1.00

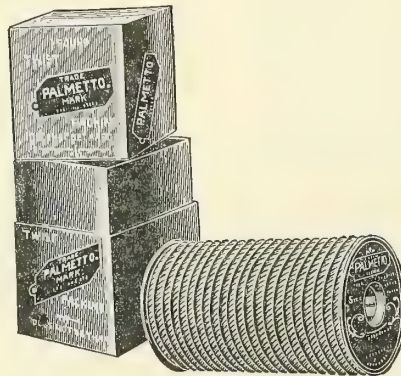
Twist Packing

Palmetto

An Ideal Packing for Globe Valves, Blow-off Cocks, Injectors, etc.



On One Pound Spools



Owing to the nature of the materials of which Palmetto Twist is made it cannot char or burn, and its perfect lubrication prevents it from becoming hard. Has high tensile strength and is far more economical and satisfactory than Asbestos Wick or Braid.

Can be Unstranded and Used for any Size

Size, inch	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
To one pound, feet	120	75	50

Per Pound, \$1.00

Pump and Throttle Packing

Palmetto

For Railroad Service

Air Pump Packing

For Westinghouse Pumps

For N.Y. Duplex Pumps

Throttle Packing

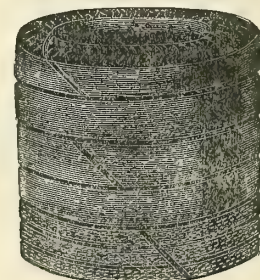
High Pressure



In sets ready to apply

For 8 and $9\frac{1}{2}$ -inch pumps, per set	\$.44
For 11-inch pumps, per set	.88
$8\frac{1}{2}$ -inch Cross Compound per set	1.76

For Nos. 1 and 2 pumps, per set	\$.88
For No. 5 pump, per set	2.20
For No. 6 pump, per set	.88



Cut in sets ready to apply to locomotive throttle valves. Designed to meet the exacting conditions of locomotive throttle service.

Per Pound, \$2.00

Cotton Wick

Patrol, in 2 ounce balls, per pound..... \$.30

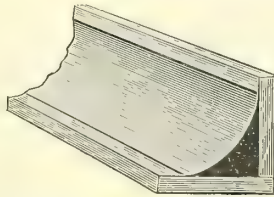
Pattern Shop Supplies

Flexible Leather Fillet-Belding Patent

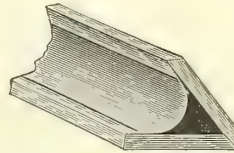
For the Pattern Shop and Foundry



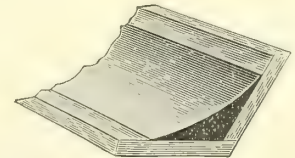
Exact shape of fillet when shipped. Being cut with special designed machines, each piece is absolutely uniform in size.



Applied as a right angle fillet. When applied in this manner the two curved sides become straight and the flat side becomes a perfect arc of a circle.



Applied as an acute angle fillet. Fits perfectly and is quickly, easily and accurately attached.



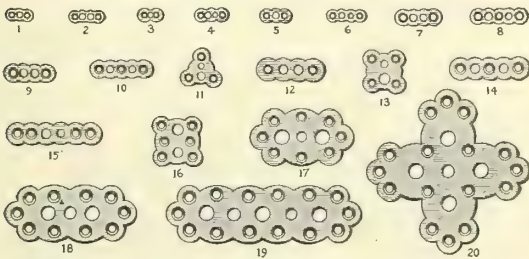
Applied as an obtuse angle fillet. Fits the angle perfectly and the fine feather edges adhere tightly to the pattern.

Almost all patterns require a fillet of some kind, and this flexible leather is so designed and cut that it may be applied to single, compound or irregular curves.

Number	1	2	3	4	5	6	8	10	12	14	16
Angle measure, inches	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Width of face (flat), inch.	$\frac{3}{32}$	$\frac{1}{16}$	$\frac{3}{16}$	$\frac{1}{8}$	$\frac{9}{16}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{31}{32}$	$1\frac{1}{32}$	$1\frac{1}{8}$	$1\frac{9}{16}$
Per 100 feet	\$2.00	2.00	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00

Rapping Plates

Malleable Iron



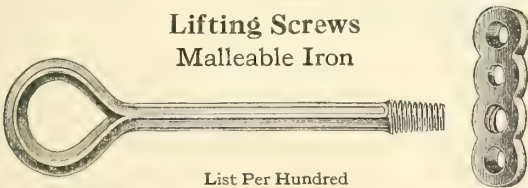
These Rapping Plates are made of best quality malleable iron; are smooth, with sharp and clean-cut edges. Every plate is a perfect casting; none warped out of shape. Provided with rapping holes, tapped draw and countersunk screw holes. Edges tapered. All gates ground off and finished ready to set into pattern.

List Per Hundred

Number	Size Inches	Number	Size Inches
1	$\frac{5}{8} \times 1\frac{1}{2}$	11	$2\frac{1}{4} \times 2\frac{1}{4}$
2	$\frac{5}{8} \times 2$	12	$1\frac{1}{4} \times 3\frac{3}{4}$
3	$\frac{3}{4} \times 1\frac{1}{4}$	13	$2\frac{3}{8} \times 2\frac{3}{8}$
4	$\frac{3}{4} \times 1\frac{3}{4}$	14	$1\frac{1}{4} \times 4\frac{1}{2}$
5	$\frac{3}{4} \times 1\frac{3}{4}$	15	$1\frac{1}{4} \times 5\frac{3}{8}$
6	$\frac{3}{4} \times 2\frac{1}{4}$	16	$2\frac{3}{4} \times 2\frac{3}{4}$
7	$\frac{7}{8} \times 2\frac{5}{8}$	17	$3 \times 5\frac{1}{2}$
8	$\frac{7}{8} \times 3\frac{1}{4}$	18	$3 \times 7\frac{1}{4}$
9	1×3	19	$3 \times 10\frac{3}{4}$
10	$1 \times 3\frac{1}{2}$	20	7×7

Lifting Screws

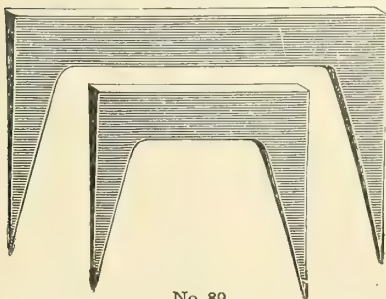
Malleable Iron



List Per Hundred

Size Inch	Length Inches	Tapped for Plates	
$\frac{3}{8}$	6	Nos. 1 to 6 inclusive	\$15.00
$\frac{1}{2}$	7	Nos. 7 to 11 inclusive	18.00
$\frac{5}{8}$	8	Nos. 12 to 17 inclusive	20.00
$\frac{3}{4}$	9	Nos. 18 to 20 inclusive	25.00

Forged From Bar Steel



No. 89

For pattern and cabinet makers. Corners over the legs are square, making easy driving.

Number	Size of Steel Inch	Length Inches	Dozen
00	$\frac{3}{16}$	$\frac{3}{4}$	\$2.00
1	$\frac{1}{4}$	$1\frac{1}{4}$	1.50
2	$\frac{1}{4}$	2	2.00
3	$\frac{5}{16}$	$2\frac{3}{4}$	2.50
4	$\frac{5}{16}$	3	3.00

Intermediate sizes take price of next larger size.

White Metal Letters and Figures

Sharp Face Gothic



To be fastened to patterns with a solution of best quality gum shellac.

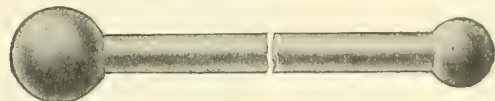
The surface to which they are to be applied should first be shellaced and allowed to dry. Then place letters in position, properly spaced, and apply to face of letters for a moment a warm soldering iron, which melts the shellac. When the warm iron is lifted the shellac dries and the letters adhere tightly to pattern. Do this carefully and the letters will need no shifting after once arranged. Avoid overheating the soldering iron. Apply it to letters but a few seconds to avoid melting them.

List Per Hundred

$\frac{3}{16}$ -inch	\$2.00	$\frac{3}{4}$ -inch	\$5.00
$\frac{1}{4}$ -inch	2.00	$\frac{7}{8}$ -inch	6.00
$\frac{1}{2}$ -inch	2.00	1 -inch	7.00
$\frac{3}{8}$ -inch	2.50	$1\frac{1}{4}$ -inch	10.00
$1\frac{1}{2}$ -inch	3.00	$1\frac{1}{2}$ -inch	15.00
$5\frac{1}{8}$ -inch	4.00		

Face measurements, center to center.

Fillet Tools



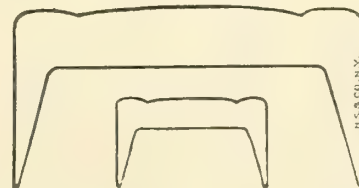
For applying leather fillet. Made of steel, highly polished. Complete set consists of four tools (Nos. 1, 2, 3, 4), suitable for applying all sizes of leather fillet.

List

Order by Number	For Applying Leather Fillet	Length Inches	Each
No. 1	Nos. 1 and 2	6	\$.15
No. 2	Nos. 3 and 4	$6\frac{1}{2}$	.30
No. 3	Nos. 5 and 6	7	.45
No. 4	Nos. 8 and larger	8	.60

Pinch Dogs

Acme



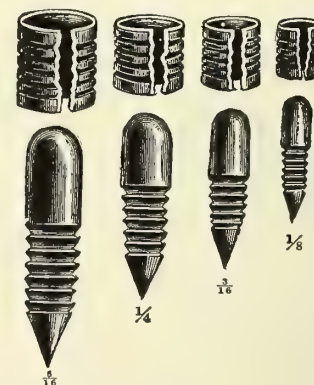
These Dogs are rough, case hardened and exceptionally low in cost. They pinch hard.

Size	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Dozen	\$.60	.80	1.00	1.20	1.60	2.20	2.80	3.60	4.60	6.00

Brass Dowels

Peg and Tube

Shoulder



The sockets in the above cut are shown reversed in order to illustrate the thread to better advantage.

Order by Number

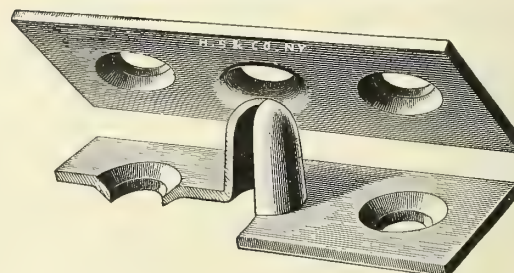
Number	Diameter of Pin Inch	Size of Bit Inch	Per Hundred Pairs
1	1/8	3/16	\$2.50
1 1/2	3/16	1/4	3.00
2	1/4	5/16	3.50
3	5/16	3/4	5.50
3 1/4	3/8	9/16	7.00
4	7/8	1 1/8	8.00
5	1 1/2	1 1/2	11.00

Are made with a special screw or ratchet thread, slightly tapered toward the end and are easily withdrawn from the pattern whenever necessary. Also made with more bearing surface than formerly, allowing the dowel to fit accurately, although one or both of the different parts are accidentally driven below the surface of the pattern. Our dowels are close fitting, a feature of the utmost importance and without which they are of little value for the purpose for which they were intended. As the different parts fit correctly they are of necessity interchangeable and also accurately centered.

Per Gross	1/8	3/16	1/4	5/16
Diameter, inch				
Gross	\$2.50	3.00	3.50	4.50

Plate

Illustration is full size of the 2 1/2-inch plate.



Length of plate, inches	1	1 1/4	1 1/2	2	2 1/2
Per gross	\$5.00	5.75	6.50	10.00	15.00

Wood Dowels



Genuine white birch and maple, we carry a large stock and can ship promptly

List Per 1000

Diameter Inches	Quantity in a Bundle	Approximate Weight per 1000 of 36-inch Birch Pounds	Smooth White Birch 18-inch	Smooth White Birch 24-inch	Smooth White Birch 30-inch	Smooth White Birch 36-inch	Smooth White Birch 42-inch	Smooth White Birch 48-inch	Grooved White Birch 36-inch	Smooth Maple 42-inch	Smooth Maple 48-inch
3-16	1,000	26	\$3.70	\$5.00	\$6.80	\$8.40	\$9.60	\$11.00			
1-4	500	48	3.70	5.00	6.80	8.40	9.60	11.00		\$15.75	
5-16	500	70	4.00	5.30	7.40	9.20	10.40	11.80		18.30	
3-8	200	100	4.60	6.10	8.90	10.70	12.60	14.30	\$12.80	21.50	\$27.00
7-16	200	135	5.20	6.80	10.20	12.20	14.20	15.20	14.60	24.70	
1-2	200	170	5.70	7.60	11.40	13.70	16.00	18.30	16.40	28.40	35.80
9-16	100	225	6.30	8.40	11.60	15.30	16.30	18.60		32.80	
5-8	100	260	7.70	10.30	14.30	18.70	21.80	24.90		37.10	46.60
11-16	100	330	9.10	12.20	16.90	22.30	23.60	27.00		42.00	
3-4	100	400	10.30	13.70	19.00	25.20	29.40	33.60		47.20	59.00
7-8	50	600	16.50	22.00	30.60	40.30	47.00	49.00		59.20	
1	50	800	20.00	26.60	36.90	49.00	57.30	65.50		72.50	

Prices in heavy faced type represent the sizes of Dowels carried regularly in stock in our New York Warehouse and these are all F. O. B. New York. Prices in light faced type represent sizes carried at our Portland Warehouse and are all F. O. B. Portland, Maine.

Selected

Dowels which have been specially chosen because they are straight and practically free from knots and other blemishes are called "Selected Dowels." Prices upon application.

Short Lengths

We always have on hand at mill quantities of various diameters in "short lengths" (under 36 inches).

Sandpaper and Cloth

General Abrasives

Flint, Emery, Garnet, Metalite, Durite and Durundum—Troy Brand

In offering you Troy Brand products, we do so with our full guarantee of their quality and endurance.

It is particularly gratifying to us to know we can guarantee our friends perfect satisfaction in sandpapers, an item about which nearly all are so particular.

The spirit of success-at-all-costs so impregnates the Manning Sandpaper Company, the manufacturers of Troy Brand products, and they are so thoroughly equipped, financially and otherwise, to produce unequalled goods, that, with your proper co-operation, we can fully guarantee to give you the greatest possible service and value, not only in sandpapers, but in abrasive papers and cloths in general.

All we ask of you is that full co-operation necessary to give us a correct understanding of your true wants.

Troy and Hudson Flint Paper

Sheets 9x11 Inches

Nos.	Per Ream
4-0 to 1/2	\$6.25
1	6.75
1 1/2	7.25
2	7.75
2 1/2	8.25
3	9.50
3 1/2	10.75
4	11.75
*Assorted	7.25

Packed in Bundles for Shipment as follows:

No.	4-0	3-0	2-0	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	Assorted
Reams	5	5	5	5	4	3 1/2	3	2 1/2	2	1 1/2	1 1/2	1	2 1/2

480 Sheets to Ream. Smallest Package 1/2 Ream.

The Hudson, which is a lighter, more flexible sheet than the Troy, is furnished only in sizes from 00 to No. 3.

Troy flint is furnished in odd sizes for special industries.

Troy Roll Flint Paper

Per Roll of 50 Yards

Width Inches	3-0 to 1/2	1	1 1/2	2	2 1/2	3	3 1/2
2 3/8	\$1.10	\$1.15	\$1.20	\$1.25	\$1.30	\$1.45	\$1.55
3 3/8	1.30	1.40	1.45	1.50	1.60	1.75	1.90
4	1.45	1.55	1.60	1.70	1.80	2.00	2.15
6	2.05	2.15	2.30	2.50	2.65	2.90	3.15
8	2.60	2.75	3.00	3.15	3.30	3.70	4.10
9	3.15	3.25	3.40	3.50	3.65	4.00	4.40
10	3.30	3.50	3.65	3.80	4.10	4.40	5.00
12	3.75	4.05	4.30	4.55	4.85	5.40	6.00
15	4.85	5.10	5.40	5.65	5.95	6.50	7.35
18	5.95	6.20	6.50	6.80	7.05	7.60	8.50
20	6.35	6.75	7.15	7.65	8.15	8.95	9.90
24	6.75	7.25	7.75	8.50	9.25	10.25	11.25
30	9.00	9.50	10.00	10.50	11.00	12.00	14.00
36	11.00	11.50	12.00	12.50	13.25	14.25	16.50
40	13.25	13.75	14.25	14.75	15.50	16.75	19.00
42	14.25	14.75	15.25	15.75	16.50	18.00	20.00
48	16.50	18.00	18.50	19.25	20.00	22.00	25.50

Troy Flint Finishing Paper

Single-faced, per ream, 9x11 inches	\$3.00 net
Double-faced, per ream (240 sheets) 9x11 inches	
Double-faced, per roll, 11 inches x 60 yards	

Packed in Bundles for Shipment as follows:

Numbers	5-0	4-0	3-0	2-0	0	1/2
Reams	10	10	10	5	5	5

Mohawk Flint Paper

Sheets 8 3/4 x 10 1/2 Inches

Nos.	Per Ream
2-0 to 1/2	\$4.25
1, 1 1/2, 2	4.75
2 1/2 and 3	5.25
*Assorted	4.75

Packed in Bundles for Shipment as follows:

Numbers	2-0	0	1/2	1	1 1/2	2	2 1/2	3	Assorted
Reams	5	5	4	3 1/2	3	2 1/2	2	1 1/2	2 1/2

480 Sheets to Ream. Smallest Package 1/2 Ream.

*Assorted Packages

The several grits are packed in this proportion

Numbers	0	1/2	1	1 1/2	2	2 1/2	3
Per cent	10	10	20	20	20	10	10

Troy Flint Cloth

Per Roll of 50 Yards

Width Inches	3-0 to 1/2	1	1 1/2	2	2 1/2	3	3 1/2
2 3/8	\$2.55	\$2.75	\$2.85	\$2.95	\$3.15	\$3.35	\$3.50
3 3/8	3.35	3.65	3.80	3.90	4.20	4.45	4.70
4	3.85	4.20	4.35	4.50	4.85	5.20	5.40
5	5.20	5.60	5.80	6.05	6.50	6.90	7.30
6	5.60	6.10	6.35	6.60	7.10	7.55	8.00
7	6.60	7.20	7.50	7.80	8.35	8.90	9.35
8	7.40	8.00	8.35	8.70	9.30	9.95	10.40
9	8.40	9.10	9.50	9.90	10.60	11.35	12.00
10	9.35	10.10	10.50	10.90	11.70	12.35	13.30
12	11.20	12.20	12.70	13.20	14.20	15.10	15.45
14	12.00	13.00	13.75	14.50	15.50	16.50	17.50
16	14.80	16.00	16.70	17.40	18.60	19.90	20.50
18	16.80	18.20	19.00	19.80	21.20	22.70	23.75
20	18.70	20.20	21.00	21.80	23.40	24.70	26.25
24	21.85	23.65	24.80	26.00	27.85	29.60	30.60
28	24.00	26.00	27.50	29.00	31.00	33.00	35.00

Widths of Rolls not shown above are charged at the prices of the next greater width.

Heavy non-stretching cloth backing is supplied for flat belt work in numbers from 000 to 3 1/2.

Light, flexible cloth backing is furnished for moulding work in Nos. 000 to 1 1/2.

Sandpaper and Cloth

General Abrasives

Flint, Emery, Garnet, Metalite, Durite and Durundum

Troy Brand (Continued)

Metalite and Durite Cloth Discs

Metalite Discs are coated with the same artificial abrasives as Metalite Cloth, but are made much heavier and more rigid to withstand the severe work of disc grinding. For the grinding of steel and hard metals, Metalite Cloth Discs are recommended. For soft metals, or light work, the Durite Discs should be used.

Single Coated Discs

Per Disc

Diameter 180 Inches to 90	80	70	60	50	40	36	30	24	20	16	12	
6	\$.06	\$.07	\$.07	\$.07	\$.08	\$.08	\$.09	\$.09	\$.10	\$.11	\$.11	\$.13
8	.07	.07	.08	.08	.08	.09	.09	.10	.11	.12	.13	.15
10	.09	.09	.10	.11	.12	.12	.13	.14	.15	.16	.19	
12	.12	.14	.16	.17	.19	.19	.20	.21	.22	.22	.23	.27
14	.16	.17	.19	.20	.21	.23	.24	.25	.26	.27	.30	.33
15	.19	.20	.22	.23	.25	.26	.27	.28	.30	.30	.31	.37
16	.22	.22	.23	.25	.27	.27	.28	.29	.30	.32	.34	.41
18	.24	.25	.26	.27	.28	.30	.31	.32	.36	.40	.42	.51
20	.34	.36	.38	.41	.44	.45	.46	.47	.49	.54	.59	.70
22	.43	.47	.51	.55	.59	.60	.62	.64	.66	.72	.78	.90
23	.45	.49	.53	.57	.61	.63	.65	.67	.69	.76	.82	.94
24	.47	.51	.55	.59	.62	.64	.66	.68	.70	.78	.86	.98
25	.49	.53	.57	.61	.65	.67	.69	.72	.74	.82	.90	1.01
26	.51	.55	.59	.62	.66	.68	.70	.74	.78	.86	.94	1.05
27	.52	.56	.60	.64	.69	.72	.73	.77	.80	.89	.97	1.09
30	.66	.70	.74	.82	.86	.88	.90	.96	1.01	1.11	1.21	1.40
40	1.36	1.44	1.52	1.64	1.76	1.80	1.84	1.88	1.96	2.16	2.36	2.80
48	1.88	2.04	2.20	2.36	2.48	2.55	2.64	2.72	2.80	3.12	3.44	3.92
53	2.08	2.24	2.40	2.56	2.76	2.88	2.92	3.08	3.20	3.56	3.88	4.36
60	2.60	2.80	2.92	3.12	3.36	3.52	3.64	3.88	4.12	4.52	4.84	5.60

Double Coated Discs

Per Disc

Diameter 180 Inches to 90	80	70	60	50	40	36	30	24	20	16	12	
6	\$.09	\$.11	\$.11	\$.11	\$.12	\$.12	\$.17	\$.17	\$.18	\$.20	\$.20	\$.24
8	.11	.11	.12	.12	.12	.14	.17	.18	.20	.22	.24	.27
10	.14	.14	.15	.17	.18	.18	.22	.24	.26	.27	.29	.35
12	.18	.21	.24	.26	.29	.29	.36	.38	.40	.40	.42	.49
15	.29	.30	.33	.35	.38	.39	.49	.51	.54	.54	.56	.67
16	.33	.33	.35	.38	.41	.41	.51	.53	.54	.58	.62	.74
18	.36	.38	.39	.41	.42	.45	.56	.58	.65	.72	.76	.92
20	.51	.54	.57	.62	.66	.68	.83	.85	.89	.98	1.07	1.26
22	.65	.71	.77	.83	.89	.90	1.12	1.16	1.19	1.30	1.41	1.62
23	.68	.74	.80	.86	.92	.95	1.17	1.21	1.25	1.37	1.48	1.70
24	.71	.77	.83	.89	.93	.96	1.19	1.23	1.26	1.41	1.55	1.77
25	.74	.80	.86	.92	.98	1.01	1.25	1.30	1.34	1.48	1.62	1.82
26	.77	.83	.89	.93	.99	1.02	1.26	1.34	1.41	1.55	1.70	1.89
27	.78	.84	.90	.96	1.04	1.08	1.32	1.39	1.44	1.61	1.75	1.97
30	.99	1.05	1.11	1.23	1.29	1.32	1.62	1.73	1.82	2.00	2.18	2.52
40	2.04	2.16	2.28	2.48	2.64	2.72	3.32	3.40	3.56	3.92	4.28	5.04
48	2.84	3.08	3.32	3.56	3.72	3.84	4.76	4.92	5.04	5.64	6.20	7.08
53	3.12	3.36	3.60	3.84	4.16	4.32	5.28	5.56	5.76	6.44	7.00	7.88
60	3.96	4.20	4.44	4.92	5.16	5.28	6.48	6.92	7.28	8.00	8.72	10.08

In ordering give grade number, outside diameter and diameter of hole.

Sheets 9 x 11 Inches

Grits	Per Ream	Grits	Per Ream
180	\$14.50	60	\$17.00
150	14.50	50	18.25
120	14.50	40	19.50
100	14.50	36	20.75
90	14.50	30	22.00
80	15.75	24	23.50
70	16.50	20	24.75

480 Sheets to Ream

Durite Paper

This name applies to our abrasive products coated with the artificial mineral silicon carbide—a highly crystalline material made at very high temperatures in an electric furnace. This abrasive is exceedingly hard, and on breaking gives very sharp cutting edges. Durite is an ideal abrasive for leather under nearly all conditions and also meets a wide range of requirements for metal finishing, particularly on soft metals, such as copper, brass, etc.

Grits	Sheets					Webster Shape	
	9x11 Inches Per Ream	9x11½ Inches Per Ream	9x12 Inches Per Ream	12x12 Inches Per Ream	12x14 Inches Per Ream	4 Inches Per Ream	7 Inches Per Ream
180 to 90	\$6.50	\$7.00	\$7.50	\$11.00	\$13.25	\$5.00	\$7.50
80	7.00	7.50	8.00	12.00	14.25	5.25	8.00
70	7.50	8.00	8.50	12.75	15.00	5.50	8.50
60	8.00	8.50	9.00	13.50	16.00	5.75	9.00
50	9.50	10.00	10.50	16.00	18.75	6.00	10.50
40	11.00	11.50	12.00	18.50	21.50	7.00	12.00
36	12.00						
30	13.50						
24	15.00						
20	16.50						

Sheets packed in bundles for shipments as follows: Reams

Grits	Webster Shape			Sheets					
	D	F	E	A	B	C	D	F	E
180	2½	2½	2½	5	5	5	4	4	4
150	2½	2½	2½	5	5	5	4	4	4
120	2½	2½	2½	5	5	4	3½	3½	3½
100	2½	2½	2½	...	...	4	3½	3½	3½
90	2½	2½	2½	...	...	...	3½	3½	3
80	...	2½	2½	...	...	...	3	3	3
70	...	...	2½	...	...	...	...	...	2½
60	...	...	2½	...	...	...	...	...	2½
50	...	...	2	...	...	...	...	...	2
40	...	...	2	...	...	...	...	...	2
Relative Weights of Backing				30	40	55	70	85	100

480 Sheets to Ream. Smallest Package ½ Ream.

Per Roll of 50 Yards

Width Inches	180 to 90	80	70	60	50	40	36	30	24	20
3	\$1.00	\$1.05	\$1.10	\$1.15	\$1.35	\$1.55	\$1.70	\$1.85	\$2.05	\$2.25
3½	1.15	1.25	1.30	1.40	1.60	1.80	1.95	2.20	2.40	2.60
4	1.35	1.40	1.50	1.60	1.80	2.10	2.25	2.50	2.75	3.00
6	1.95	2.10	2.20	2.35	2.70	3.10	3.35	3.70	4.10	4.45
8	2.55	2.70	2.90	3.05	3.55	4.05	4.40	4.90	5.40	5.90
9	2.80	2.95	3.15	3.35	3.90	4.45	4.85	5.40	5.95	6.55
10	3.10	3.30	3.50	3.70	4.35	4.95	5.40	6.00	6.65	7.25
12	3.75	4.00	4.25	4.50	5.25	6.00	6.50	7.25	8.00	8.75
15	4.50	4.85	5.15	5.45	6.40	7.35	7.95	8.90	9.85	10.75
16	4.75	5.10	5.40	5.75	6.75	7.75	8.40	9.40	10.40	11.40
18	5.35	5.70	6.10	6.45	7.60	8.70	9.45	10.60	11.70	12.85
20	5.95	6.40	6.80	7.20	8.50	9.70	10.55	11.80	13.05	14.30
24	7.00	7.50	8.00	8.50	10.00	11.50	12.50	14.00	15.50	17.00

Durite Cloth

Per Roll of 50 Yards

Width Inches	180 to 90	80	70	60	50	40	36	30	24	20
3	\$1.80	\$2.00	\$2.15	\$2.20	\$2.30	\$2.50	\$2.75	\$2.95	\$3.10	\$3.35
3½	2.30	2.60	2.75	2.80	2.95	3.25	3.50	3.75	4.00	4.25
4	2.40	2.70	2.80	2.90	3.05	3.40	3.60	3.90	4.15	4.40
5	3.20	3.60	3.80	3.90	4.10	4.50	4.85	5.25	5.55	5.95
6	3.50	3.95	4.20	4.30	4.50	4.95	5.35	5.80	6.15	6.55
7	4.10	4.60	4.85	5.00	5.25	5.75	6.20	6.75	7.15	7.65
8	4.65	5.25	5.55	5.70	6.00	6.60	7.10	7.70	8.15	8.70
9	5.10	5.75	6.10	6.25	6.60	7.25	7.85	8.50	9.00	9.65
10	5.80	6.00	6.90	7.15	7.50	8.25	8.85	9.60	10.15	10.90
12	7.00	7.90	8.30	8.50	9.00	9.85	10.60	11.50	12.15	13.00
14	8.55	9.65	10.25	10.55	11.05	12.20	13.20	14.30	15.15	16.30
18	10.20	11.50	12.20	12.50	13.20	14.50	15.70	17.00	18.00	19.30
20	11.45	12.95	13.70	14.05	14.80	16.30				
24	13.75	15.55	16.40	16.85	17.75	19.55				
27	15.25	17.25	18.25	18.75	19.75	21.75	23.50	25.50	27.00	29.00

Light Cloth furnished in 180 to 70. Heavy Cloth furnished in 180 to 20

Sandpaper and Cloth

General Abrasives

Flint, Emery, Garnet, Metalite, Durite and Durundum

Troy Brand (Continued)

Troy Garnet Paper

Number	Sheets			Webster Shape	
	9x11 Inches Per Ream	9x11½ Inches Per Ream	9x12 Inches Per Ream	4 Inches Per Ream	7 Inches Per Ream
4-0 to ½	\$6.50	\$8.00	\$8.50	\$5.75	\$8.00
1	7.00	8.50	9.00	6.00	8.50
1½	7.50	9.00	9.50	6.25	9.00
2	8.00	9.50	10.00	6.50	9.50
2½	8.50	10.00	10.50	7.00	10.00
3	9.75	11.00	11.50	7.50	11.00
3½	11.00	12.00	12.50		

Per Roll of 50 Yards

Width Inches	4-0 to ½	1	1½	2	2½	3	3½
2¾	\$1.15	\$1.20	\$1.25	\$1.30	\$1.35	\$1.40	\$1.45
3¾	1.30	1.35	1.40	1.45	1.50	1.70	1.90
4	1.50	1.55	1.60	1.70	1.80	1.95	2.15
6	2.10	2.15	2.25	2.35	2.50	2.80	3.25
8	2.75	2.85	2.95	3.15	3.30	3.70	4.25
9	3.20	3.35	3.45	3.60	3.75	4.00	4.50
10	3.50	3.65	3.80	4.00	4.20	4.55	5.25
12	4.05	4.20	4.30	4.60	4.90	5.40	6.20
15	5.20	5.45	5.75	6.05	6.25	6.80	7.85
18	6.20	6.50	6.75	7.00	7.30	7.80	8.85
20	7.30	7.60	7.90	8.10	8.40	8.90	10.25
24	7.50	7.75	8.00	8.50	9.25	10.25	12.00
30	9.75	10.25	10.75	11.25	12.00	13.00	15.25
36	12.00	12.50	13.00	13.50	14.00	15.25	17.25
40	14.00	14.50	15.25	15.75	16.25	17.25	20.00
42	16.25	16.75	17.25	17.75	18.25	20.00	21.75
48	20.00	21.00	21.50	22.00	23.75	27.00	31.00

Width of Rolls not shown above are charged at the prices of the next greater width.

Troy Garnet Finishing Paper

Single-faced, per ream, 9x11 inches..... }
Double-faced, per ream (240 sheets) 9x11 inches..... } \$3.50 net
Double-faced, per roll, 11 inches x 60 yards..... }

Packed in Bundles for Shipment as Follows:

	Numbers.....	5-0	4-0	3-0	2-0	0	1½	1
Garnet	Reams.....	10	10	5	5	5	5	5

Durundum

The Durundum products listed here are made of another electric furnace or artificial mineral—refined and fused aluminum oxide. This abrasive while not so hard as Durite, is somewhat tougher. It finds its greatest application for the heavier work in leather and metal finishing. The selection of Durundum, Durite or Metalite for different conditions can best be determined by actual trial.

Durundum Paper

Grits	Sheets					Webster Shape	
	9x11 Inches Per Ream	9x11½ Inches Per Ream	9x12 Inches Per Ream	12x12 Inches Per Ream	12x14 Inches Per Ream	4 Inches Per Ream	7 Inches Per Ream
120 to 90	\$6.50	\$7.00	\$7.50	\$11.00	\$13.25	\$5.00	\$7.50
80	7.00	7.50	8.00	12.00	14.25	5.25	8.00
70	7.50	8.00	8.50	12.75	15.00	5.50	8.50
60	8.00	8.50	9.00	13.50	16.00	5.75	9.00
50	9.50	10.00	10.50	16.00	18.75	6.00	10.50
40	11.00	11.50	12.00	18.50	21.50	7.00	12.00

Durundum Roll Paper

Sold at same prices as Durite Roll Paper (on preceding page) but only in grits 120 to 40.

Durundum Paper is furnished only on F Paper Backing for grits 120 to 80 and on E Paper Backing for grits 120 to 40, and packed for shipment same as Durite F and E.

Durundum Paper Discs

Attractive prices furnished on application.

Troy Garnet Cloth

Per Roll of 50 Yards

Width Inches	4-0 to ½	1	1½	2	2½	3	3½
2¾	\$2.90	\$3.10	\$3.20	\$3.25	\$3.35	\$3.45	\$3.55
3¾	3.80	4.00	4.10	4.25	4.40	4.55	4.65
4	4.20	4.55	4.70	4.90	5.00	5.15	5.25
5	5.80	6.25	6.50	6.70	6.90	7.15	7.25
6	6.45	7.25	7.70	7.95	8.30	8.55	8.65
7	7.25	7.80	8.05	8.30	8.60	8.85	9.00
8	8.40	9.00	9.35	9.60	9.95	10.25	10.50
9	9.35	10.00	10.35	10.75	11.00	11.50	11.95
10	11.60	12.50	13.00	13.40	13.80	14.30	14.40
12	12.75	13.65	14.20	14.55	15.10	15.50	15.75
14	14.00	15.00	15.50	16.00	16.50	17.00	17.50
16	16.80	18.00	18.70	19.20	19.90	20.50	20.70
18	18.20	19.55	20.20	20.90	21.50	22.15	23.35
20	20.00	21.00	21.50	22.00	22.50	23.00	26.00
24	25.20	27.00	28.05	28.80	29.85	30.75	31.50
28	28.00	30.00	31.00	32.00	33.00	34.00	35.00

Heavy cloth backing is supplied for flat belt work in numbers from 3-0 to 3½. A flexible cloth with light backing is supplied for moulding work in numbers from 3-0 to 1½.

Troy Garnet Combination

(Paper Cloth) Per Roll of 50 Yards

Width Inches	3-0 to ½	1	1½	2	2½	3	3½
2¾	\$2.30	\$2.45	\$2.55	\$2.60	\$2.70	\$2.80	\$2.90
3¾	3.00	3.15	3.20	3.30	3.40	3.60	3.70
4	3.50	3.65	3.75	3.90	4.00	4.10	4.20
5	4.65	5.00	5.20	5.35	5.55	5.75	6.00
6	5.00	5.50	5.60	5.75	5.95	6.10	6.30
7	5.80	6.25	6.45	6.65	6.90	7.10	7.20
8	6.70	7.20	7.40	7.70	7.90	8.10	8.25
9	7.50	8.00	8.30	8.60	8.80	9.20	9.45
10	9.30	10.00	10.40	10.75	11.00	11.45	11.70
12	10.00	10.80	11.15	11.50	11.90	12.00	12.35
14	11.70	12.55	12.90	13.30	13.90	14.20	14.40
16	13.30	13.95	14.70	15.15	15.60	16.10	16.30
18	14.90	16.00	16.45	17.00	17.50	18.00	18.85
20	16.50	17.70	18.40	18.90	19.50	20.00	21.00
24	19.20	20.60	21.25	21.95	22.65	23.35	24.50
28	22.40	24.00	24.80	25.60	26.40	27.20	28.00

Widths of Rolls not shown above are charged at the prices of the next greater width.

Belts

Prices will be named on application for Garnet Belts, glued and ready for use and for Special Belts for small vertical sanding machines. These belts are supplied with a bevel cut instead of a straight cut, therefore running very much smoother on the machine.

Durundum Cloth

Grits	Sheets 9x11 Per Ream	Per Roll of 50 Yards		
		9 Inches	18 Inches	27 Inches
120 to 90	\$14.50	\$5.10	\$10.20	\$15.25
80	15.75	5.75	11.50	17.25
70	16.50	6.10	12.20	18.25
60	17.00	6.25	12.50	18.75
50	18.25	6.60	13.20	19.75
40	19.50	7.25	14.50	21.75

Furnished only on heavy cloth backing.

Durite and Durundum Combination

(Paper Cloth)

Per Roll of 50 Yards

Grits	24 Inches	28 Inches	Grits	24 Inches	28 Inches
150 to 90	\$14.50	\$17.00	60	\$16.00	\$18.50
80	15.00	17.50	50	16.50	19.25
70	15.50	18.00	40	17.50	20.50

Troy Emery Paper

Numbers	Sheets 9x11 Inches Per Ream	Per 50-Yard Roll 24 Inches
3-0 to 1/2	\$10.25	\$11.00
1	12.00	12.75
1 1/2	12.75	13.25
2	13.50	13.75
2 1/2	15.50	15.75
3	18.25	19.25
3 1/2	21.25	22.00
4	24.25	25.25
Assorted	12.75	

Packed in Bundles for Shipment as Follows:

Numbers.....	3-0	2-0	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	Assorted
Reams.....	4 1/2	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1 1/2	1 1/2	2 1/2
480 Sheets to Ream. Smallest Package 1/2 Ream.											

Troy Emery Cloth

Numbers	Grits	Sheets 9x11 Inches Per Ream	Per Roll of 50 Yards		
			9 Inches	18 Inches	27 Inches
3-0 to 1/2	180-90	\$26.50	\$9.25	\$18.50	\$27.75
1	80	28.50	10.50	21.00	31.50
1 1/2	70	29.75	11.00	22.00	33.00
2	60	30.75	11.50	23.00	34.50
2 1/2	54	33.00	12.00	24.00	36.00
3	46	35.25	13.25	26.50	39.75
3 1/2	40	37.50	14.25	28.50	42.75
4	36	40.00	15.75	30.50	45.75
4 1/2	30	42.50	16.25	32.50	48.75
5	24	45.00	17.50	35.00	52.50
Assorted		28.50			

Packed for Shipment as Follows:

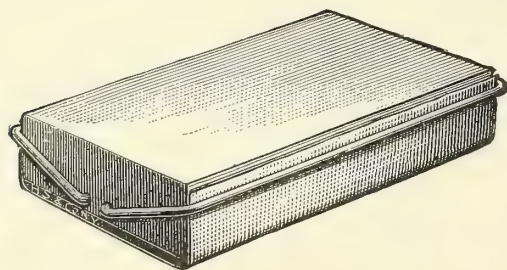
Numbers.....	3-0	0	100	1/2	1	1 1/2	2	2 1/2	3	3 1/2	Assorted
Reams.....	2 1/2	2 1/2	2	2	1 3/4	1 1/2	1 1/4	1	3/4	3/4	2
480 Sheets in Ream. Smallest Package 1 Quire.											

Crocus Cloth

Per Ream 480 Sheets 9x11 inches. \$26.50
2 Reams to the Bundle

In the manufacture of our Emery Paper and Cloth we use only the highest quality of Turkish Emery.

Perfection Sandpaper Holder



With the use of this device the sandpaper will always be held securely in place, by means of the wire clamps. The heavy felt with which the holder is covered and over which the sandpaper is placed will prevent the surface of articles from being scratched.

The sand or emery paper can be attached quickly and holds No. 00 up to No. 3. Size 4 1/2 x 2 3/4 x 1 inch.

Each holder is covered with a piece of sandpaper.

Dozen..... \$2.00

Shark or Fish Skins

Used by skilled carvers, instead of sandpaper. When wet, will fold snugly over a cork or other holder and after drying, does perfect abrasive work. Does not leave any grit to dull the tools.

No. 43 Dozen..... \$20.00
Each..... 2.00

Also cut in small pieces ready for use

Metalite Cloth

As its name implies, this abrasive material is intended primarily for metal finishing work. It is made from artificial abrasives—products of the high temperature electric furnace.

Under many of the conditions encountered in shop work, Metalite has been found to give better results than emery. On hard and tough metals particularly it exhibits unusual endurance and cool cutting qualities.

This Cloth is specially treated so as to be very flexible, a very important feature.

Sheet and Rolls

Sheets 9 x 11 Inches Per Ream

3-0 to 1/2	1	1 1/2	2	2 1/2	3	3 1/2	4
\$26.50	\$28.50	\$29.75	\$30.75	\$33.00	\$35.25	\$37.50	

Width Inches	Rolls of 50 Yards							
3	3.40	3.85	4.05	4.20	4.40	4.85	5.25	5.60
3 1/2	4.35	4.95	5.20	5.45	5.65	6.25	6.70	7.20
4	4.50	5.15	5.40	5.65	5.85	6.50	6.95	7.45
5	6.10	6.95	7.25	7.60	7.90	8.75	9.40	10.05
6	6.80	7.70	8.05	8.45	8.80	9.70	10.45	11.20
7	7.90	9.00	9.40	9.85	10.25	11.35	12.20	13.05
8	9.05	10.25	10.75	11.25	11.75	12.95	13.95	14.90
9	9.25	10.50	11.00	11.50	12.00	13.25	14.25	16.75
10	11.30	12.85	13.45	14.05	14.65	16.20	17.45	18.65
12	13.55	15.40	16.15	16.85	17.60	19.40	20.90	22.40
14	15.25	17.35	18.15	19.00	19.80	21.85	23.55	25.20
18	18.50	21.00	22.00	23.00	24.00	26.50	28.50	30.50
20	22.60	25.65	26.90	28.10	29.35			
24	27.10	30.80	32.25	33.75	35.20			
27	27.75	31.50	33.00	34.50	36.00	39.75	42.75	46.00

Handy Rolls

Rolls of 50 Yards wound on Spools

Width Inches	3-0 to 1/2	1	1 1/2	2	2 1/2	3	3 1/2
1/4	\$.70	\$.75	\$.80	\$.85	\$.90	\$.95	\$1.00
1/2	.90	.95	1.00	1.05	1.10	1.15	1.20
3/4	1.15	1.25	1.35	1.40	1.45	1.50	1.60
1	1.45	1.55	1.65	1.70	1.75	1.90	2.05
1 1/2	1.85	2.05	2.15	2.20	2.30	2.50	2.65
2	2.65	2.95	3.10	3.20	3.35	3.65	3.90
2 1/2	3.35	3.75	3.95	4.10	4.25	4.70	5.00

Corresponding Grit Numbers and Bundles for Shipment

Numbers .	3-0	2-0	0	100	1/2	1	1 1/2	2	2 1/2	3	3 1/2
Grit.....	180	150	120	100	90	80	70	60	50	36	24
Reams....	2 1/2	2 1/2	2 1/2	2	2	1 3/4	1 1/2	1 1/4	1	3/4	3/4

480 Sheets to Ream

Sandpaper Corks

Inches.....	1 1/8 x 3 x 4	1 1/2 x 4 x 6	1 1/2 x 4 x 12
Dozen.....	\$1.80	4.32	8.64

Steel Wool and Shavings

Are masses of sharp cut steel fiber; being soft and pliable will reach every corner and crevice; is rapid in action and will not clog or gum.

In packages containing 1 pound net.

Steel Wool

No. 00	For very high finish and fine work, particularly adapted for rubbing down piano cases. 1 pound package.....	\$1.25
No. 0	Substitute for pumice stone, etc., in rubbing down successive coats of varnish, etc., 1 pound package.....	.75
No. 1	Equivalent of sandpaper No. 0.....	.60
No. 2	Equivalent of sandpaper Nos. 1/2 and 1.....	.55
No. 3	Equivalent of sandpaper Nos. 1 1/2 and 2.....	.50
Also Nos. 1, 2, 3 and "Fine"	in small papers, each.....	.10

Steel Shavings

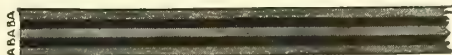
"Fine,"	coarser than No. 3 steel wool.	
"Medium,"	coarser than fine shavings	
"Coarse,"	coarser than medium shavings.	
All grades,	1 pound package.....	\$.40

Roofing

Black Diamond Tar



Two-ply consists of two sheets of the best quality of tarred felt (AA) cemented together with one layer of coal tar pitch (B).



Three-ply consists of three sheets of the best quality of tarred felt (AAA) cemented together with two layers of coal tar pitch (BB).

Enlarged Sectional Diagram

Made 32 Inches Wide

A combination of tarred felt and coal tar pitch, for roofing and water-proofing. The above sectional diagrams clearly indicate of what Black Diamond Roofing is made and illustrate the only difference between two and three-ply—the quality of materials used being the same in both. These materials are carefully combined by the original old-fashioned but practical method into a solid, flexible fabric.

1-ply rolls contain 324 square feet.

2-ply rolls contain 108 square feet.

3-ply rolls contain 108 square feet.

Prices upon application.

Ru-ber-oid

Ru-ber-oid consists of a felted fabric which is saturated and coated with flexible Ru-ber-oid gum.

There is no secret about the foundation of this fabric. It is the best roofing felt procurable. The only secret lies in the process of making Ru-ber-oid Gum. This gum is waterproof and as flexible as new rubber. Yet, unlike rubber, it retains these qualities when exposed to the elements. Rubber rots after slight exposure. Ru-ber-oid retains its life and flexibility under the severest weather conditions.

Ru-ber-oid is inexpensive to buy, costs little to lay and requires very little attention. It is in the end the cheapest roofing known.

Ru-ber-oid contains no rubber or tar. It is not "asphalt" roofing. It is tasteless and odorless, and may be used on roofs from which drinking water is gathered.

It is an effective insulator, for it excludes both heat and cold. It is fire-resisting. Hot coals thrown on it do not set fire to the roofing or to the sheathing beneath.

Roofings of metal, slate, tile, etc., have no advantage over Ru-ber-oid in insurance rating. All are placed in the same class by fire underwriters.

Two-ply for dwellings, warehouses, stores, etc.

Three-ply for factories, foundries, etc.

2-ply, per square..... \$3.25
3-ply, per square..... 4.00

While each square is charged for at the rate of 100 square feet, 8 extra square feet are included to allow for two-inch laps. Each roll, also, includes Ru-ber-ine Cement, heavily zinc-coated nails—everything needed to lay the roofing.

Asbestos Sheet Mill Board

Especially adapted for fireproof lining of floors, partitions, etc. Also for packings, fire screens, lining for ranges, stoves, grates, gas backs, etc.

Made from pure asbestos fiber and is fire and acid-proof.

In thicknesses of $\frac{1}{4}$ or $\frac{1}{8}$ inch, sheets 40x40 inches or 20x40 inches, $\frac{1}{4}$ weighs 4 pounds and $\frac{1}{8}$ weighs 8 pounds, per 40x40 inches sheet, per pound..... \$.05

Building and Sheathing Papers

Nox-em-all

A red rosin-sized sheathing. These are tough, strong, durable papers, damp and moisture-proof, air-tight, well calendered and thoroughly rosin-sized.

They are made from selected rag and jute stock and afford all the service a sheathing paper can possibly offer. There is no shrinkage or waste.

Nox-Em-All Sheathings are made 36 inches wide.

Nox-Em-All No. 12—A three-ply red. 12 square feet to the pound. Rolls contain approximately 500 square feet and weigh about 40 pounds.

Nox-Em-All No. 16—A three-ply red. 16 square feet to the pound. Rolls contain approximately 500 square feet and weigh about 30 pounds.

Nox-Em-All No. 20—A three-ply red. 20 square feet to the pound. Rolls contain approximately 500 square feet and weigh about 25 pounds.

Prices on application.

Insulating Paper

Standard P and B

Treated with P. & B., a preservative and insulative compound, which renders it thoroughly air-tight, moisture-proof and resistant to the action of acids and alkalies. Contains no tar, oil, or other ingredients that will be affected by exposure or by changes of temperature, and is entirely free from taste or odor. Is suitable for lining ice-boxes, etc., and also used as a sheathing paper and for construction work where excellent quality is desired.

In rolls containing 500 square feet.

Ply.....	1	2
Weight of 500 square feet, pounds.....	15	25
Price of 500 square feet.....	\$3.50	3.90

Deadening Felt

Tomb Brand

Made of soft woollen rags, which not only have remarkable deadening qualities but add greatly to the warmth of the structure.

Made 36 inches wide and put up in measured rolls containing 50 lineal yards—450 square feet.

Made in one quality and three weights, as follows:

1 pound to square yard, or 9 square feet to pound.

1½ pounds to square yard, or 6 square feet to pound.

2 pounds to square yard, or 4½ square feet to pound.

Prices on application.

Roofing Tins



1¼ inches in diameter. For fastening all roofing papers to the sheathing boards. The cap is used as a washer for the head of the nail, preventing the nail from cutting the felt or pulling through. A 1 or 1½ inch No. 12 barbed wire nail will answer all purposes. We will not send nails with tins unless so specified in order.

Per pound..... \$.08

Wire Cloth

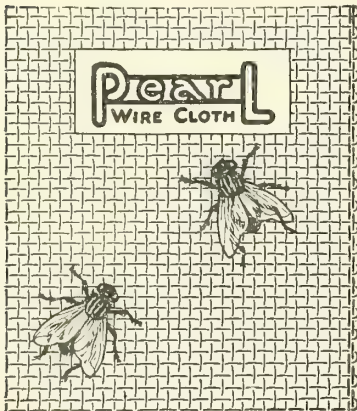
When ordering Wire Cloth be careful to state the exact length and width desired

Mesh

The size of any mesh in wire cloth is the distance from center to center of its parallel wires—not the clear space between these wires. The numeral which precedes this word in the description of cloth indicates the number of openings it has in one lineal inch. Thus, 14 mesh means that the cloth has 14 openings per lineal inch.

Wire Gauges

The recognized standards for gauging wire fabrics are the Washburn & Moen gauge for iron, steel, galvanized, tinned and coppered wire, and the Old English gauge for brass, copper and bronze wire.



14 Mesh No. 34 Wire

Pearl

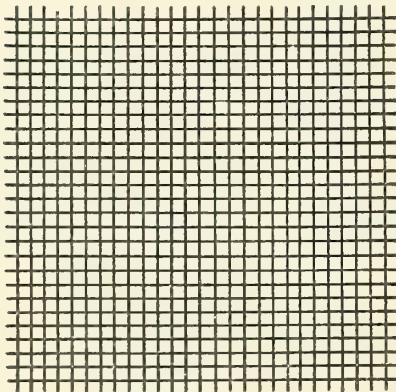
Is made of steel wire of unusual hardness protected by a metallic finish, which is the result of years of experiment. This imparts to the cloth remarkable durability and smoothness.

The metallic finish, at first lustrous—similar to silver—turns, after short exposure, to a shade of gray, rendering the wire almost invisible.

The cost of screening a building with Pearl Wire Cloth is but little more than if the ordinary painted material is used and the expense and annoyance of frequently repainting and replacing the wire is avoided.

In Rolls of 100 Linear Feet

Carried in stock in widths 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 48 inches. List per square foot..... \$.06



14 Mesh No. 31 x 32 Wire

“Pompeiiian” Bronze

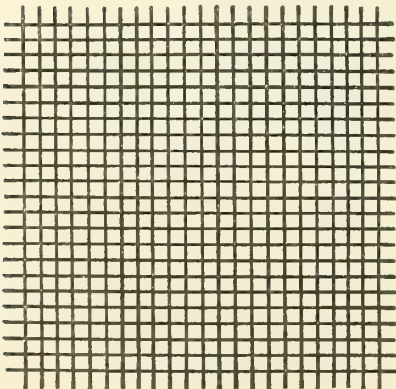
This Bronze Wire is an alloy of non-corrodible metals of which copper represents about 90 per cent., and tests have proven it to be more durable than pure copper when used for window and door screens.

Requiring no paint, lacquer or other protective coating, light and air have an unobstructed passage through these fabrics. Exposure to the weather simply darkens the color, rendering the cloth nearly invisible.

We specially recommend Pompeiiian Bronze Wire Cloth in cases where exposed to salt air.

In Rolls of 100 Linear Feet

Carried in stock in widths of 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 48 inches. List per square foot..... \$.08



12 Mesh No. 33 x 34 Wire

Black Painted

The paint used on this cloth is a special mixture which practical testing has proven to be perfectly adapted to all requirements. It is composed of white lead, boiled linseed oil, turpentine varnish and color pigments of best quality, and produces an elastic and durable coating which is essential to the life of painted screen cloth and which cannot be produced with inferior materials.

The painting is done by power machines of delicate adjustment, which thoroughly cover every wire with a coat of paint of the proper thickness.

As the cloth leaves the painting machine it passes into drying ovens which are maintained at the temperature required for slow and thorough drying of the paint.

In Rolls of 100 Linear Feet

Carried in stock in widths of 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 48 inches. List per square foot..... \$.02

Galvanized Steel Wire Cloth

When ordering Wire Cloth be careful to state length and width, as well as mesh and size of wire wanted

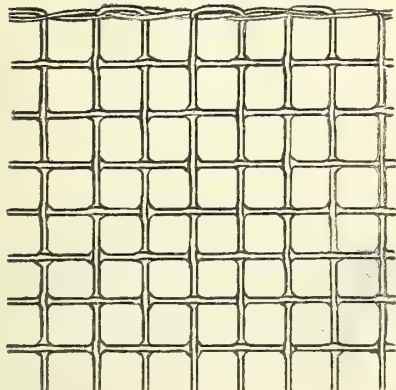
Mesh

The size of any mesh in wire cloth is the distance from center to center of its parallel wires—not the clear space between these wires. The numeral which precedes this word in the description of cloth indicates the number of openings it has in one lineal inch. Thus, 4 mesh means that the cloth has 4 openings per lineal inch, each measuring $\frac{1}{4}$ inch from center to center of its parallel wires.

Wire Gauges

The recognized standards for gauging wire fabrics are the Washburn & Moen gauge for iron, steel, galvanized, tinned and coppered wire, and the Old English gauge for brass, copper and bronze wire.

Square Mesh

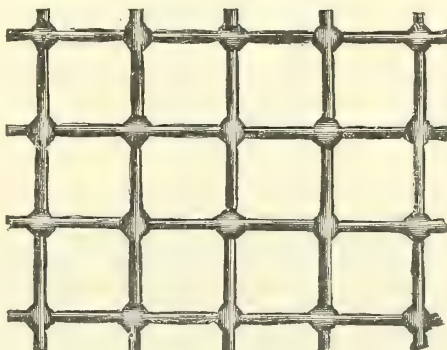


No. 4 Mesh. Standard

No. 23 Wire

In rolls of 100 linear feet. Carried in stock in widths of 24, 30, 36, 42 and 48 inches.

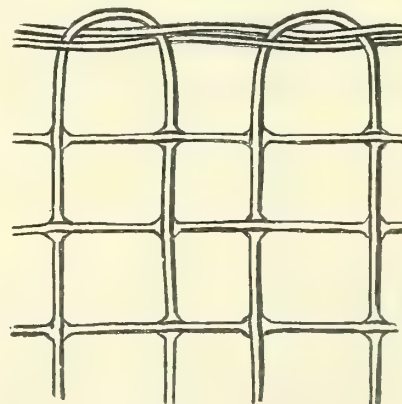
List per square foot..... \$.08



No. 2 Mesh. No. 14 Wire

In rolls of 100 linear feet. Carried in stock in widths of 36, 42 and 48 inches.

List per square foot..... \$.17



No. 2 Mesh. Standard

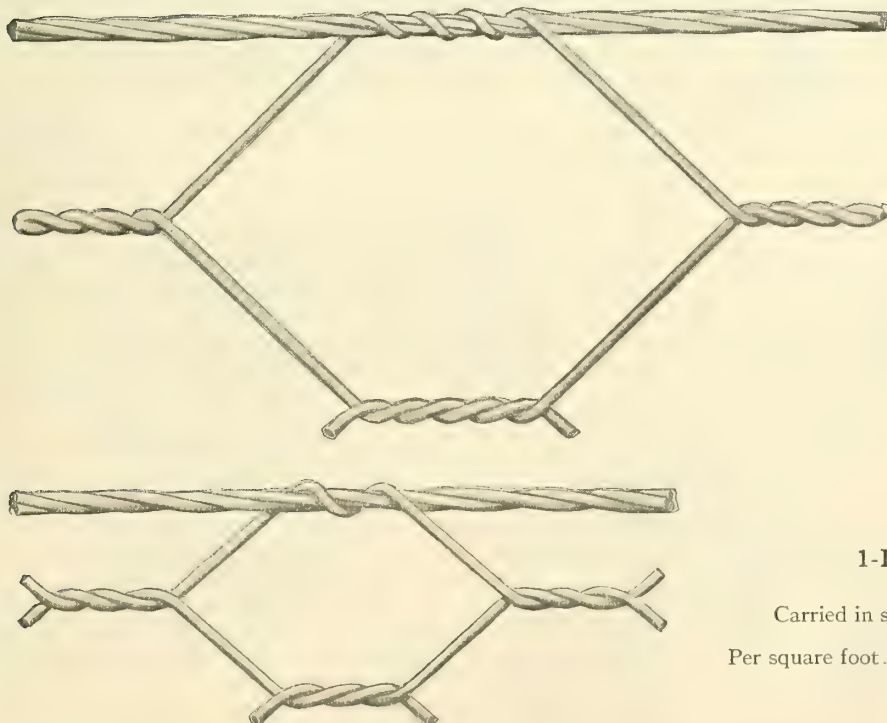
No. 19 Wire

In rolls of 100 linear feet. Carried in stock in widths of 24, 30, 36, 42 and 48 inches.

List per square foot..... \$.08

Galvanized Poultry Netting

In Rolls of 75 or 150 Linear Feet



2-Inch Diamond Mesh. No. 19 Wire

Carried in stock in widths of 24, 30, 36, 42, 48, 60 and 72 inches.

Per square foot, in widths of 24, 30, 36 and 42 inches..... \$.02 $\frac{1}{2}$

Per square foot, in widths of 48 and 60 inches..... .03 $\frac{1}{2}$

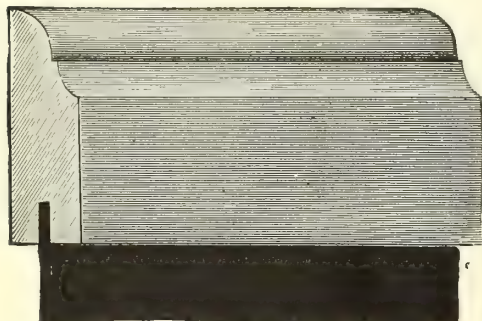
1-Inch Diamond Mesh. No. 20 Wire

Carried in stock in widths of 24, 30, 36, 42, 48, 60 and 72 inches.

Per square foot..... \$.05 $\frac{1}{2}$

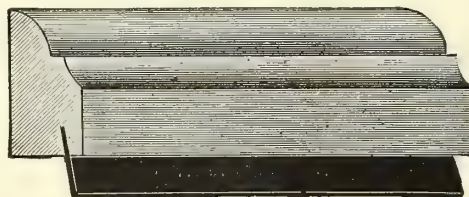
Weather Strips

Wood, with Strip Rubber Insert



No. A2

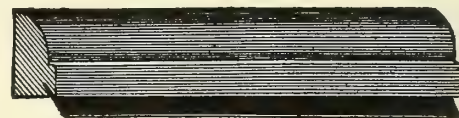
For use on the bottoms of light inside doors, the rubber to press gently on the sill. Close the door before applying. Use 1¼-inch finishing nails or 1-inch screws. Red cherry or hazel, plain, per foot . . . \$.10



No. A3

For use on the lower sash of lift windows, making them air-tight and entirely preventing their rattling. Close the sash and brad to the stop bead at the sides and bottom so that it will press gently against the sash. It may also be used in the same manner for the upper sash, applying it outside. Use ¾-inch brads or finishing nails.

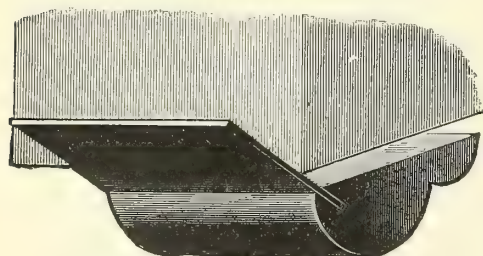
Red cherry or hazel, plain, per foot . . . \$.05



No. A5

For use on the upper sash of lighting windows, making them air-tight and also preventing them from rattling. Cut a little of the meeting rail of the lower sash before applying, so as to allow sash to move freely over the weather strip. Close the sash and brad to the parting strip with rubber pressing gently against the sash. Use ¾-inch brads or finishing nails.

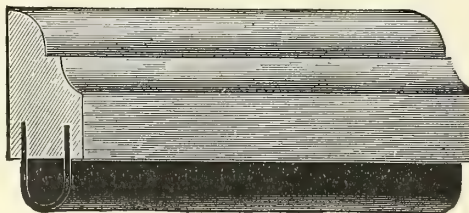
Red cherry or hazel, plain, per foot . . . \$.05



No. A6

An effective device for closing the joint between the two sashes. For lift windows apply to the under side of the upper sash, with rubber projecting over the lower one. Use 1-inch brads or finishing nails.

Hazel or red cherry, plain, per foot . . . \$.07

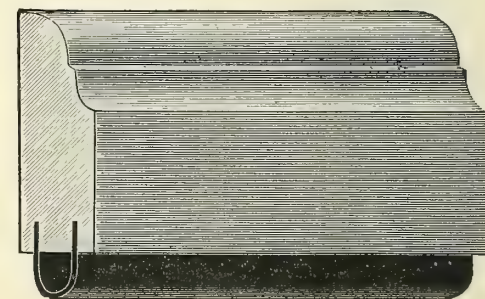


No. A7

The cushion shape makes it more elastic, and consequently more effective in its operation than any other form.

It is applicable to double and single doors and French windows. Close the door and brad the strips to the jamb or frame outside, so that the cushion rubber presses very gently against the door.

Hazel or red cherry, plain, per foot . . . \$.05



No. A8

Extra heavy cushion strips. For use on heavy doors, or in cases where too much warped to allow use of No. 7.

Red cherry or hazel, plain, per foot . . . \$.10

Metallic, with Strip Rubber Insert

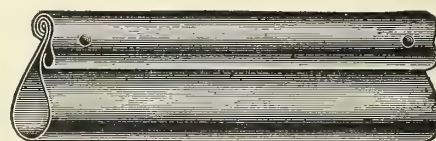
In 7 foot lengths



3/8 Inch

For windows with narrow parting strips.

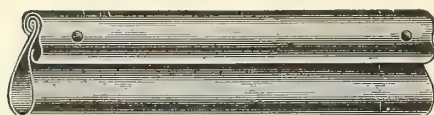
3/8 inch wide, plain zinc, per foot . . . \$.06



5/8 Inch

For the sides and tops of doors.

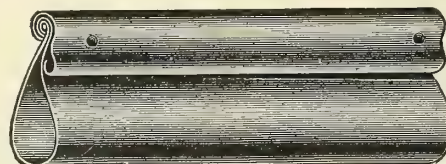
5/8 inch wide, plain zinc, per foot . . . \$.07



1/2 Inch

For ordinary lift windows.

1/2 inch wide, plain zinc, per foot . . . \$.06



3/4 Inch

For light inside door bottoms.

3/4 inch wide, plain zinc, per foot . . . \$.08

Elastic Rubber

Put up in boxes of 50 feet each



Full Size, 1/2 Inch

Size, inch.	3/8	1/2	3/4	1
Per foot	\$.05	.06	.08	.10

Fire Pails

Galvanized



Painted Red Outside

Quarts.....	12	14
Inches.....	11x9½	11½x10½
Dozen.....	\$3.60	3.90
Covers to fit, per dozen...	1.65	1.80



Painted Red Outside

Quarts.....	12	14
Inches.....	10½x11½	11x12¼
Dozen.....	\$4.20	4.80
Covers to fit, per dozen	1.65	1.80

Water Pails

Galvanized—Heavy



Quarts.....	12	14	16
Inches.....	11x10	11½x10½	12¾x11¼
Dozen.....	\$3.90	4.20	5.00
Covers to fit, per dozen...	1.75	2.00	2.50

Water Pails

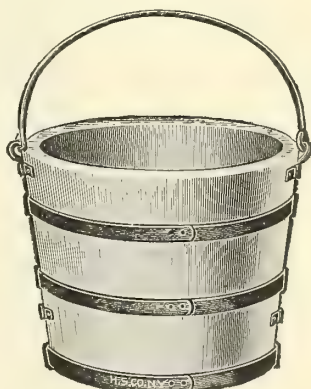
Galvanized



Quarts.....	12	14	16
Inches.....	11x9½	11½x10¼	12¾x11¼
Dozen.....	\$2.85	3.15	3.90
Covers to fit, dozen....	1.65	1.80	2.25

Stable Pails

Flush Bottoms

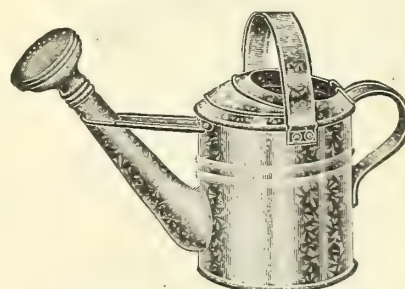


J. I. C.

Oak, galvanized hoops and straps, dozen.....	\$12.00
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Watering Pots

Galvanized



New York Pattern with Zinc Roses

Number.....	116	118	
Quarts.....	6	8	
Dozen.....	\$7.20	8.10	
Number.....	120	122	126
Quarts.....	10	12	16
Dozen.....	\$9.90	10.80	12.96

Cuspidores

Agate Nickel Steel



Self-righting

Number.....	9
Inches.....	7¾x4½
Dozen.....	\$10.00

Measures

Galvanized



Number.....	03	04	05	06
Measure, quarts..	½	1	2	4
Dozen.....	\$2.15	2.95	4.30	5.50

Funnels

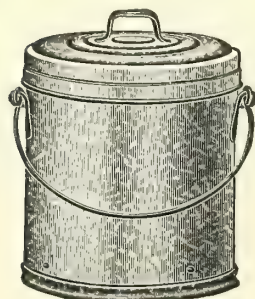
Galvanized



Number.....	03	04	05	06
Capacity, quarts.	½	1	2	4
Dozen.....	\$1.80	2.25	3.20	4.00

Garbage Cans

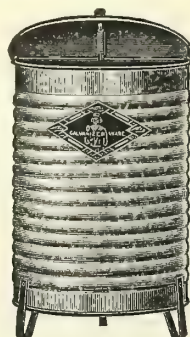
Bailed Flat Bottoms
Deep Seamless Cover, Fits
Over Outside



Number	Capacity Gallons	Dimen- sions Inches	Dozen
02	6½	13x12½	\$9.75
03	8½	14x14	11.35
04	9	14x15½	13.00

Oily Waste Cans

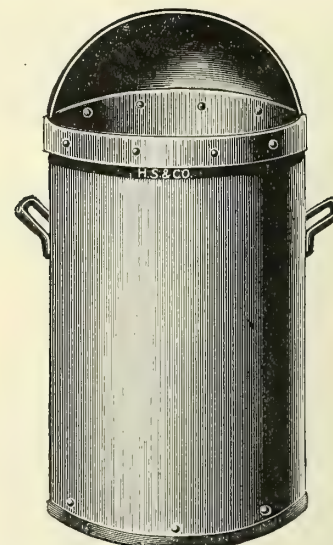
New York Pattern
With Spring Covers



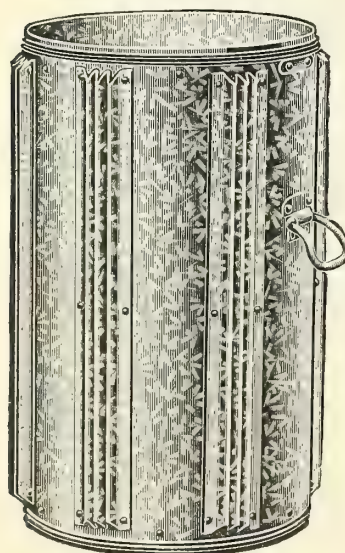
Number	Dimensions Inches	Height From Floor	Dozen
1	11¼x11¼	2½	\$18.00
2	11¾x15½	2½	27.00
3	12¾x17½	2½	36.00
4	14 x19¼	2½	45.00
5	14¾x21¼	2½	54.00
6	18½x23½	3	81.00
7	20½x28½	3	108.00
8	23½x33¼	3	142.20

Waste Paper or Rubbish Cans

Japanned Green Heavy Half-
Hood Stationary Handles



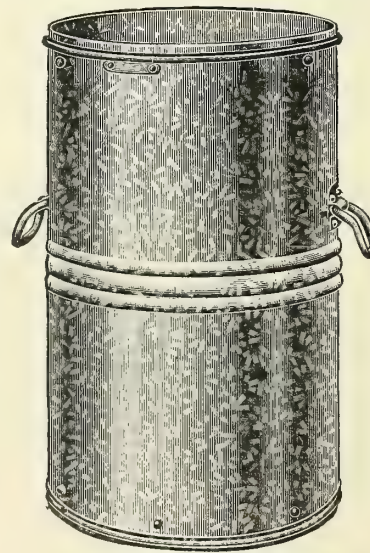
Number	1
Dimensions, inches	20½x30
Dozen.....	\$72.00



Ash Cans

Galvanized Steel Ribbed
Without Covers

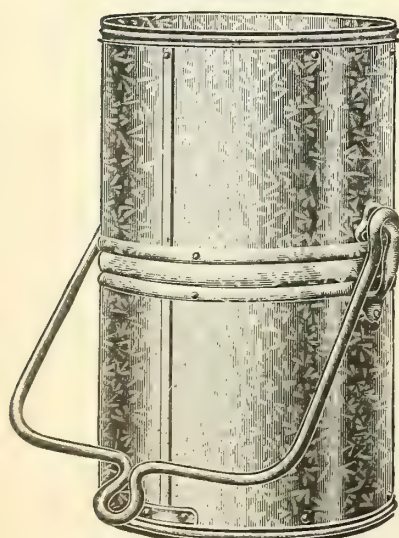
Number.....	17	18		
Inches.....	15x26	17x26		
Dozen.....	\$34.20	36.90		
Number.....	19	20		
Inches.....	18x26	20x26		
Dozen.....	\$40.50	47.70		
Covers to fit:				
Number.....	3	4	5	6
Dozen.....	\$3.85	4.50	5.40	6.45



Ash Cans

Galvanized
Without Covers

Number ..	2½	3	4
Inches...	14x17¾	15x26	17x26
Dozen...	\$20.70	23.40	27.00
Covers to fit:			
Number ..	2	3	4
Dozen.....	\$2.70	3.85	4.50

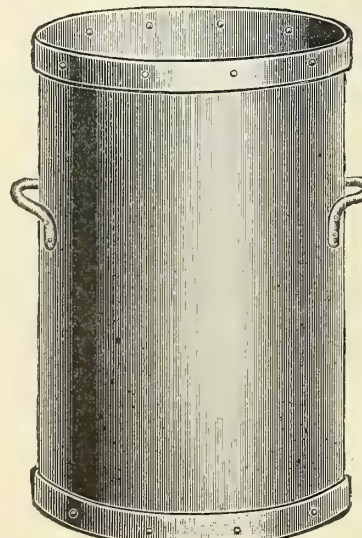


Ash Cans

Galvanized Bailed Extra
Heavy for Hoisting

Without Covers

Number.....	103	104	105	106
Inches.....	15x26	17x26	18x26	20x26
Dozen.....	\$41.00	46.00	51.00	56.00
Covers to fit:				
Number....	3	4	5	6
Dozen.....	\$3.85	4.50	5.40	6.45

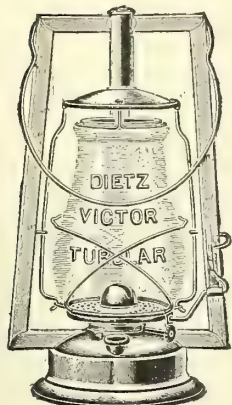


Engineers Ash Cans

Made of heavy wrought
iron, japanned.
No. 2 18x24 inches, each \$8.00

Loose hoist hooks supplied
when ordered.

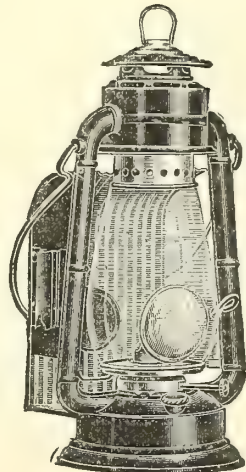
Lanterns



Victor No. 0

The crank at the side raises and lowers the globe and securely locks the burner in place when down. Bright tin. For use with kerosene. $\frac{5}{8}$ inch wick.

With white globe, dozen	\$6.50
With red globe, dozen	8.15
Extra white globes, dozen	1.50
Extra red globes, dozen	3.40



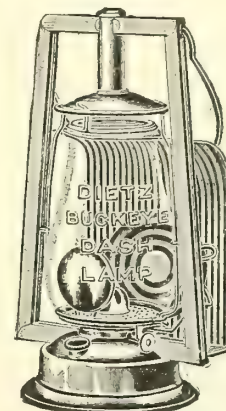
"Junior" Side

The Dietz "Junior" Side Lamp is designed to meet all requirements of the state and city laws regulating night lights on horse-drawn vehicles. It is compact and handy, and by means of our patent combination socket taking any round or flat bracket, may be located on the side of the vehicle, or at the side of dash, lighting the road and at the same time showing a red danger signal to the rear.

The "Junior" Side Lamp has a bright corrugated tin reflector and a bullseye lens, also a $2\frac{1}{4}$ -inch ruby rear lens. Has a safety oil well and all the latest lantern improvements.

It may also be used as a hand lantern.

With white globe, dozen	\$14.00
Extra white globes, dozen	1.50



"Buckeye" Dash

Has a dash clip spring, a bail for use as a hand-lantern, and also serves as a wall lamp.

The "Buckeye" is black enamel, equipped with a bright, corrugated tin reflector and a bullseye lens. It has a large oil filler, patent safety wing-lock burner, positive locking globe lift, dome-shaped solderless oil fount with safety oil well, and security standing bail hooked into patent brass eyelets.

With white globe, dozen	\$10.00
Extra white globes, dozen	1.50

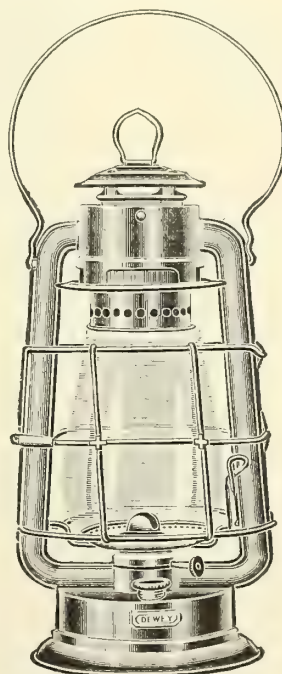


Blizzard Mill No. 2

Approved by insurance inspection department.

These lanterns represent the highest type of watchman's lanterns on the market. They give a light of 10 candle-power and embody every modern lantern improvement, bright tin, having special reinforced frames braced to founts, hinged guards, safety oil wells, and a locking attachment to prevent tampering with the flame. Sold without padlock.

With white globe, dozen	\$33.00
Extra white globes, dozen	2.00

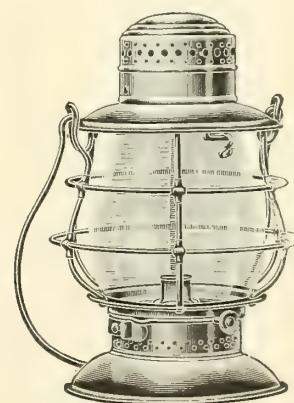


Dewey

Has attachment for locking frame to prevent tampering with the flame. Weighted slide in oil reservoir automatically presses against wick and shuts off oil supply in case lantern is overturned, thereby preventing fire.

The lantern is bright tin, substantially built and is of the cold blast type. A high-grade watchmans lantern.

Dozen	\$40.00
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Railroad No. 39

Hinge top, removable globe, double guard, casts no shadow. For use with railroad signal oil. Bright tin.

With white globe, dozen	\$13.50
Extra white globes, dozen	2.00
Extra red globes, dozen	5.30

Fire Extinguishers

Accurate



Capacity, 2½ Gallons

Simple to operate. No experience required. Throws stream 50 feet and will instantly extinguish an oil, tar, naphtha or gasoline fire

Besides the great strength of the "Accurate," there are other advantages embodied in its construction, among them being the following:

I. Moisture-proof acid bottle, because top is ground true and lead stopper has a true bearing surface, thus the acid retains its full strength.

II. Side handle fastened on cylinder instead of on dome and four heavy rivets used.

III. Acid bottle cage made of hard rolled brass, coated, with heavy rolled copper tops.

IV. Chemical charge securely packed inside the extinguisher for shipment (see right hand cut). Charges are never lost or damaged in transit, making user always certain of the correct charges for use.

V. The general finish and appearance of the "Accurate" is unusually fine, and it is guaranteed absolutely dependable. 2½ gallons capacity, tested to 350 pounds pressure. Passed by the underwriters laboratories.

Each.....	\$10.00
Extra re-charges, dozen.....	5.00



Showing method of packing chemical charges in Accurate Fire Extinguishers.

Choke Fire

A Dry Chemical



A well coated metal tube, strongly made. It is 24 inches in length and contains chemical fire-killing ingredients of the highest grade. These chemicals are in powder form, ground extremely fine, and are therefore much more efficient because of the greater amount of carbonic acid gas that is immediately generated when the powder comes in contact with the fire. It is a well-known fact that carbonic acid gas is a very powerful agent in extinguishing fire.

Choke Fire may be used to best advantage where objection might be made to water or a fluid chemical stream. Fires starting from electric causes may frequently be extinguished with less damage by using Choke Fire than by any other means, if attacked in their incipency.

Choke Fire should be regarded as invaluable as a "first aid," but is not intended to take the place of the liquid chemical extinguishers.

Dozen.....	\$10.00
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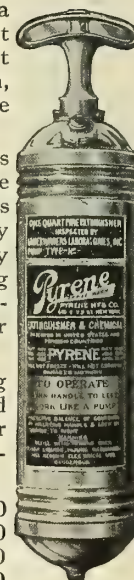
Pyrene

Pyrene is a combination of powerful gases in liquid form, absolutely devoid of moisture, thus rendering it a non-conductor of electricity. When this liquid is brought into contact with a temperature of 200 degrees or over it is instantly converted into a heavy gas blanket which, surrounding the fire, excludes oxygen, and extinguishes the fire without damaging surrounding property.

Pyrene will not freeze at a temperature of 50 degrees below zero, does not deteriorate with age, or corrode metals, no matter how long a period may elapse, thus eliminating cost of maintenance and care. It is equally efficient on all classes of incipient fires, and is the only extinguisher that will effectually extinguish burning Gasoline, Turpentine, Varnish, Paint Remover, Oil-soaked Waste, Shavings, Calcium Carbide, and all other highly inflammable materials.

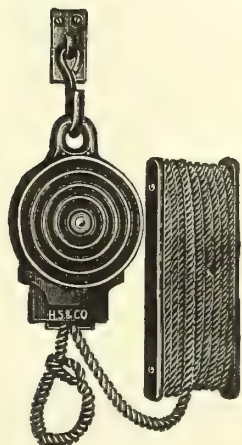
Size is three inches in diameter, fourteen inches long and weight is about six pounds. Is especially adapted for car shops, barns, power houses, for the home and for any automobile or railroad car. Passed by the underwriters laboratories.

Brass polished, each.....	\$7.00
Brass nickel-plated, each.....	8.00
Extra re-charges, each.....	1.00
Enameled brackets, each.....	.50
Brass brackets, each.....	.75



Fire Escapes

Wilson Portable Automatic



Complete with Wall Hook and Rope.

No. 1	Travelers size, with 60 feet of rope, each.....	\$5.00
No. 2	Residence and hotel size, with 75 feet of rope, each.....	8.00
No. 3	Fire department size, with 100 feet of rope, each.....	12.00
	Extra rope, per foot.....	.03
	Extra hooks, each.....	.25
	Belts, if desired, each.....	1.50

Consists of a rope with a loop at each end, which passes through a simple mechanical device hung at the window. This device controls the speed of the moving rope absolutely without any human assistance. It is not made to lower a specified weight, but adjusts itself to any weight. A person weighing two hundred and fifty pounds will descend approximately at the same rate of speed as one weighing ninety pounds. It can be conveniently packed in a trunk.

The mechanism is simple and thoroughly durable. It has no ratchet, cog gearing or spring liable to stick or get out of adjustment.

The reel or coil of rope, which should be of sufficient length to reach the ground, is thrown out of the window and the ring on uncoiling device must be attached to suitable and substantial hook

With the loop at the end of the rope at the window a slip noose is made and slipped over the head and under the arms. The person may then descend without holding or controlling the rope in any way

It is not necessary for the second or succeeding persons to draw the rope up again. It is ready for them, as there is a loop at each of the rope.

Suitable for use in residences, hotels, apartments, factories, retail and wholesale stores and by travelers

American Chain Ladder



A safe, practical, indestructible fire escape, suitable for use in schools, colleges, private residences, etc. To install and prepare ready for use requires only the fastening of the chain anchors to baseboard and floor. This is done with 12 steel screws without disfigurement to interior or exterior of building. To use, drop out of the window.

It is constructed of weldless link, non-kinkable, high carbon steel chain side supports, to which are attached at intervals of 12 inches, seamless cold drawn steel tube rungs, 15 inches in length.

Every ladder will support a strain of 2,000 pounds and is assembled without drilling, denting or otherwise weakening the rungs. All parts are heavily galvanized, which renders the ladder impervious alike to fire and water.

Each ladder is packed in oxidized case, which may be used as a permanent container, set under window ready for instant use (see illustration).

Length of ladder, feet.....	10	15	20	25	30	40
Each.....	\$12.00	15.00	16.50	18.00	20.00	22.50
Length of ladder, feet.....	50	60	70	80	90	100
Each.....	\$25.00	30.00	35.00	39.00	44.00	48.00
Extra for waterproof roof or balcony case	\$6.50					

Fire Guards

A Protection for Gas Lights or Electric Lamps

Gas Jet

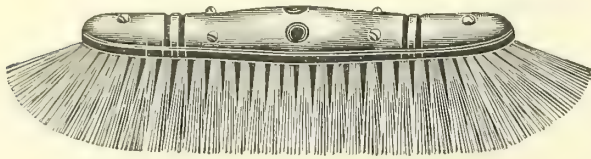
No. 200 7 inches in diameter, made of wire and retinned, dozen . \$3.00

Electric Lamp

No. 201. Made of wire, extra heavy, with clamp screw. Lamp may be removed and replaced without detaching guard.

Dozen..... \$5.00

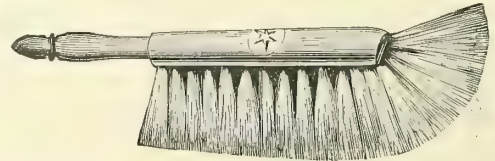
Floor Brooms



Brooms are made on polished double threaded hole blocks.
Threaded handle supplied with each broom.

No. 6 16-inch block, made of Russian bristle, dozen..... \$50.00
No. 116 16-inch block, black middle, white outside, dozen.. 33.75

Bench Dusters



No. 10* 5-inch block, white bristles, dozen..... \$5.00
No. AH3 10-inch block, white and gray bristles, dozen..... 8.00
No. 2 Boston 9-inch block, gray bristles, dozen..... 10.00
No. 2 Extra Boston 9-inch block, gray bristles cased with white, dozen..... 12.00

*Our regular manual training-school duster.

Feather Dusters



Factory Brooms

All corn, smooth stock. Strongly made, heavy weight. Extra quality.

No. 7 Dozen \$8.00
No. 8 Dozen 8.50

Black polished handles, full feathers, and well made.

No. 14 Ostrich feathers, dozen..... \$25.00
No. 14 Turkey feathers, dozen..... 10.00

Broom Holders



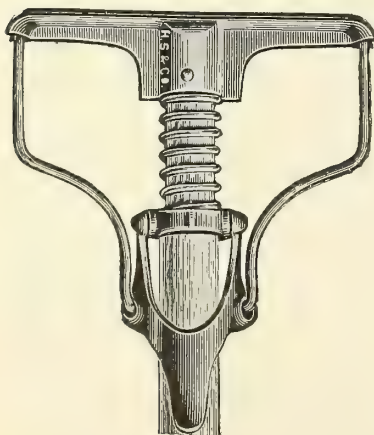
Handy

Made of heavy nicked wire, dozen..... \$.80



No. 215 Stamped steel, coppered, dozen. \$1.00

Mop Handles



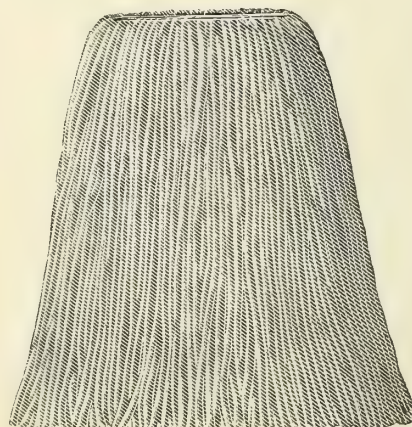
These Mop handles are made of selected hardwood and polished.

The heads and levers are made of extra heavy sheet steel. They do not break in shipment or in use.

Metal parts galvanized.

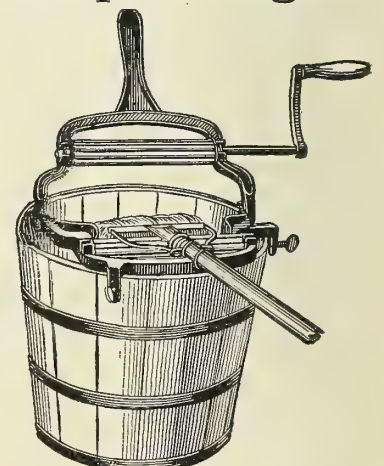
Dozen..... \$2.00

Cotton Mops



No. 2 Cotton Twine, dozen..... \$3.00

Mop Wringers



No. 1 Japanned

With galvanized rolls (as illustrated).
Each..... \$1.25

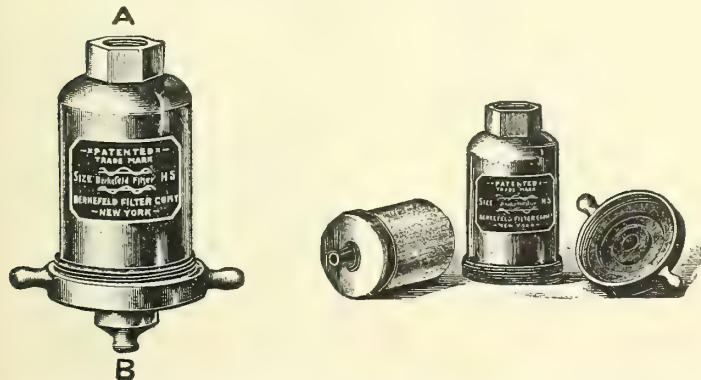
Whites

With this Wringer the mop is squeezed dry between two boards without muss. It is the best of its kind.
Each..... \$2.10

Filters Berkefeld

The Berkefeld Filtering Medium is made of infusorial earth found in the kieselguhr (fossil meal) mines in Hanover, Germany. The peculiar properties and microscopic construction of this earth (composed of the silicious skeletons of diatoms) render it peculiarly suitable for the purpose of filtration. The form of these minute skeletons (ladder like and interlacing) gives an enormous number of tiny pores, thus affording a free passage for the liquid and at the same time stopping all suspended matter. The great difficulty to be overcome has been the formation of a solid substance of this deposit thoroughly annealed together. These filters include this feature in a hollow filtering cylinder completely closed at one end and the other end fitted into a metal headpiece. The water passes through the walls from the outside to the interior, leaving all impurities on the outer surface. The accumulated impurities can be removed with a sponge or soft brush. At each cleaning a thin surface layer of the medium will be brushed off, thus reopening all the pores and regaining the original filtering capacity. The entire cylinder may be sterilized by boiling in water for one hour.

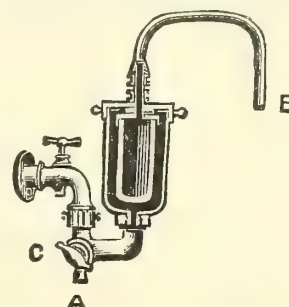
No. H-5 Nickel-plated



This filter is 5½ inches long and is 2½ inches in diameter; weight is 18½ ounces and its capacity is 1 gallon in 6 minutes at 40 pounds pressure. Designed to be attached to any regular ¾-inch hose bibb faucet of the main supply pipe at A, as shown in cut. Where there is no thread, use No. 1 hose ends.

Each \$4.50
Extra filtering cylinders, each 1.50

No. H-2 Upward, Nickel-plated

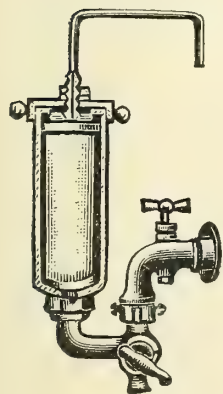


Similar to No. H-5 but larger. Is 6½ inches long, and 2¾ inches in diameter; weight is 1 pound and 7 ounces and its capacity is 1 gallon in 4 minutes, at 40 pounds pressure. This style is recommended for houses where the faucet is placed too low to allow pitchers, etc., under the filter to collect the filtered water.

Each, complete as shown, with two-way cock \$6.00
Extra filtering cylinders, each 2.25

Nos. H-2B and H-4

These filters, having a larger filtering surface, naturally require less frequent cleaning than the smaller sizes. The proper place for the filter is on the off side of the faucet, and not between the hot and cold water faucets, where the space is generally limited. In order to allow this arrangement, the two-way cocks are made either right or left hand, as shown in illustrations. When two-way cock is desired, always specify the number as desired, with "Upward" attached, and advise whether right or left hand is desired.



No. H-2B Upward

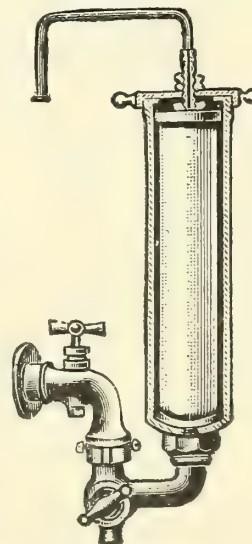
Showing left hand two-way cock and outlet pipe. 9¼ inches high; 2¾ inches in diameter. Weight, 3¼ pounds. Capacity ¾ gallon in two minutes.

Complete as shown \$12.00
Filter only 9.00
Extra filtering cylinders, each 3.00

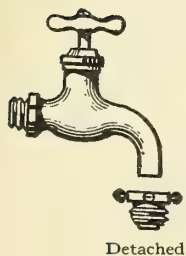
No. H-4 Upward

Showing right hand two-way cock and outlet pipe. 11½ inches high; 2¾ inches in diameter. Weight, 3¾ pounds. Capacity one gallon in two minutes.

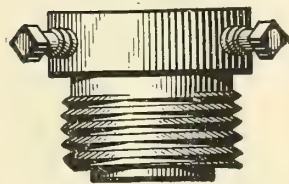
Complete as shown \$15.00
Filter only 12.00
Extra filtering cylinders, each 3.75



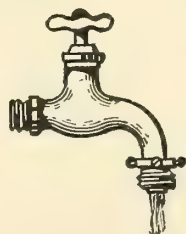
No. 1 Hose End



Detached



Loose Ring Projecting

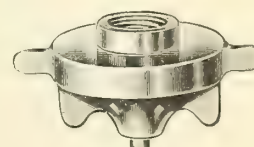


Attached

To attach filters to plain bibb, may easily be attached by anyone. Complete directions with each.

Each, nickel-plated \$.75

Rex



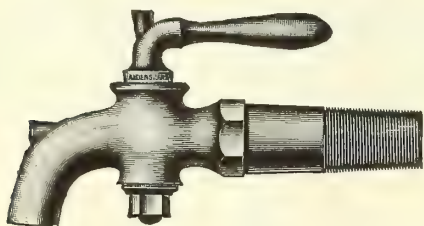
Complete Filter



The discs in this filter are white cotton filter pulp (used largely by breweries) which forms a superior filtering medium for water.

Each with 1 dozen discs \$2.50
Extra discs, dozen25

Petroleum Oil Faucets



Made of iron, with brass key. Japanned all over. Lever handle. Screw shank for use in wood.

No. 6 $\frac{3}{4}$ inch, dozen \$16.00

Molasses Gates



Screw taper shank for use in wood.

Number	51	52	53	54
Inside diameter of discharge, inch.....	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Dozen.....	\$12.00	14.00	16.50	20.00

Rubber Elastic Force Cups

Regular

Little Plumber



No. 4 Small, dozen..... \$4.20

No. 5 Medium, dozen .. 6.00

No. 6 Large, dozen..... 7.20

For cleaning the discharge pipes of wash-bowls, bath tubs, stationary wash-tubs, etc., when they become partially or entirely stopped.

No. 1 3-inch diameter, dozen \$2.70

No. 2 $3\frac{3}{4}$ -inch diameter, dozen 3.00

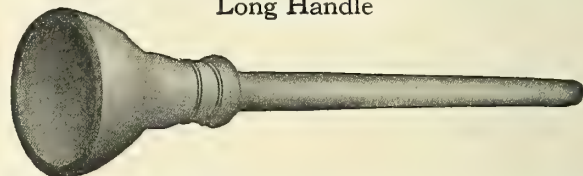
No. 3 $4\frac{1}{2}$ -inch diameter, dozen 3.50

Short Handle



For forcing stoppages out of closets, bowls, sinks, tubs, urinals and soil pipes.
Junior Corrugated Plumbers Friend, each \$.75

Long Handle



For forcing stoppages out of closets, bowls, sinks, tubs, urinals and soil pipes.
Regular, 6-inch cup, dozen \$12.00

Battery Connectors



A simple little clip that will never let go. Holds fast no matter how the batteries are jolted. It grips like a vice. Attached and detached in a second.

No. 1026 Box of ten..... \$.60

Annunciator Wire

Assorted Colors—No. 18

Spools containing, feet	25	50	100
Dozen.....	\$2.50	4.40	7.75
One pound coils, about 160 feet to one pound.....			\$.40

Flexible Conducting Cords

Cuts Full Size



No. 3868

Composed of two conductors, each having 16 No. 33 Copper Wires in strands with cotton braid, laid together flat, with outer braid of green or red silk.

Double Conductor Flexible Silk-covered Cord, yard..... \$.24



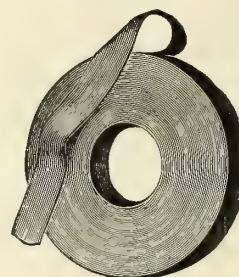
No. 3877

Composed of two conductors, each having 16 No. 33 Copper Wires in strands insulated with silk, covered with green colored silk. This cord is generally used for Pear Shape Push Buttons.

Two Conductor Push Button Cord, yard \$.24

Splicing Tape

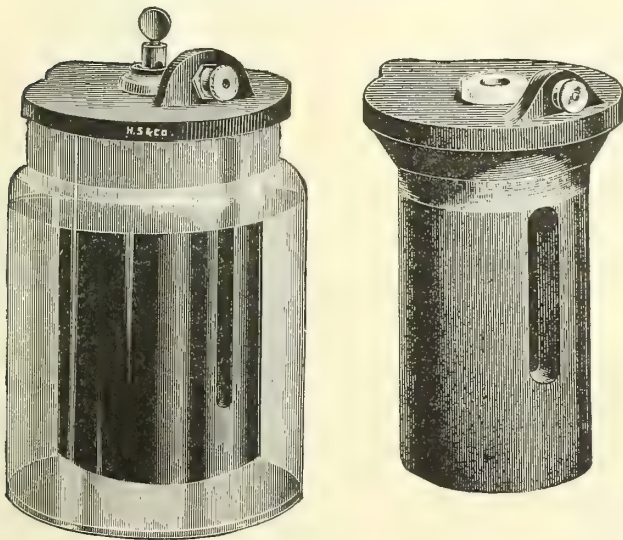
Black.



"Special" $\frac{1}{4}$ pound rolls, roll.....	\$.18
"Regular" $\frac{1}{2}$ pound rolls, roll.....	.30

Batteries

Carbon Cylinder



The carbon element in these batteries is non-exhaustible and is molded in one piece, forming a perfect seal for the battery and preventing evaporation or the climbing of salts.

The zinc is suspended by a porcelain insulator through the center of the carbon cylinder.

No. 3 For open circuit, complete with charge of salamoniac, each \$.45

Zincs

No. 3 Per dozen \$.60

Salamoniac

For battery charging, per pound \$.15

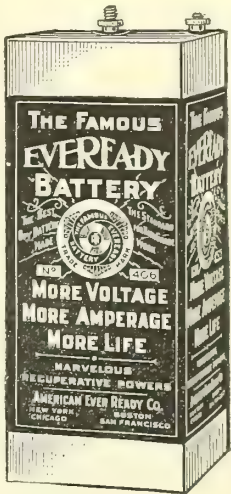
Dry Cell

EveReady

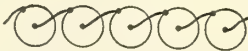
The EveReady Ignition Battery produces a hot, fat, snappy spark and gives a service of such unqualified uniformity, that it can be depended upon absolutely to do its part in producing perfect ignition.

It is economical, owing to its high amperage and remarkably long life, and its steady service eliminates trouble that is inevitable with an unreliable battery.

Size in Inches				
Number	Diameter	Height	Amperage	Volts
406	2½	6	22 to 25	1.6
Dozen, \$3.00				



In Series

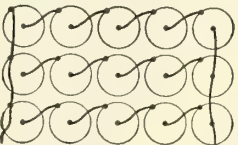


In Series Multiple

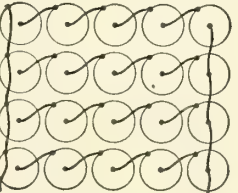
Voltage 7½ Amperage 60



Voltage 7½ Amperage 90



Voltage 7½ Amperage 120



How to Connect

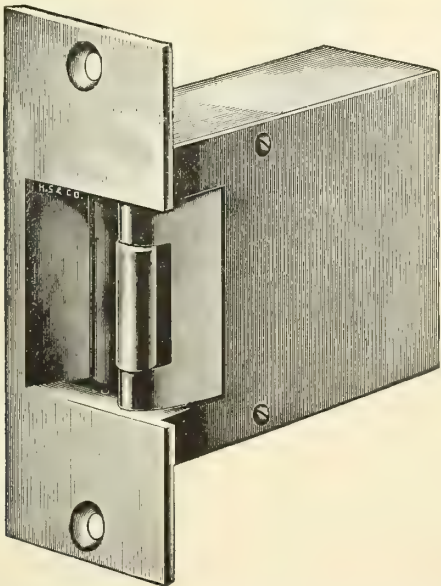
No set rule can be adopted governing the number of cells to be connected in series—nor the number of series to be connected in multiple. The number of cylinders on the engine and the service to which the engines are put, whether heavy or light, must be considered.

The voltage is increased progressively with the addition of each cell connected in series and the amperage increased progressively with each series connected in multiple. In general practice five cells are connected in series.

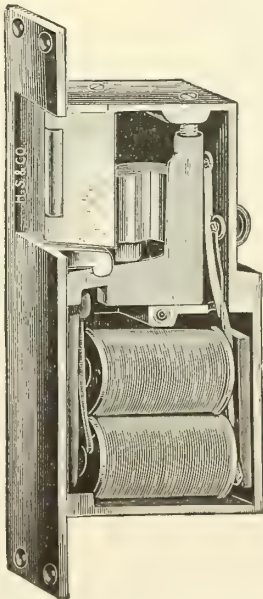
While actual tests show an increased economy in operation with each additional series connected in multiple, want of room for storing the batteries compels the motorist to carry as few cells as possible and seldom are more than two series connected in multiple for automobile ignition. For stationary work which is more or less continuous, three series and even four may be connected in multiple with economy.

That the batteries may have periods of rest in which to recuperate, it is a decided advantage to have two sets of cells, with a combination switch, so that either may be thrown into circuit or both together, in series-multiple. This increases the efficiency of the batteries and also eliminates the necessity of frequent adjustment of coil for weak or strong batteries.

Electric Door Openers

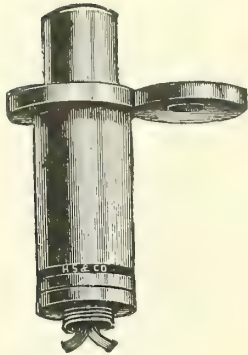


No. 154 Iron back, brass side and front. The patent anti-friction roller enables it to be used for very heavy doors, with small battery power. Each one carefully tested under heavy pressure. 3¾ x 1¼ inches front. Complete with pushout spring, each \$3.00

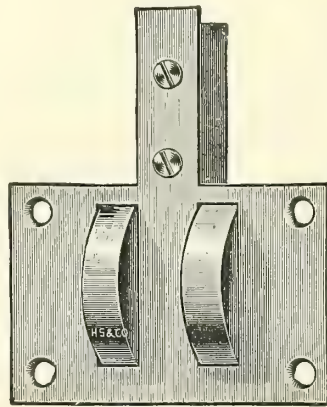


Schneider's, cast bronze. Can be used on either right or left-hand doors. Complete with push-out spring and screws, each \$2.00

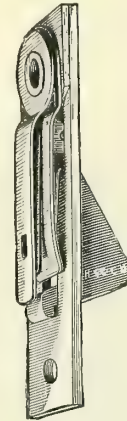
Burglar Alarm Springs



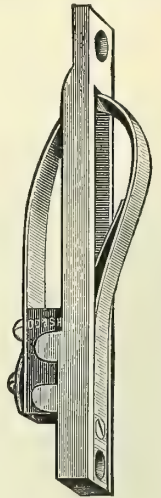
Cylindrical For Doors
Full Size Cut
Dozen..... \$3.00



Double For Windows
Size $2\frac{1}{2} \times 2\frac{3}{4}$ inches
Dozen..... \$3.00



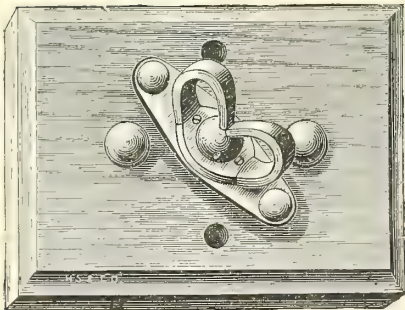
Single Small For Windows
Size $\frac{1}{2} \times 2\frac{1}{2}$ inches
Dozen..... \$2.50



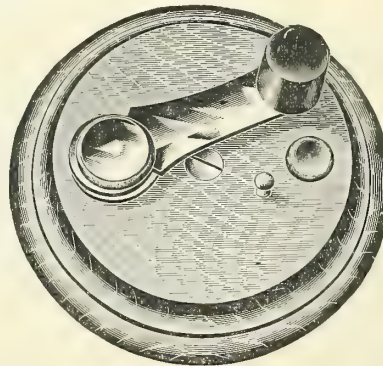
Single Large For Windows
Size $\frac{5}{8} \times 3\frac{3}{8}$ inches
Dozen..... \$5.00

Switches

Full Size Cuts

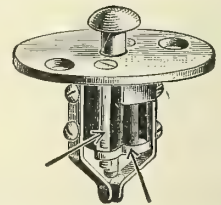


"Crown." Single point, ash or cherry.
Dozen..... \$3.00



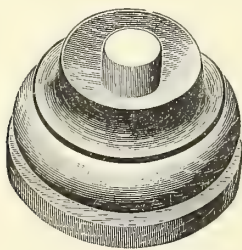
"Round." One-point, ash or cherry.
Dozen..... \$1.75
"Round." Two-point, ash or cherry.
Dozen..... 1.95

Floor Push Button

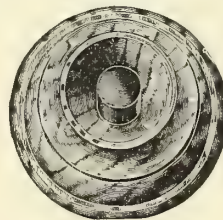


This Push is intended to be inserted in floor, to be operated by the foot of the person giving the signal. Can be used under the diningroom table, under desk, or any other place where a foot press push is desirable. A neat design, very durable and reliable.
No. 1 Plate 2 inches diameter, dozen. \$3.90

Wood Push Buttons



No. 49. Ash or Cherry
Base $1\frac{9}{16}$ inches diameter, dozen..... \$1.25

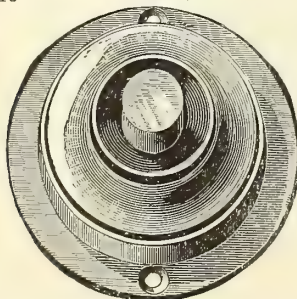


No. 50. Ash or Cherry
Base $2\frac{1}{8}$ inches diameter, dozen..... \$1.25

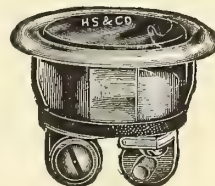


No. 049. "Pear" Ash or Cherry
Length $2\frac{1}{2}$ inches. Dozen..... \$1.80

Metal Push Buttons



No. 229 $\frac{1}{2}$. Wrought Bronze, Polished
Base $2\frac{5}{16}$ inches diameter, dozen..... \$1.80

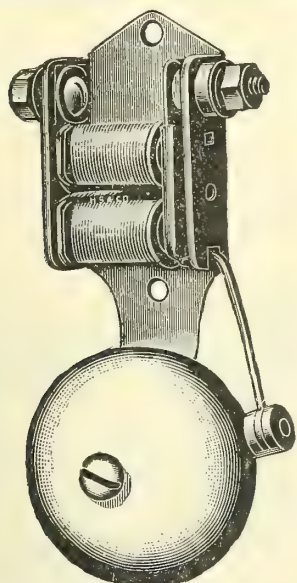


No. 358
Black center, to fit $\frac{3}{4}$ -inch hole,
dozen..... \$3.00
For other Metal Push Buttons, see index

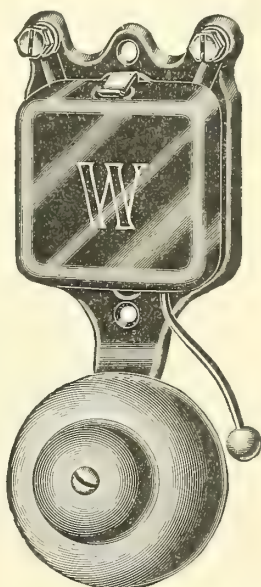


No. 398
Black center, to fit $\frac{1}{2}$ -inch hole,
dozen..... \$2.00

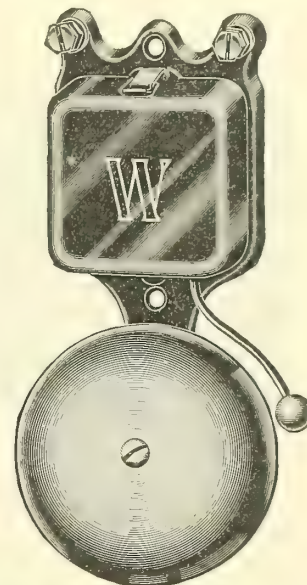
Electric Bells



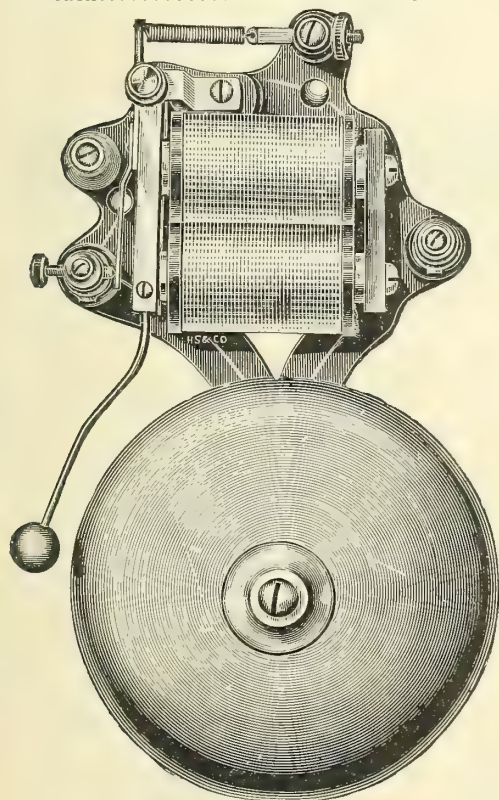
No. 18 1 3/4-inch nickel-plated box, each..... \$.90



No. 1892 Dome shape; 2 1/2-inch nickel-plated shell, japped boxes, each. \$.90



No. 189 2 1/2-inch nickel-plated shell, each..... \$.55
No. 189 4-inch nickel-plated shell, each..... .75
Above bells have japped boxes.



Electric Skeleton Bells

Are well made, strong and substantial. The frames are iron japped and the shells are cast bell metal. The armature is pivoted and easily adjusted. Are suitable for factories, schools, etc.

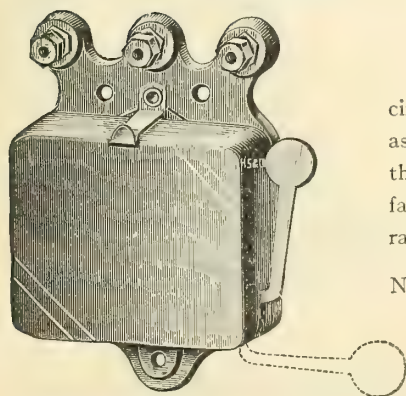
No. 6	4-inch nickel-plated shell, each	\$2.40
No. 6	5-inch nickel-plated shell, each	3.50
No. 6	6-inch nickel-plated shell, each	3.72
No. 6	8-inch nickel-plated shell, each	6.76

Automatic Drops

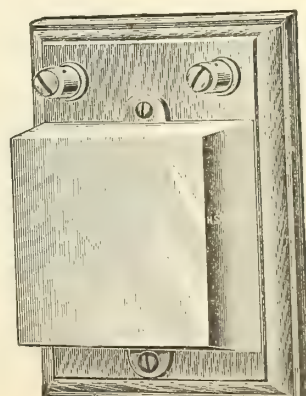
Magneto Circuits

These Drops are used for closing a bell circuit automatically, and keeping it closed as long as desired. When the circuit is closed the drop, operated by an electro-magnet, falls and holds the circuit closed until it is raised again.

No. B26 Each..... \$1.25

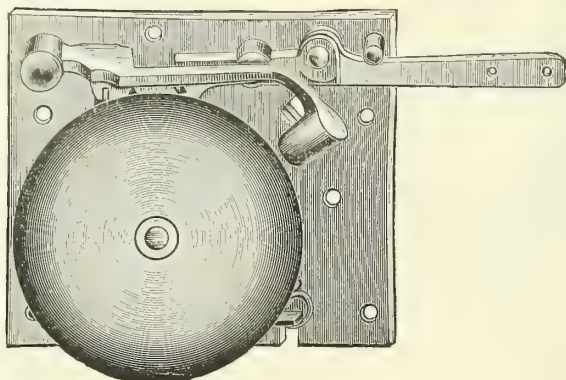


Buzzers



Style D1 Steel, japped, each..... \$1.25
Style H Iron, japped, each..... .60
Style C Oak base, nickel-plated box, each..... 1.15

Trip Gong Bells



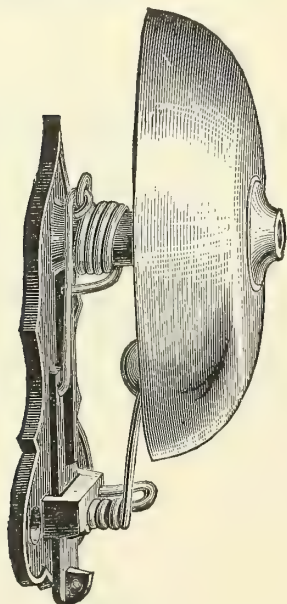
No. 17870

For miscellaneous uses. Polished bell metal shells. Sizes 4 to 6 inches have wrought steel bases which will not crack. Either right or left hand.

4-inch gong, wrought steel base, dozen	\$9.90
5-inch gong, wrought steel base, dozen	14.30
6-inch gong, wrought steel base, dozen	18.00
8-inch gong, cast iron japanned base, dozen	49.40
10-inch gong, cast iron japanned base, each	6.60
12-inch gong, cast iron japanned base, each	13.70
14-inch gong, cast iron japanned base, each	17.60
16-inch gong, cast iron japanned base, each	21.60
18-inch gong, cast iron japanned base, each	27.00

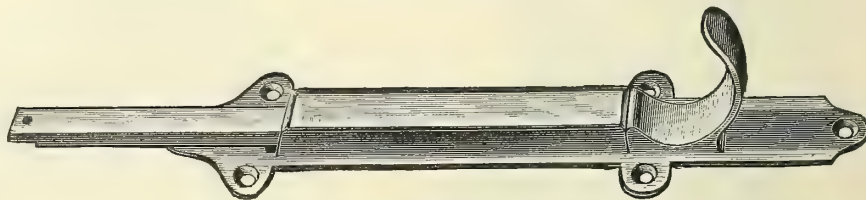
Gongs above 12 inches have hardwood hammers.

Gong Bells



No. 20	Bronzed steel shells, 4-inch, dozen	\$5.00
No. 30	Polished bell metal shells, 4-inch, dozen	10.00

Bell Slide Pulls

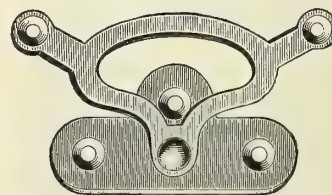


Polished Cast Brass

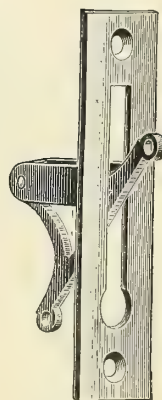
No. 17978	Length 9 inches over all, dozen	\$10.00
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Bell Cranks

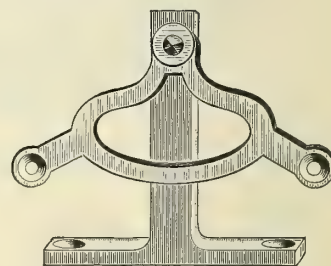
Half Size Cuts



No. 32



No. 11

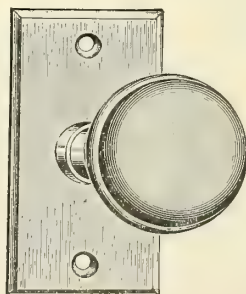


No. 33

No. 11	Iron, painted, dozen	\$1.00
No. 32	Iron, japanned, dozen	.80
No. 33	Iron, japanned, dozen	1.15

Bell Pulls

No. 1548	Wrought bronze, polished, knob 1 5/8 inches diameter, dozen	\$10.00
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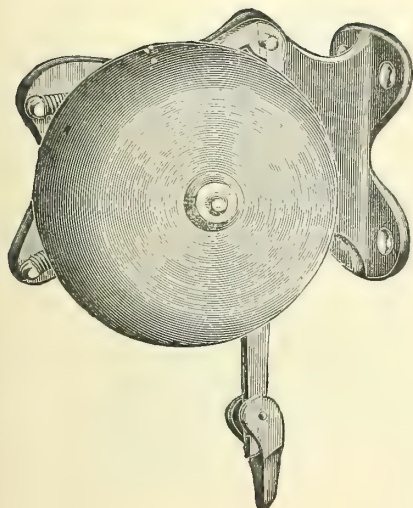


Check Springs



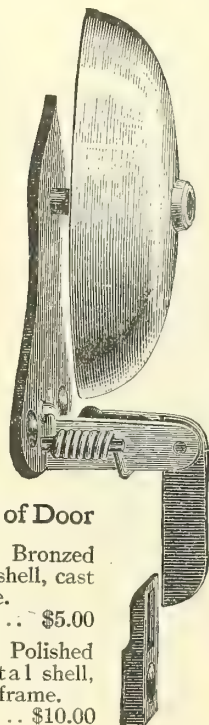
No. 25	5-inch coppered, gross	5.90
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Alarm Bells



For Side or Top of Door

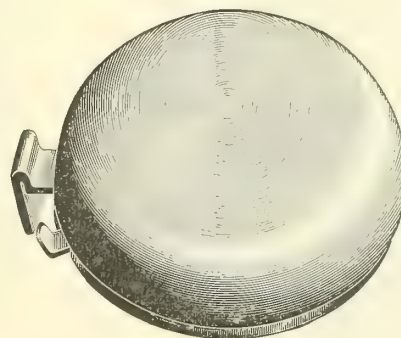
No. 27405 Polished-bell metal shell, cast-iron frame, dozen.. \$12.20



For Top of Door

No. 125 Bronzed steel bell shell, cast iron frame.
Dozen..... \$5.00

No. 135 Polished bell-metal shell, cast-iron frame.
Dozen..... \$10.00



Automatic

Applicable to any door or to wide sash.

When once attached it requires no attention whatever.

The act of closing the door sets the operating mechanism, so that the instant the door is opened the alarm is sounded.

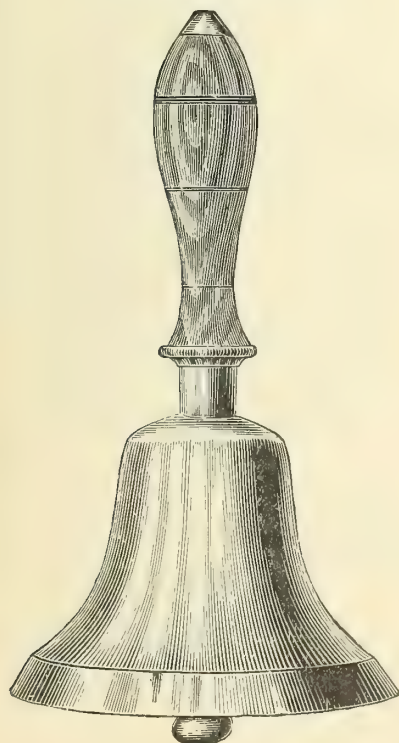
The bell may be rendered silent when desired by the stop mechanism.

Being small, neat, and handsomely finished, it is not obtrusive or objectionable when on the door.

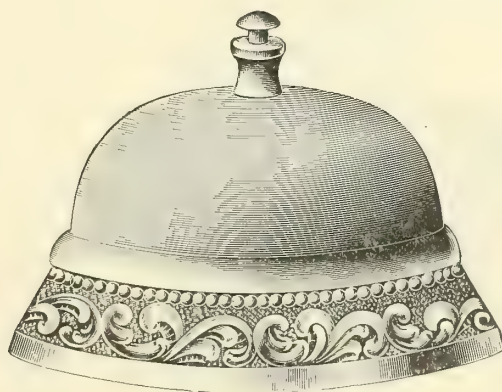
Is applied in a few seconds and never fails to work when the door is opened.

Dozen..... \$9.00

Hand Bells

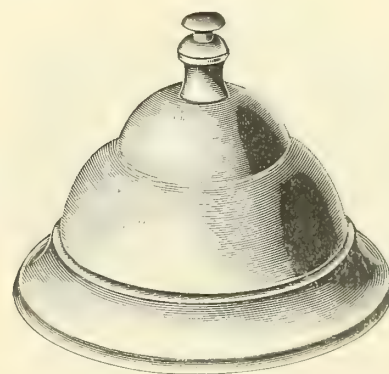


Call Bells



Cast Bell-Metal Shell. Bronzed Base

No. 96 4 inches diameter, nickel-plated,
dozen..... \$5.00



Base and Shell are Wrought Steel

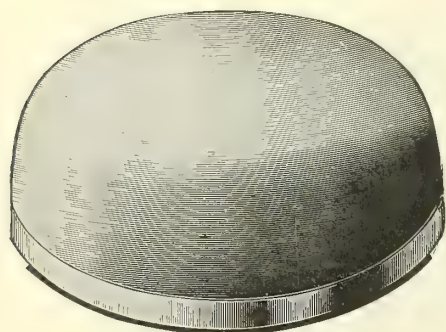
No. 84 3 3/8 inches diameter, nickel-plated,
dozen..... \$2.50

Polished Bell Metal Shells

Wood Handles

Number	4	6	8
Size of mouth, inches.....	3 1/4	4	4 7/8
Dozen.....	\$6.50	11.25	18.50

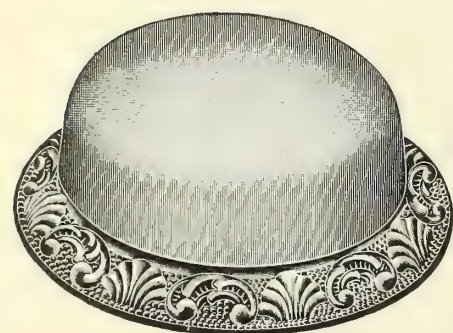
Mechanical Door Bells



Push Button Type

Continuous ring gong, made from bell metal. Shell and button plate are old brass finish.

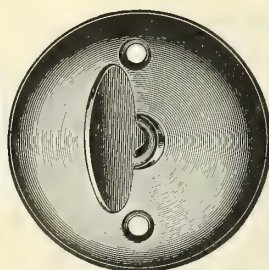
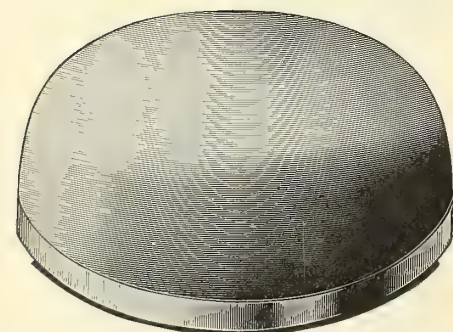
No. 48FX66F Dozen \$11.15



Rotary Type

Gong made from wrought steel. Shell and turn and plate are all antique copper finish.

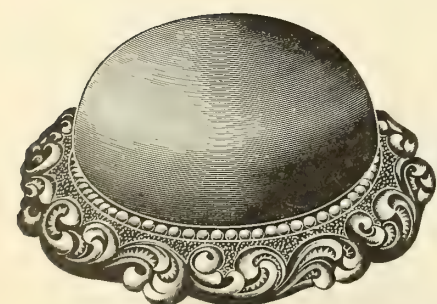
No. 0320CX42 Dozen \$5.25



Rotary Type

Gong made from wrought brass. Shell is nickel-plated. Turn and plate are polished bronze.

No. 033NX75B Dozen \$7.00

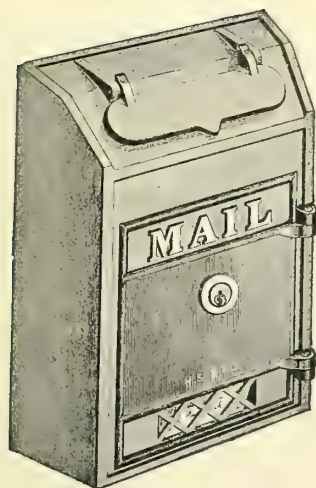


Rotary Type

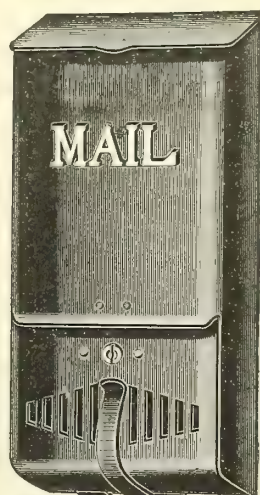
Gong made from wrought steel. Shell is nickel-plated. Turn and plate are bronze-plated.

No. 019NX44B Dozen \$4.15

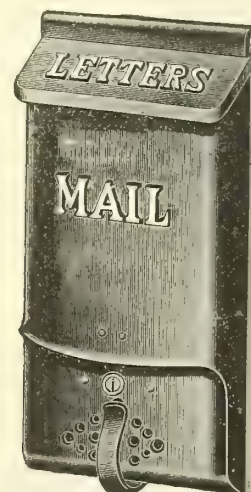
Mail Boxes



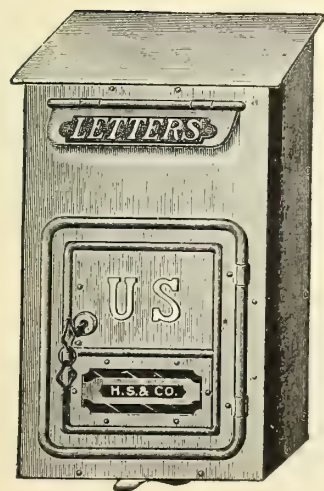
No. 2261 11x7x3¼ inches, cast iron, japanned, with lock and two corrugated keys, each \$4.85



No. 2417 11¼x5¼x2¼ inches, wrought steel, black enamel flat keyed lock with two keys, each \$.60



No. 2436 12x5¼x2 inches, aluminum finish, flat keyed lock with two keys, each..... \$1.20



No. 2½ 10½x5½x2¾ inches, wrought steel statuary bronze finish with secure lever lock and 2 keys, each. \$2.50

No. 3 Style of No. 2½, but dull black, japanned, each..... 1.90

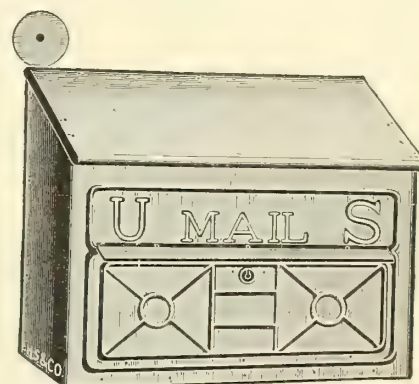
No. 4 Style of No. 2½, but antique copper finish, each..... 2.50

No. 30 Style of No. 2½, but wrought brass, old brass finish, each..... 4.50



No. 2447 12x5¼x2 inches, wrought steel, antique brass finish, glass panel with name-plate for owner's card, flat keyed lock with two keys, each..... \$1.50

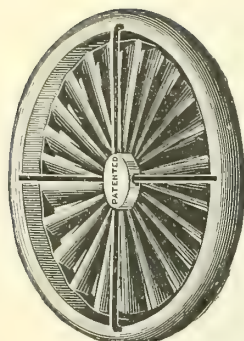
For Rural Delivery



No. 1½ 11x14x4 inches, aluminum finish, with carriers and owners signals and automatic guard device, each..... \$3.00

Window Ventilators

Protective Revolving Type



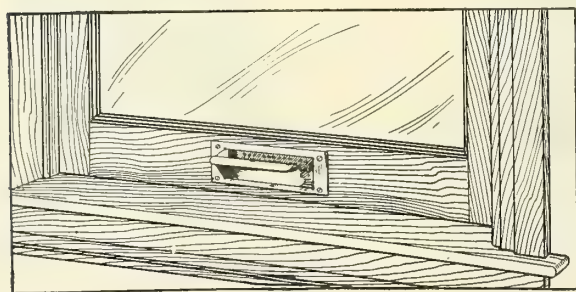
The revolving wheel is the oldest known principle of ventilating; it consists of two currents of air passing in opposite directions—a fresh current of air inward and a foul current of air outward. It also prevents frost or steam on show windows, etc.

Capacity: When motionless the 8½-inch Ventilator has a capacity of 20 cubic feet of air per minute; in a gentle breeze five times that quantity of air passes through the Ventilator. The 6-inch Ventilators have about one-half the above capacity.

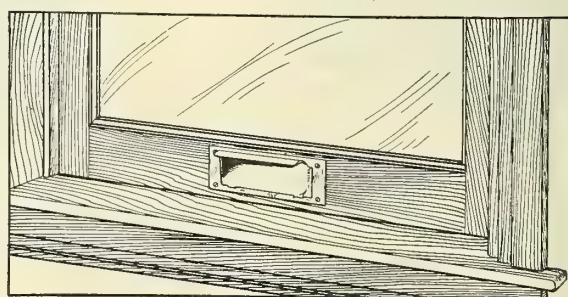
The set-screw adjustment in the construction of these ventilators is an entirely new feature and the strengthening of all the wearing parts together with a solid metal perfectly balanced wheel.

8½-inch gilt (brass), with storm cap, each.....	\$3.50
6-inch, gilt (brass), with storm cap, each.....	2.25

Yawman Sash Lift Type



Open



Closed

A sash lift and ventilator combined.

Gives constant ventilation without drafts.

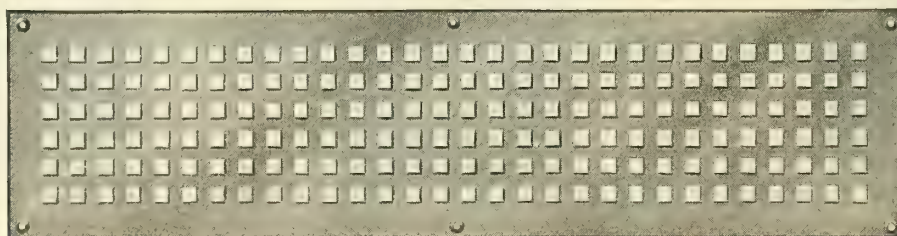
Air currents always under control by opening or closing valve.

The window may be locked at all times, if desired.

Easily installed—simply cut a mortise of proper size in sash rail and attach inner and outer plates.

Polished bronze, dozen.....	\$10.00
Brass, old brass finish, dozen.....	10.00

Grilles



No. 570

For ventilation, indirect heating, inserting in stair risers and many other purposes. They are especially adapted for use on store windows and in other places where ventilation must be good. Ordinarily these grilles are made from either No. 12 or No. 13 gauge metal. For indirect heating in connection with either steam or hot water where a heavy or thick grille is desired this style is recommended. These grilles are furnished with holes in margin drilled and countersunk for flat-head screws.

Width of opening, inches.....	3	4	5	6	7	8	9	10	11	12
Solid brass or bronze, per lineal foot.....	\$3.85	4.00	4.15	4.35	4.65	5.00	5.40	5.85	6.70	7.15

Can be furnished in any length not exceeding 8 feet, to order only.

Brass Key Tags



No. 0 Diameter, inch $\frac{29}{32}$
Per 100..... \$.65



No. 1 Diameter, inches..... $\frac{13}{32}$
Per 100..... \$.90



No. 1½ Diameter, inches..... $1\frac{3}{8}$
Per 100..... \$1.20

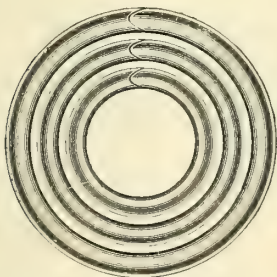


No. 2 Diameter, inches..... 3
Per 100..... \$4.95



No. 3 Diameter, inches..... 2
Per 100..... \$1.80

Above Tags lettered or numbered, per 100 letters or numbers, \$.75



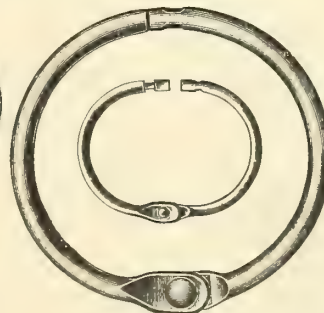
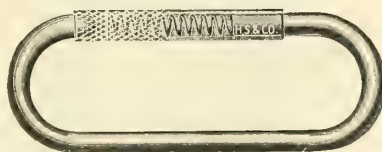
Keys can be slipped on and off easily, and lie flat in the pocket.

Billings Steel, dozen.... \$1.20
Williams Steel, gross.... 7.20

Key Rings

Full Size Cuts

No. 55 Steel, diameter, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{3}{8}$	2
Gross.....	\$.38	.75	1.20	1.50	3.00	5.25	11.25
No. 155 Brass, diameter, inches.....		$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$			1
Gross.....		\$.90	1.15	3.00			3.75

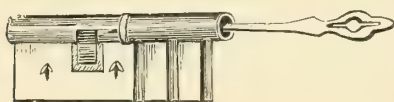


Metal Rings

Used for loose leaf systems, etc.
Also used as a key ring.

College—Gross..... \$7.20

Keyhole Guards



Placed in keyhole and locked, thereby plugging same and making it impossible for any one to tamper with lock. For bit key locks only.

Dozen \$12.00

Lead Seals



Largely used by express, railway, electrical and gas companies, government inspectors, cigar manufacturers, and other shippers of sealed merchandise to protect their goods from being tampered with.

No. 2 With wires, per 1000..... \$4.00
No. 2 Without wires, per 1000..... 2.75
Seal press for above No. 1, length 10 inches, each.. 1.50

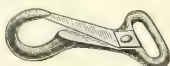
Iron Snaps

Bag



$\frac{3}{8}$ -Inch Round Eye

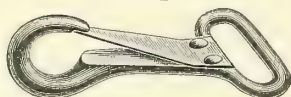
No. 70 Polished, gross \$1.80



$\frac{1}{2}$ -Inch Loop Eye

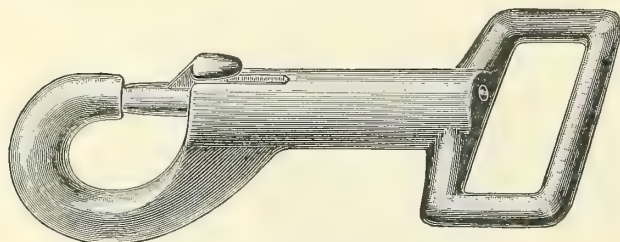
No. 30 $\frac{1}{4}$ Polished, gross \$1.80

Loop



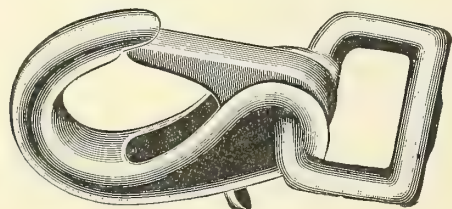
$\frac{5}{8}$ -Inch Loop Eye

No. 40 $\frac{1}{2}$ Japanned, gross \$2.40



XC Plate

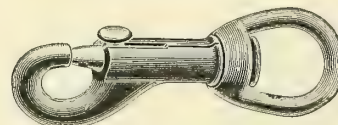
Number.....	04	08	012	014
Loop Eye, inch.....	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$
Gross.....	6.00	6.00	9.88	10.63



1-Inch Loop Eye

No. 1 XC Plate, gross \$8.00

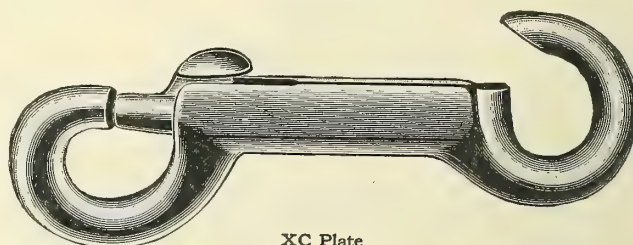
Swivel Eye



XC Plate

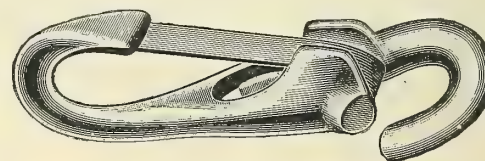
Number.....	50	50	50
Round Eye, inch.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Gross.....	\$7.90	\$9.00	\$11.00

Open Eye



XC Plate

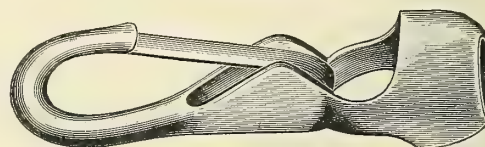
Number.....	520	522
Round Eye, inch.....	$\frac{3}{8}$	$\frac{1}{2}$
Gross.....	\$5.20	9.40



$\frac{3}{8}$ -Inch Round Eye

No. 731 XC Plate, gross \$3.20

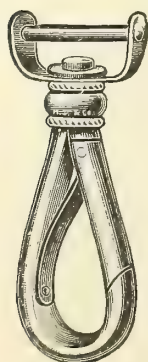
Rope



No. 720 XC Plate

For rope, inch.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
Gross.....	\$3.40	4.20	4.50

Brass Snaps



No. 1733
Style of No. 352



No. 4
Style of Nos. 1, 3, 5 and 7

No. 1	1 inch over all, cast brass, polished, gross.....	\$5.75
No. 3	1 $\frac{5}{16}$ inches over all, brass, polished, gross.....	9.20
No. 4	1 $\frac{1}{2}$ inches over all, brass, polished, gross.....	10.50
No. 5	1 $\frac{5}{8}$ inches over all, brass, polished, gross.....	13.15
No. 7	2 inches over all, brass, polished, gross.....	19.70
No. 352	2 $\frac{3}{4}$ inches over all, brass, polished, heavy, dozen.....	4.00
No. 1733	1 $\frac{3}{4}$ inches over all, brass, polished, gross.....	15.00

Wire Rope Clamps

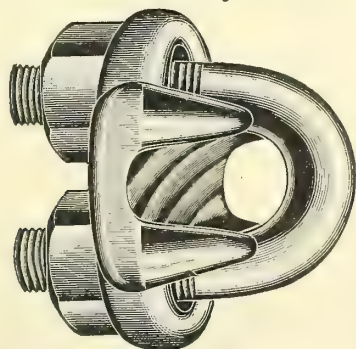


No. 430. Galvanized Iron

For rope, size, inches..... $\frac{1}{8}$ $\frac{3}{16}$
Each..... \$.25 .30

Wire Rope Clips

Crosby



Galvanized Iron

For rope, size, inch..... $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{1}{2}$
Each..... \$.25 .25 .25 .30

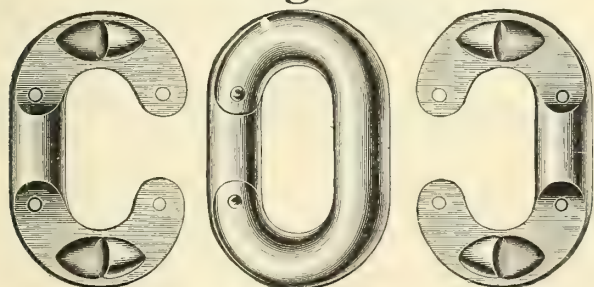
Round Wire Rope Hook Sockets



No. 418. Drop-Forged

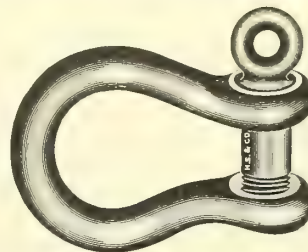
For size, diameter rope..... $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{1}{2}$
Each..... \$1.30 1.40 1.50 1.95
Size hook..... $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ 1

Missing Links



Size Inch	Dozen		Outside Dimensions of Links Inches
	Galvanized	Self-colored	
$\frac{1}{4}$	\$1.35	\$1.00	$1\frac{1}{2} \times 1$
$\frac{5}{16}$	1.45	1.10	$1\frac{11}{16} \times 1\frac{3}{16}$
$\frac{3}{8}$	1.60	1.20	$2\frac{1}{16} \times 1\frac{3}{8}$
$\frac{7}{16}$	1.80	1.35	$2\frac{3}{8} \times 1\frac{1}{2}$
$\frac{1}{2}$	2.10	1.50	$2\frac{5}{8} \times 1\frac{3}{4}$
$\frac{9}{16}$	2.55	1.80	$3 \times 1\frac{15}{16}$
$\frac{5}{8}$	3.00	2.00	$3\frac{5}{16} \times 2\frac{3}{16}$
$\frac{11}{16}$	3.75	2.65	$3\frac{1}{2} \times 2\frac{5}{16}$
$\frac{3}{4}$	4.50	3.35	$3\frac{7}{8} \times 2\frac{1}{2}$
$\frac{7}{8}$	6.50	5.00	$4\frac{7}{16} \times 2\frac{15}{16}$
1	9.00	7.00	$4\frac{1}{8} \times 3\frac{5}{16}$

Screw Shackles



No. 209. Drop-Forged Steel, Galvanized

Size Inch	Length Inside Inches	Width Between Eyes Inch	Diameter of Pin Inch	Each
$\frac{3}{16}$	$\frac{7}{8}$	$\frac{3}{8}$	$\frac{1}{4}$	\$.25
$\frac{1}{4}$	$1\frac{1}{16}$	$\frac{1}{2}$	$\frac{5}{16}$	.25
$\frac{5}{16}$	$1\frac{1}{4}$	$\frac{9}{16}$	$\frac{3}{8}$	.25
$\frac{3}{8}$	$1\frac{3}{8}$	$\frac{11}{16}$	$\frac{7}{16}$	.27
$\frac{1}{2}$	$1\frac{7}{8}$	$\frac{3}{4}$	$\frac{9}{16}$	.37

Swivels

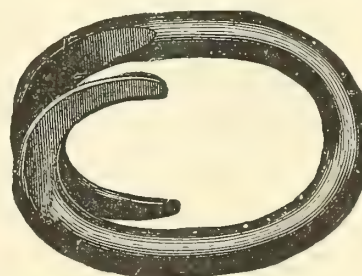


No. 402. Drop-Forged Steel, Galvanized

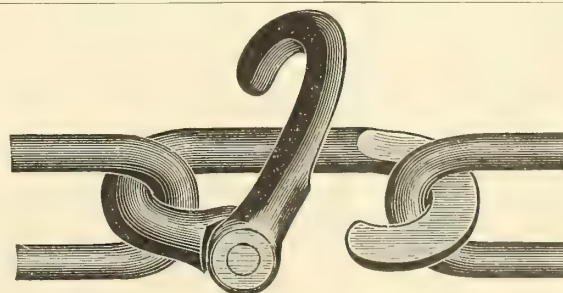
Size Inch	Extreme Length Inches	Width Inside Inches	Each
$\frac{1}{4}$	$3\frac{1}{4}$	$\frac{3}{4}$	\$.35
$\frac{5}{16}$	$4\frac{1}{8}$	1	.35
$\frac{3}{8}$	5	$1\frac{1}{4}$	.40
$\frac{1}{2}$	6	$1\frac{1}{2}$	.50

Repair Links

Wrought Iron



Inside Measurements, Inches	Gross
$\frac{5}{8} \times 2$	\$12.00
$\frac{1}{4} \times 2$	12.00



No. 476, $\frac{5}{16}$ -inch, hinged..... \$15.00

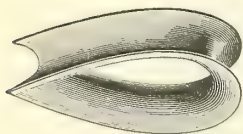
Wire Rope Thimbles

No. 412 Small

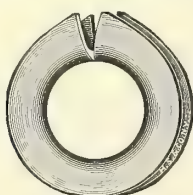
Size Inch	Length Inches	Each
$\frac{1}{8}$	$1\frac{1}{16}$	\$.04
$\frac{3}{16}$	$1\frac{1}{8}$	.05
$\frac{1}{4}$	$1\frac{1}{4}$	.05
$\frac{5}{16}$	$1\frac{5}{8}$	.06
$\frac{3}{8}$	$1\frac{7}{8}$	.07

No. 411 Regular

Size Inch	Length Inches	Each
$\frac{1}{2}$	3	\$.09
$\frac{5}{8}$	$3\frac{1}{4}$	.11
$\frac{3}{4}$	$3\frac{3}{4}$	.13
1	$4\frac{3}{4}$	.18



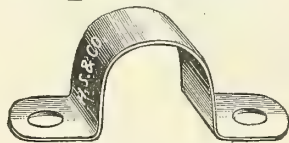
Rope Thimbles



No. 415 Steel, Galvanized

Diameter, inches.....	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$	3
Size score, inches.....	$\frac{3}{4}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Dozen.....	\$.45	.90	1.10	1.60

Pipe Straps



Galvanized

Size, inch.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Dozen.....	\$.90	1.20	1.50

Hooks and Rope Thimbles



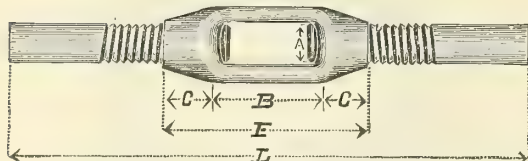
No. 305. Forged Steel, Galvanized

Size, inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Length, inches.....	$3\frac{5}{8}$	$4\frac{5}{8}$	$5\frac{7}{8}$
Diameter of eye, inches.....	$\frac{31}{32}$	$1\frac{7}{32}$	$1\frac{15}{32}$
Score of thimble, inch.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Each.....	\$.17	.21	.29

Turnbuckles



Without Stubs, Tapped Right and Left, Style N



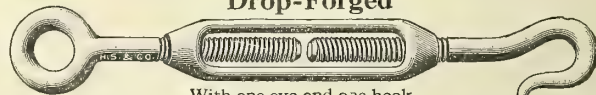
With Right and Left Stub Bolt Ends, Style W

List—Each

Diameter of A	3	6	9	12	15	18	24	36	48	72
$\frac{1}{4}$	\$.36									
$\frac{5}{16}$	.38									
$\frac{3}{8}$	.40	\$.40								
$\frac{7}{16}$	.42	.42								
$\frac{1}{2}$	.45	.45	\$.56	\$.68	\$.90					
$\frac{9}{16}$	.48	.48	.60	.72	.96					
$\frac{5}{8}$	.50	.50	.63	.75	1.00	\$1.25	\$1.75			
$\frac{3}{4}$	.63	.63	.79	.95	1.26	1.58	2.20			
$\frac{7}{8}$	.75	.75	.94	1.13	1.50	1.88	2.62			
1	.88	.88	1.10	1.32	1.76	2.20	3.08	\$3.52		
$1\frac{1}{8}$	1.00	1.00	1.25	1.50	2.00	2.50	3.50	4.00	\$6.00	\$8.00
$1\frac{1}{4}$	1.25	1.25	1.56	1.88	2.50	3.13	4.37	5.00	7.50	10.00
$1\frac{3}{8}$	1.38	1.73	2.07	2.76	3.45	4.83	5.52	8.28	11.04	
$1\frac{1}{2}$	1.50	1.88	2.25	3.00	3.75	5.25	6.00	9.00	12.00	
$1\frac{3}{4}$	1.75	2.00	2.63	3.50	4.38	6.12	7.00	10.50	14.00	
2	2.00	2.00	3.00	4.00	5.00	7.00	8.00	12.00	16.00	
$2\frac{1}{8}$	2.25	2.25	3.38	4.50	5.63	7.87	9.00	13.50	18.00	
$2\frac{1}{4}$	2.65	2.65	3.98	5.30	6.63	9.27	10.60	15.90	21.20	
$2\frac{3}{4}$	3.50	3.50	5.25	7.00	8.75	12.25	14.00	21.00	28.00	
3	4.50	4.50	6.75	9.00	11.25	15.75	18.00	27.00	35.00	

Above list applies to turnbuckles either with or without stubs.

Drop-Forged



With one eye and one hook



With two eyes



With two hooks

With Right and Left U. S. Standard Thread

List Prices with either One Hook and One Eye, Two Eyes, or Two Hooks

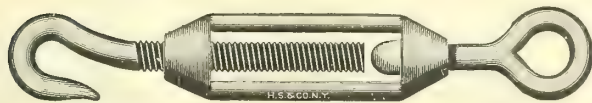
List—Each

Diameter of Screw	3	6	9	12	15	18	24	36	48	72
$\frac{1}{4}$	\$.40									
$\frac{5}{16}$	.45									
$\frac{3}{8}$	.65	\$.65								
$\frac{7}{16}$	.72	.72								
$\frac{1}{2}$	.72	.72	\$.85	\$.95	\$1.15					
$\frac{9}{16}$	.80	.80	.95	1.05	1.30					
$\frac{5}{8}$	.80	.80	.95	1.05	1.30	\$1.55	\$2.05			
$\frac{3}{4}$	1.10	1.10	1.25	1.40	1.70	2.00	2.65			
$\frac{7}{8}$	1.35	1.35	1.35	1.70	2.10	2.45	3.20			
1	1.65	1.65	1.85	2.05	2.50	2.95	3.80	\$4.25		
$1\frac{1}{8}$	2.10	2.10	2.35	2.55	3.05	3.55	4.55	5.05		
$1\frac{1}{4}$	2.65	2.65	2.95	3.25	3.90	4.50	5.75	6.40	\$8.90	
$1\frac{3}{8}$	3.15	3.45	3.80	4.50	5.20	6.60	7.25	10.00		
$1\frac{1}{2}$	3.70	4.05	4.45	5.20	5.95	7.45	8.20	11.20	\$14.20	
$1\frac{3}{4}$	4.65	5.00	5.50	6.40	7.25	9.00	9.90	13.40	16.90	
2	5.40	5.40	6.40	7.40	8.40	10.40	11.40	15.40	19.40	
$2\frac{1}{8}$	6.50	6.50	7.60	8.75	9.85	12.10	13.25	17.75	22.25	
$2\frac{1}{4}$	7.75	7.75	9.10	10.40	11.75	14.40	15.75	21.00	25.30	

Above list applies to turnbuckles either Black or Galvanized.

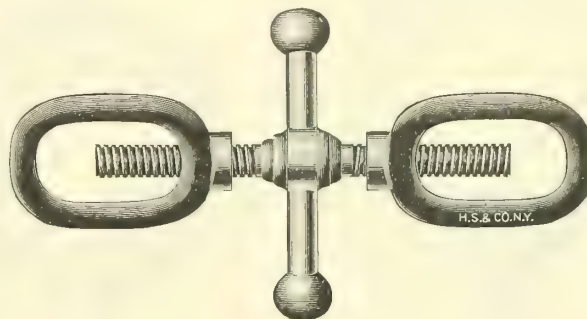
Turnbuckles

Malleable Iron, with Wrought Hooks



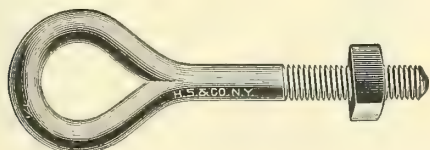
Diameter Screw Inch	Length in Clear Inches	Weight Pounds	Black Each	Galvanized Each
$\frac{3}{16}$	3	$\frac{1}{4}$	\$.48	\$.55
$\frac{1}{4}$	$3\frac{3}{4}$	$\frac{5}{16}$	.50	.60
$\frac{5}{16}$	$4\frac{1}{4}$	$\frac{3}{8}$	.55	.65
$\frac{3}{8}$	$4\frac{3}{4}$	$\frac{5}{8}$	.70	.85
$\frac{7}{16}$	$5\frac{1}{2}$	1	.90	1.00
$\frac{1}{2}$	6	$1\frac{1}{2}$	1.00	1.25
$\frac{5}{8}$	8	$3\frac{1}{4}$	1.75	1.90

Wire Stretchers



Malleable Iron, $\frac{1}{4}$ -inch screw, $2\frac{1}{2}$ -inch take-up.
Dozen..... \$1.20

Eye Bolts



Wrought Steel, Galvanized

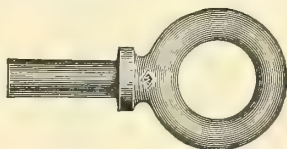
Diameter Rod		Per Dozen						
Inches	No.	Length Overall Inches						
		$3\frac{1}{2}$	4	5	6	8	10	$11\frac{1}{2}$
$\frac{5}{16}$	73	\$2.60	\$2.70	\$2.90	\$3.10			
$\frac{3}{8}$	83	3.00	3.20	3.60	4.00	\$4.80	\$6.00	
$\frac{7}{16}$	93	....	3.50	3.90	4.30			
$\frac{1}{2}$	103	....	....	4.20	4.80	5.30	6.50	
$\frac{5}{8}$	113	....	....	....	7.50	8.30	....	\$9.50



Wrought Steel, Galvanized

Size rod, inches,	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Length overall, inches .	$3\frac{3}{4}$	4	$4\frac{1}{2}$	$5\frac{1}{4}$	$5\frac{3}{4}$	$6\frac{3}{4}$	$8\frac{1}{4}$
Length under eye, inches	$2\frac{3}{8}$	$2\frac{7}{8}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{3}{4}$
Inside diameter of eye, inches.....	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{3}{4}$
No. 102, dozen	\$1.30	1.70	2.00	2.80	3.40	5.50	9.60

Shoulder Pattern



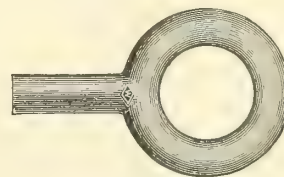
Drop-Forged Weldless

When ordering, please state whether Blank or Threaded are desired; if not specified Blank (shank not threaded) will be sent.

Capacity, Net Tons									
No.	Shank Inches		Diam. Eye Inches	Safe Working Load	Average Load at Elastic Limit	Ap- proxi- mate Break- ing Strain	Blank Each	Threaded Each	Extra Length Blank Per Inch Each
	Diam- eter	Length under Shoulder							
21	$\frac{1}{4}$	1	$\frac{1}{16}$	.2	.4	1.4	\$.09	\$.14	\$.01
22	$\frac{5}{16}$	$1\frac{1}{8}$	$\frac{1}{16}$	.3	.6	2.	.10	.15	.01
23	$\frac{3}{8}$	$1\frac{1}{4}$	$\frac{1}{16}$	.6	1.3	3.	.11	.16	.02
24	$\frac{7}{16}$	$1\frac{3}{8}$	$\frac{1}{8}$	.8	1.6	4.	.12	.17	.02
25	$*\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	1.	2.	5.	.14	.20	.03
26	$\frac{9}{16}$	$1\frac{5}{8}$	$\frac{1}{8}$	1.3	2.5	6.	.17	.24	.03
27	$\frac{5}{8}$	$1\frac{3}{4}$	$\frac{1}{8}$	1.5	3.	8.	.22	.30	.04
28	$\frac{3}{4}$	2	$\frac{1}{2}$	2.3	4.5	12.	.30	.40	.04
29	$\frac{7}{8}$	$2\frac{1}{4}$	$\frac{1}{2}$	3.	6.	13.	.40	.52	.05
30	1	$2\frac{1}{2}$	$\frac{3}{4}$	3.5	7.	19.	.55	.69	.06
31	$1\frac{1}{8}$	$2\frac{3}{4}$	2	4.5	9.	23.	.80	.96	.07
32	$1\frac{1}{4}$	3	$2\frac{1}{8}$	5.5	11.	33.	1.10	1.29	.08
34	$1\frac{1}{2}$	$3\frac{1}{2}$	$2\frac{7}{8}$	7.	13.	42.	1.55	1.80	.10
35	$1\frac{3}{4}$	$3\frac{3}{4}$	$2\frac{3}{4}$	8.	16.	53.	2.60	3.00	.14
36	2	4	$3\frac{1}{4}$	10.	20.	68.	3.80	4.50	.18

*When ordering V-Thread state if 12 or 13 threads are wanted.

Plain Pattern



Drop-Forged Weldless

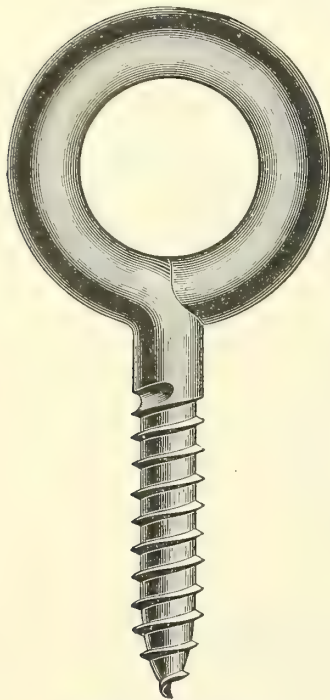
When ordering, please state whether Blank or Threaded are desired; if not specified Blank (shank not threaded) will be sent.

Capacity, Net Tons									
No.	Shank Inches		Diameter Eye Inches	Safe Working Load	Average Load at Elastic Limit	Ap- proxi- mate Break- ing Strain	Blank Each	Threaded Each	Extra Length Blank Per Inch Each
	Diam- eter	Length under Eye							
3	$\frac{3}{8}$	$1\frac{1}{4}$	$\frac{1}{8}$	.7	1.4	3.	\$.11	\$.16	\$.02
4	$\frac{7}{16}$	$1\frac{3}{8}$	$\frac{1}{8}$	1.	2.	4.	.12	.17	.02
5	$*\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	1.3	2.5	5.	.14	.20	.03
6	$\frac{9}{16}$	$1\frac{5}{8}$	$\frac{1}{8}$	1.5	3.	6.	.17	.24	.03
7	$\frac{5}{8}$	$1\frac{3}{4}$	$\frac{1}{2}$	2.	4.	8.	.22	.30	.04
8	$\frac{3}{4}$	2	$\frac{1}{2}$	3.	6.	12.	.30	.40	.04
9	$\frac{7}{8}$	$2\frac{1}{4}$	$\frac{1}{2}$	3.5	7.	16.	.40	.52	.05
10	1	$2\frac{1}{2}$	$\frac{3}{4}$	4.	8.	20.	.55	.69	.06
11	$1\frac{1}{8}$	$2\frac{3}{4}$	$\frac{3}{4}$	5.	10.	23.	.80	.96	.07
12	$1\frac{1}{4}$	3	$2\frac{1}{8}$	7.5	15.	33.	1.10	1.29	.08
14	$1\frac{1}{2}$	$3\frac{1}{2}$	$2\frac{3}{8}$	9.	18.	42.	1.55	1.80	.10
15	$1\frac{3}{4}$	$3\frac{3}{4}$	$2\frac{3}{4}$	11.	21.	53.	2.60	3.00	.14
16	2	4	$3\frac{1}{2}$	13.	25.	68.	3.80	4.50	.18
17	$2\frac{1}{2}$	5	$4\frac{1}{8}$	16.	32.	85.	6.00	7.50	.28

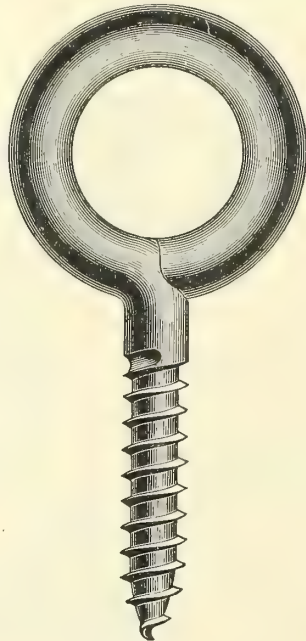
*When ordering V-Thread state if 12 or 13 threads are wanted.

Wire Screw Eyes

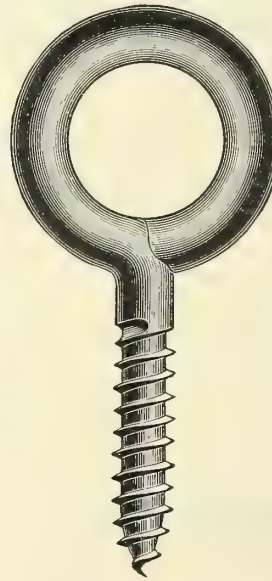
(Full Size Cuts)



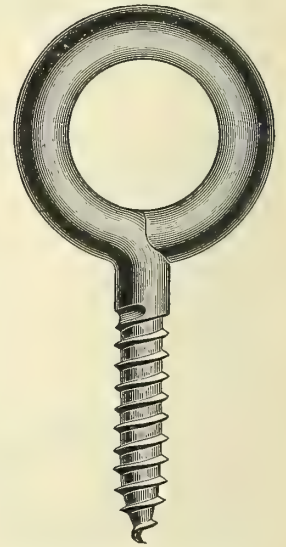
No. 000 ($\frac{3}{8}$ -inch wire.)
Bright Iron



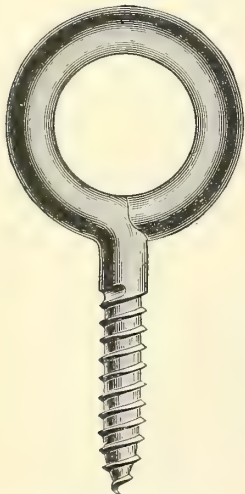
No. 00 Bright Iron Wire



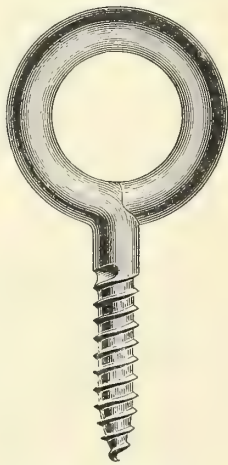
No. 0 Bright Iron Wire
No. 1000 Brass Wire



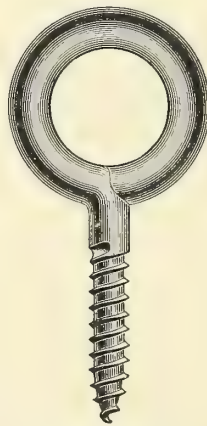
No. 1 Bright Iron Wire
No. 1001 Brass Wire



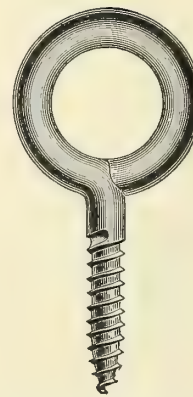
No. 2 Bright Iron Wire
No. 1002 Brass Wire



No. 3 Bright Iron Wire
No. 1003 Brass Wire



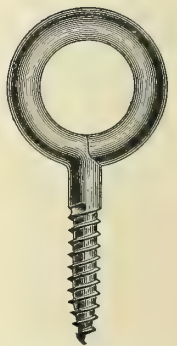
No. 4 Bright Iron Wire
No. 1004 Brass Wire



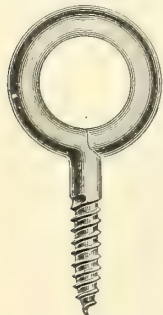
No. 5 Bright Iron Wire
No. 1005 Brass Wire



No. 6 Bright Iron Wire
No. 1006 Brass Wire



No. 7 Bright Iron Wire
No. 1007 Brass Wire



No. 8 Bright Iron Wire
No. 1008 Brass Wire



No. 9 Bright Iron Wire
No. 1009 Brass Wire



No. 10 Bright Iron Wire
No. 1010 Brass Wire



No. 11 Bright Iron Wire
No. 1011 Brass Wire



No. 12 Bright Iron Wire
No. 1012 Brass Wire



No. 13 Bright Iron Wire
No. 1013 Brass Wire



No. 14 Bright Iron Wire
No. 1014 Brass Wire

Bright Iron Wire

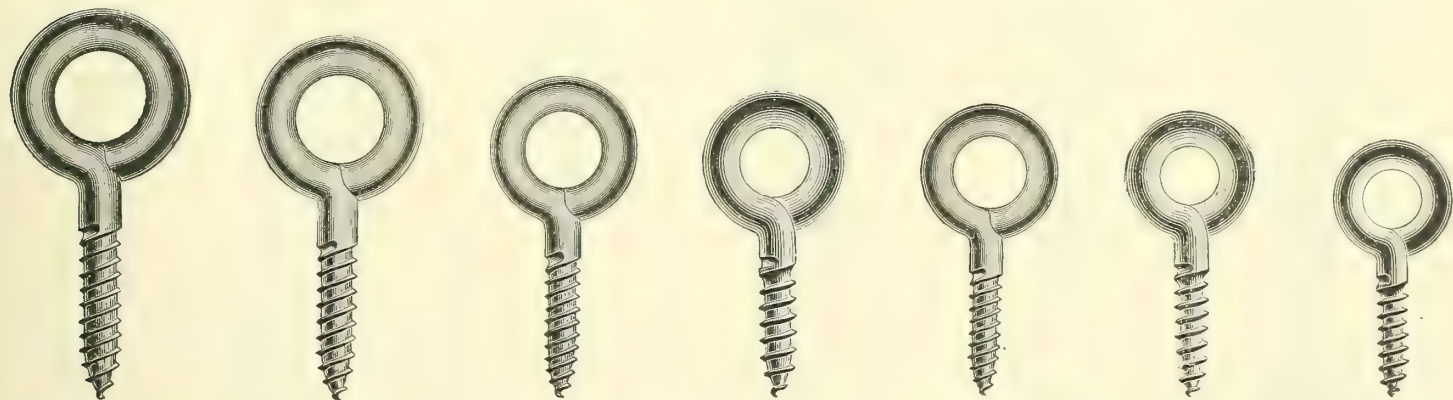
Number.....	000	00	0	1	2	3	4	5
Gross.....	\$40.00	30.00	16.00	13.00	11.00	9.00	7.00	5.80
Number.....	6	7	8	9	10	11	12	13
Gross...	\$4.50	3.80	3.30	2.80	2.50	2.00	1.70	1.50

Brass Wire

Number.....	1000	1001	1002	1003	1004	1005	1006
Gross.....	\$70.00	57.50	48.00	37.00	30.00	26.00	21.00
Number.....	1007	1008	1009	1010	1011	1012	1013
Gross.....	\$16.00	13.00	10.00	9.00	7.00	5.50	4.50

Wire Screw Eyes

(Full Size Cuts)



No. 104, Bright Iron Wire
No. 1104, Brass Wire

No. 105, Bright Iron Wire
No. 1105, Brass Wire

No. 106, Bright Iron Wire
No. 1106, Brass Wire

No. 107, Bright Iron Wire
No. 1107, Brass Wire

No. 108, Bright Iron Wire
No. 1108, Brass Wire

No. 109, Bright Iron Wire
No. 1109, Brass Wire

No. 110, Bright Iron Wire
No. 1110, Brass Wire



No. 111, Bright Iron Wire
No. 1111, Brass Wire

No. 112, Bright Iron Wire
No. 1112, Brass Wire

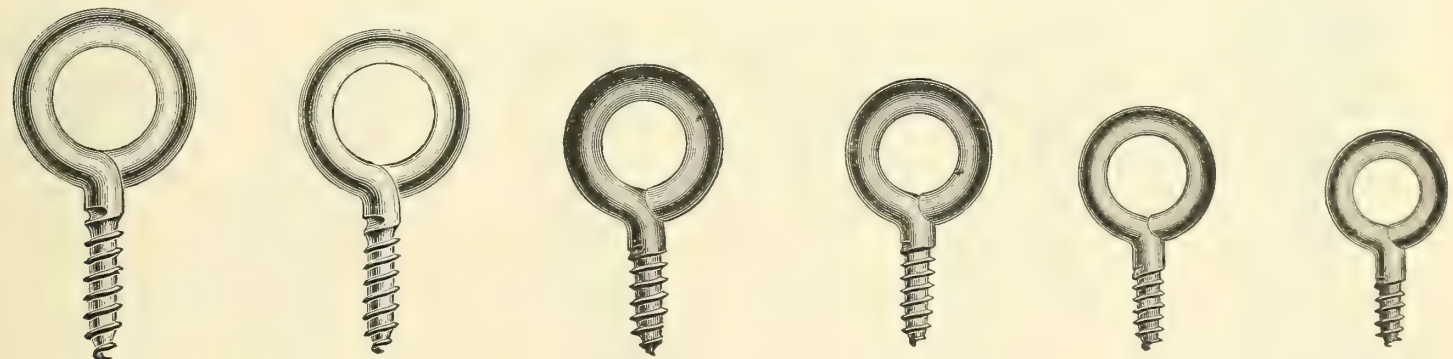
No. 113, Bright Iron Wire
No. 1113, Brass Wire

No. 114, Bright Iron Wire
No. 1114, Brass Wire

No. 115, Bright Iron Wire
No. 1115, Brass Wire

Bright Iron Wire							Brass Wire						
Number	104	105	106	107	108	109	Number	1104	1105	1106	1107	1108	1109
Gross	\$7.00	5.80	4.50	3.80	3.30	2.80	Gross	\$30.00	26.00	21.00	16.00	13.00	10.00
Number	110	111	112	113	114	115	Number	1110	1111	1112	1113	1114	1115
Gross	\$2.50	2.00	1.70	1.50	1.50	1.50	Gross	\$9.00	7.00	5.50	4.50	3.50	3.50

Half size or short shank for picture frame use



No. 104½

No. 105½

No. 106½

No. 107½

No. 108½

No. 109½



No. 110½

No. 111½

No. 112½

No. 113½

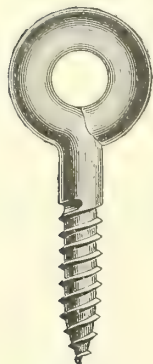
No. 114½, Bright Wire
No. 1114½, Brass Wire

No. 115½, Bright Wire
No. 1115½, Brass Wire

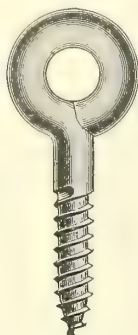
Number	104½	105½	106½	107½	108½	109½	110½	111½	112½	113½	114½	115½	1114½	1115½
Gross	\$7.00	5.80	4.50	3.80	3.30	2.80	2.50	2.00	1.70	1.50	1.50	1.50	3.50	3.50

Wire Screw Eyes

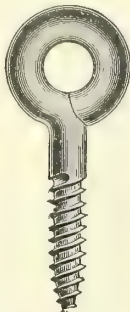
Full Size Cuts



No. 204, Bright Iron Wire
No. 1204, Brass Wire



No. 205, Bright Iron Wire
No. 1205, Brass Wire



No. 206, Bright Iron Wire
No. 1206, Brass Wire



No. 207, Bright Iron Wire
No. 1207, Brass Wire



No. 208, Bright Iron Wire
No. 1208, Brass Wire



No. 209, Bright Iron Wire
No. 1209, Brass Wire



No. 210, Bright Iron Wire
No. 1210, Brass Wire



No. 211, Bright Iron Wire
No. 1211, Brass Wire



No. 212, Bright Iron Wire
No. 1212, Brass Wire



No. 213, Bright Iron Wire
No. 1213, Brass Wire



No. 214, Bright Iron Wire
No. 1214, Brass Wire



No. 215, Bright Iron Wire
No. 1215, Brass Wire

Bright Iron Wire

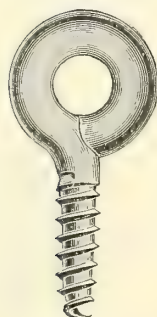
Number	204	205	206	207	208	209
Gross	\$7.00	5.80	4.50	3.80	3.30	2.80
Number	210	211	212	213	214	215
Gross	\$2.50	2.00	1.70	1.50	1.50	1.50

Brass Wire

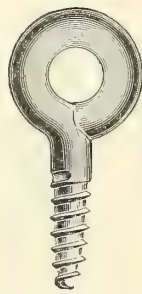
Number	1204	1205	1206	1207	1208	1209
Gross	\$30.00	26.00	21.00	16.00	13.00	10.00
Number	1210	1211	1212	1213	1214	1215
Gross	\$9.00	7.00	5.50	4.50	3.50	3.50

Half Size or Short Shank

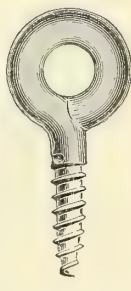
For Picture Frame Use



No. 204 1/2
Bright Iron Wire



No. 205 1/2
Bright Iron Wire



No. 206 1/2
Bright Iron Wire



No. 207 1/2
Bright Iron Wire



No. 208 1/2
Bright Iron Wire



No. 209 1/2
Bright Iron Wire



No. 210 1/2
Bright Iron Wire



No. 211 1/2
Bright Iron Wire



No. 212 1/2
Bright Iron Wire



No. 213 1/2
Bright Iron Wire



No. 214 1/2
No. 1214 1/2



No. 214 3/4
No. 1214 3/4



No. 215 1/2
No. 1215 1/2



No. 216 1/2
No. 1216 1/2



No. 217 1/2

Bright Iron Wire

Number	204 1/2	205 1/2	206 1/2	207 1/2	208 1/2	209 1/2	210 1/2	211 1/2
Gross	\$7.00	5.80	4.50	3.80	3.30	2.80	2.50	2.00
Number	212 1/2	213 1/2	214 1/2	214 3/4	215 1/2	216 1/2	217 1/2	
Gross	\$1.70	1.50	1.50	1.50	1.50	1.50	1.50	

Brass Wire

Number	1214 1/2	1214 3/4	1215 1/2	1216 1/2
Gross	\$3.50	3.50	3.50	3.50

SINCE
1848

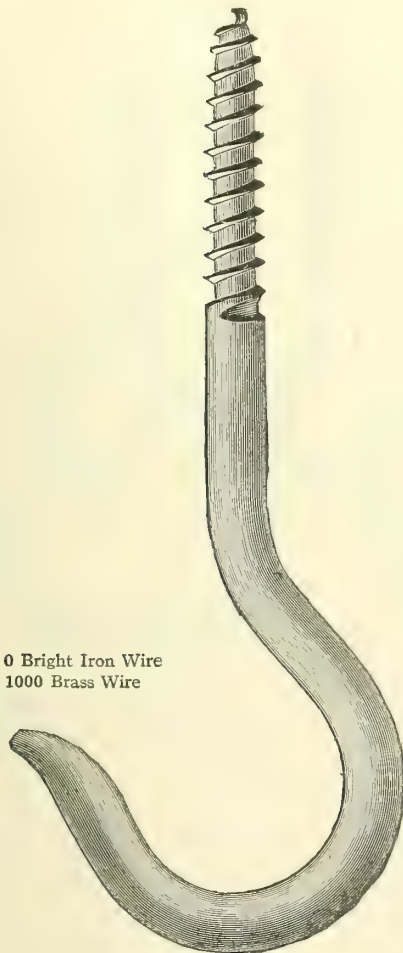
HAMMACHER SCHLEMMER & CO.

NEW
YORK

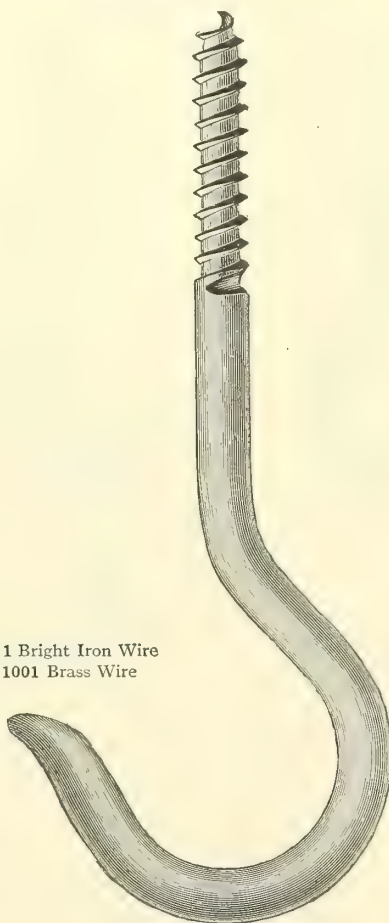
Wire Screw Hooks

Full Size Cuts

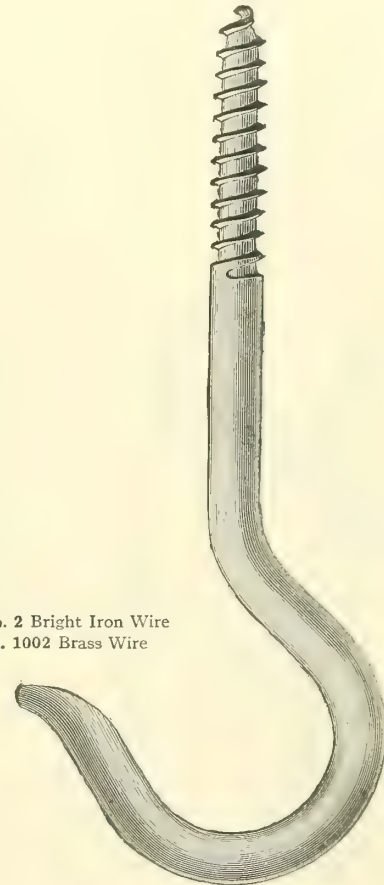
No. 0 Bright Iron Wire
No. 1000 Brass Wire



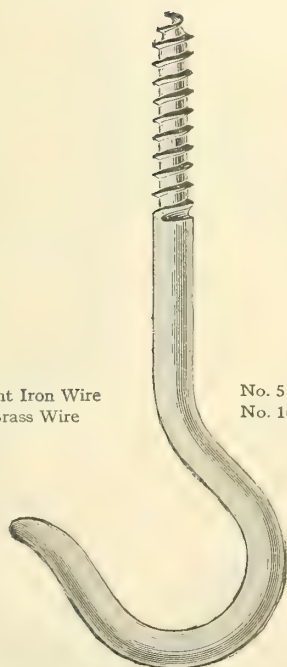
No. 1 Bright Iron Wire
No. 1001 Brass Wire



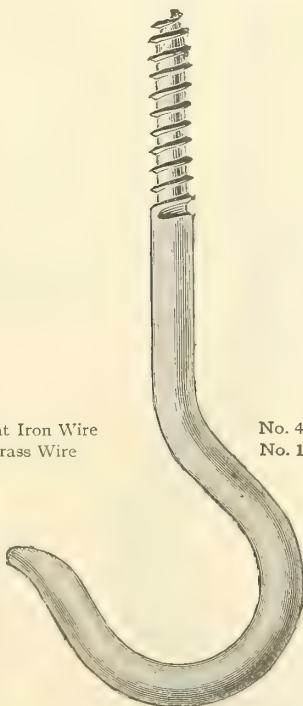
No. 2 Bright Iron Wire
No. 1002 Brass Wire



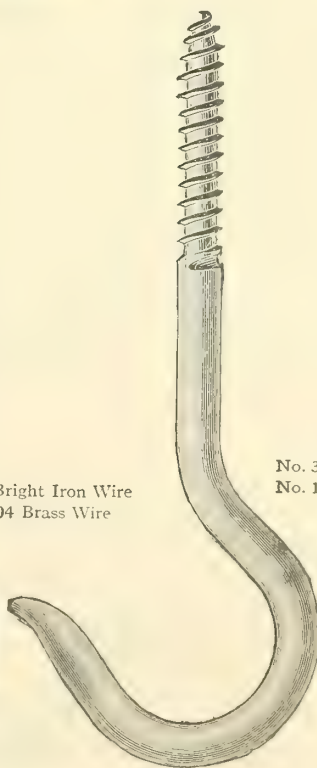
No. 6 Bright Iron Wire
No. 1006 Brass Wire



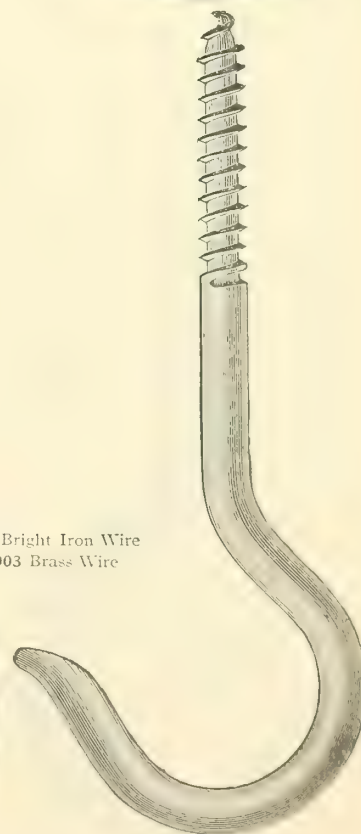
No. 5 Bright Iron Wire
No. 1005 Brass Wire



No. 4 Bright Iron Wire
No. 1004 Brass Wire



No. 3 Bright Iron Wire
No. 1003 Brass Wire

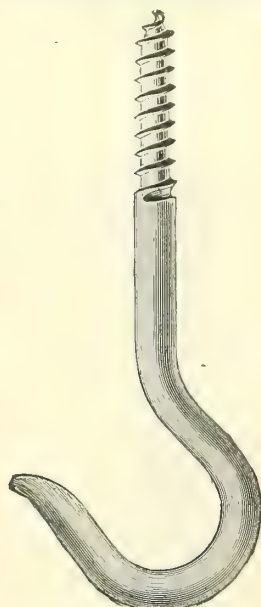


See next page for listing and illustrations of other sizes

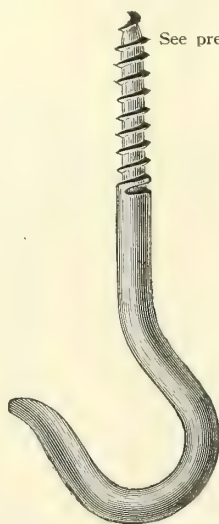
Wire Screw Hooks

Full Size Hooks

See preceding page for illustrations of larger sizes



No. 6 1/2 Bright Iron Wire
No. 1006 1/2 Brass Wire



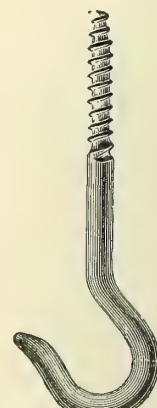
No. 7 Bright Iron Wire
No. 1007 Brass Wire



No. 8 Bright Iron Wire
No. 1008 Brass Wire



No. 9 Bright Iron Wire
No. 1009 Brass Wire



No. 10 Bright Iron Wire
No. 1010 Brass Wire



No. 11 Bright Iron Wire
No. 1011 Brass Wire



No. 12 Bright Iron Wire
No. 1012 Brass Wire



No. 13 Bright Iron Wire
No. 1013 Brass Wire



No. 14 Bright Iron Wire
No. 1014 Brass Wire

Bright Iron Wire

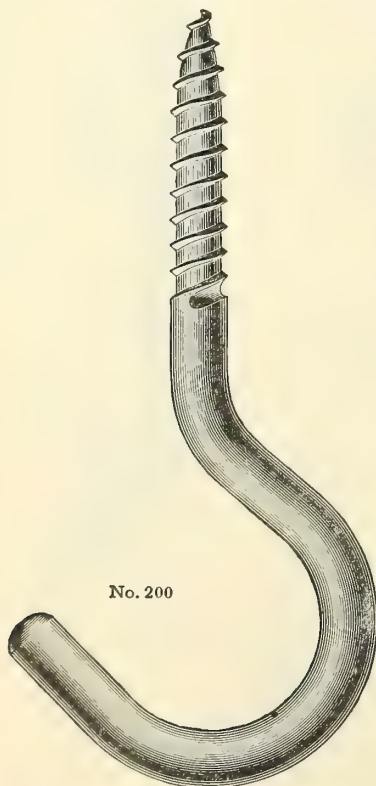
Number.	0	1	2	3	4	5	6	6 1/2	7
Gross....	\$21.00	18.00	15.00	12.50	10.00	8.00	6.00	5.30	4.50
Number.....			8	9	10	11	12	13	14
Gross.....			\$4.00	3.50	3.00	2.80	2.50	2.30	2.00

Brass Wire

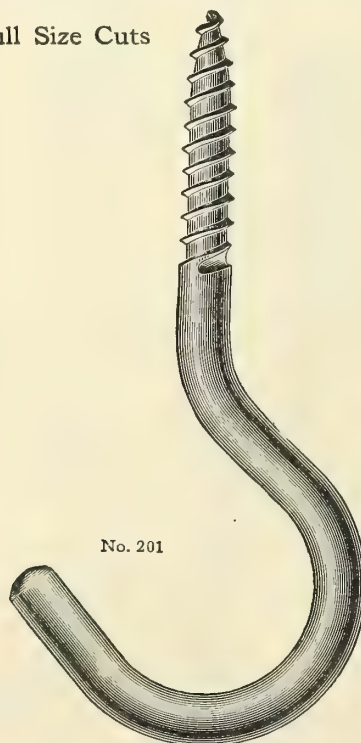
Number.....	1000	1001	1002	1003	1004	1005	1006	1006 1/2
Gross.....	\$125.00	105.00	85.00	65.00	45.00	37.00	30.00	26.00
Number.....	1007	1008	1009	1010	1011	1012	1013	1014
Gross.....	\$21.00	15.00	12.00	10.00	8.00	6.50	5.00	4.00

Bright Iron Blunt Screw Hooks

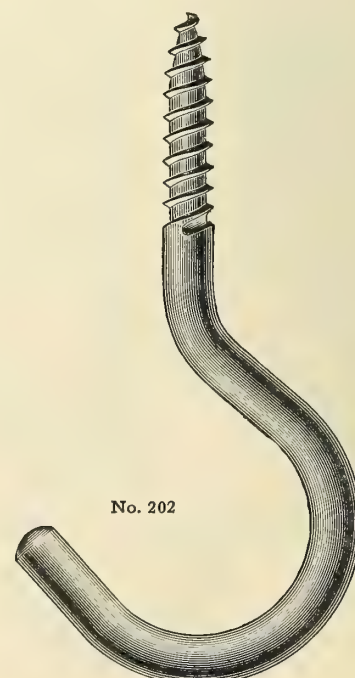
Full Size Cuts



No. 200



No. 201

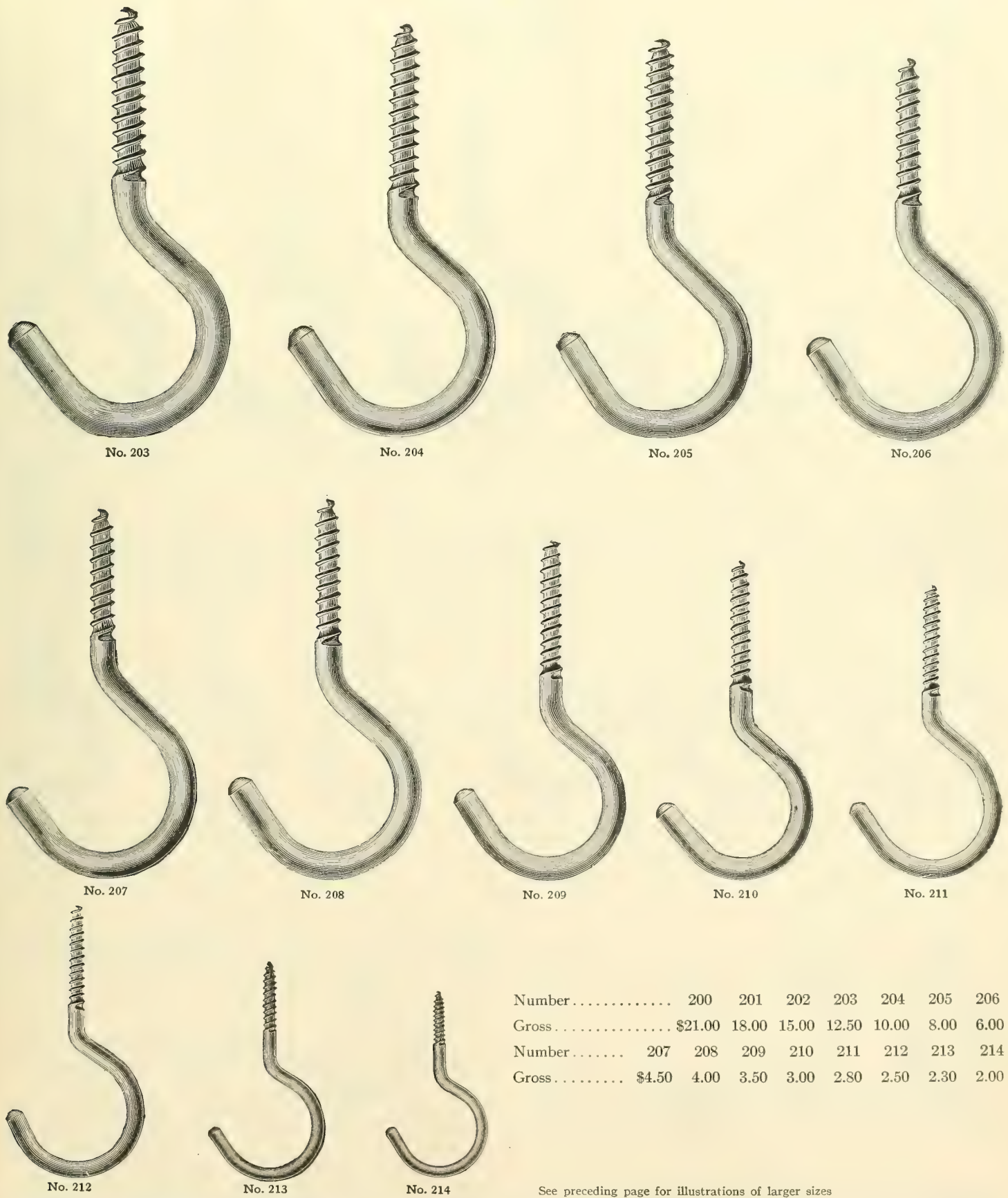


No. 202

See next page for listing and illustrations of other sizes.

Bright Iron Wire Blunt Screw Hooks

Full Size Cuts.

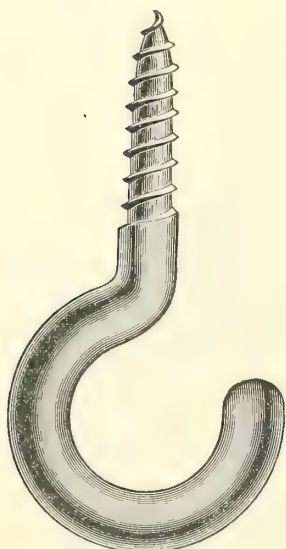


Number.....	200	201	202	203	204	205	206	
Gross.....	\$21.00	18.00	15.00	12.50	10.00	8.00	6.00	
Number.....	207	208	209	210	211	212	213	214
Gross.....	\$4.50	4.00	3.50	3.00	2.80	2.50	2.30	2.00

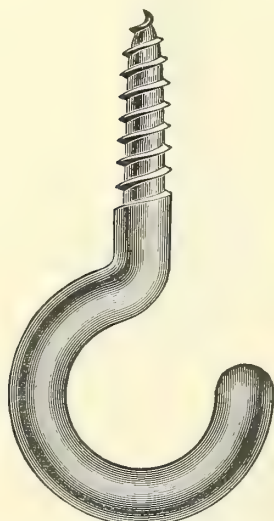
See preceding page for illustrations of larger sizes

Wire Cup Hooks

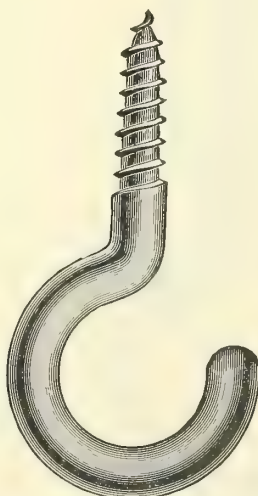
Full Size Cuts



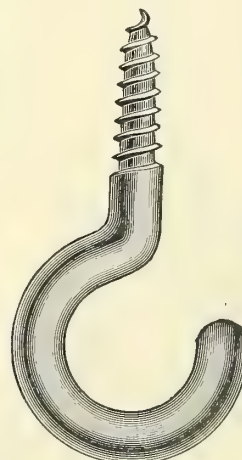
No. 300 Bright Iron
No. 1300 Brass



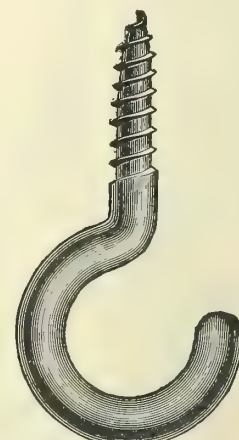
No. 301 Bright Iron
No. 1301 Brass



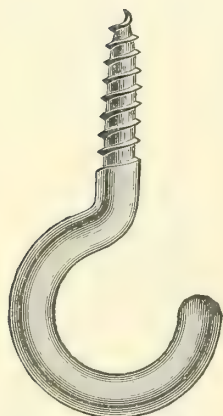
No. 302 Bright Iron
No. 1302 Brass



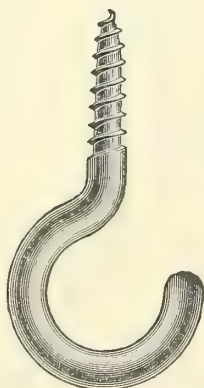
No. 303 Bright Iron
No. 1303 Brass



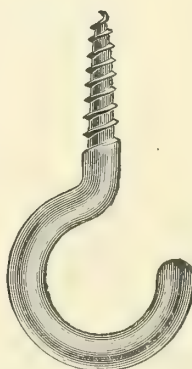
No. 304 Bright Iron
No. 1304 Brass



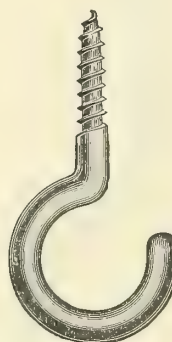
No. 305 Bright Iron
No. 1305 Brass



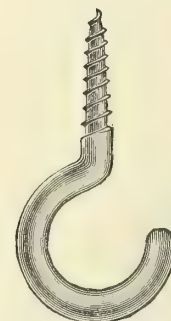
No. 306 Bright Iron
No. 1306 Brass



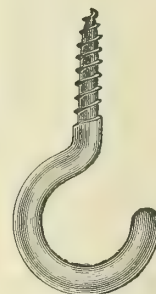
No. 307 Bright Iron
No. 1307 Brass



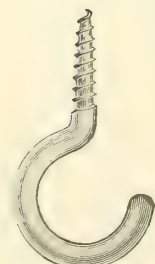
No. 308 Bright Iron
No. 1308 Brass



No. 309 Bright Iron
No. 1309 Brass



No. 310 Bright Iron
No. 1310 Brass



No. 311 Bright Iron
No. 1311 Brass



No. 312 Bright Iron
No. 1312 Brass



No. 313 Bright Iron
No. 1313 Brass



No. 314 Bright Iron
No. 1314 Brass

Bright Iron

Number.....	300	301	302	303	304	305	306
Gross.....	\$21.00	18.00	15.00	12.50	10.00	8.00	6.00
Numbers.....	307	308	309	310	311	312	313
Gross.....	\$4.50	4.00	3.50	3.00	2.80	2.50	2.30

Brass

Number.....	1300	1301	1302	1303	1304	1305	1306
Gross.....	\$125.00	105.00	85.00	65.00	45.00	37.00	30.00
Number.....	1307	1308	1309	1310	1311	1312	1313
Gross.....	\$21.00	15.00	12.00	10.00	8.00	6.50	5.00

Wire Drive Hooks



Full Size Cut

No. 212	Bright Iron Wire, 1⅛-inch, per gross.....	\$1.10
No. 1212	Brass Wire, 1⅛-inch, per gross.....	1.70

Tenter Hooks



Full Size Cut

Extra quality, sharp points, ⅞-inch, machine made, tinned, 1000 in a box, per 1000.....	\$1.50
---	--------

Kitchen Hooks



Full Size Cut of Nos. 67 and 1067

No. 67	Bright Wire, for towels, utensils, etc., gross.....	\$3.00
No. 1067	Brass Wire, for the bath room, china closet, etc., gross.....	9.00

Square Screw Hooks

Cuts Full Size



No. 104 Bright Iron Wire No. 1104 Brass Wire



No. 105 Bright Iron Wire No. 1105 Brass Wire



No. 106 Bright Iron Wire No. 1106 Brass Wire



No. 107 Bright Iron Wire No. 1107 Brass Wire



No. 108 Bright Iron Wire No. 1108 Brass Wire



No. 109 Bright Iron Wire
No. 1109 Brass Wire



No. 110 Bright Iron Wire
No. 1110 Brass Wire



No. 111 Bright Iron Wire
No. 1111 Brass Wire



No. 112 Bright Iron Wire
No. 1112 Brass Wire



No. 113 Bright Iron Wire
No. 1113 Brass Wire

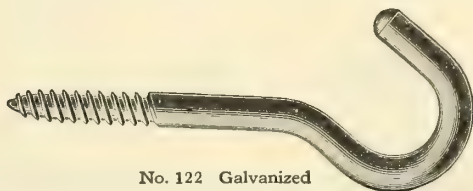


No. 114 Bright Iron Wire
No. 1114 Brass Wire

Bright Iron Wire											
Number.....	104	105	106	107	108	109	110	111	112	113	114
Gross.....	\$10.00	8.00	6.00	4.50	4.00	3.50	3.00	2.80	2.50	2.30	2.00

Brass Wire											
Number.....	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114
Gross.....	\$45.00	37.00	30.00	21.00	15.00	12.00	10.00	8.00	6.50	5.00	4.00

Wrought Steel Screw Hooks



No. 122 Galvanized

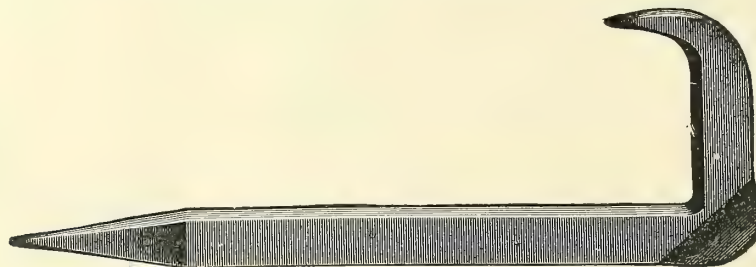
Diameter of Rod, inch.	¼	⅝	¾	7/16	½	5/8	¾
Length overall, inches.	4¼	4½	4⅞	5¼	6	7	8
Length to bend of hook, inches.....	2⅜	2⅜	2¾	2⅞	3¾	4	4⅞
Dozen.....	\$1.20	1.35	1.50	2.10	2.80	4.50	6.70

Well Wheel Hooks



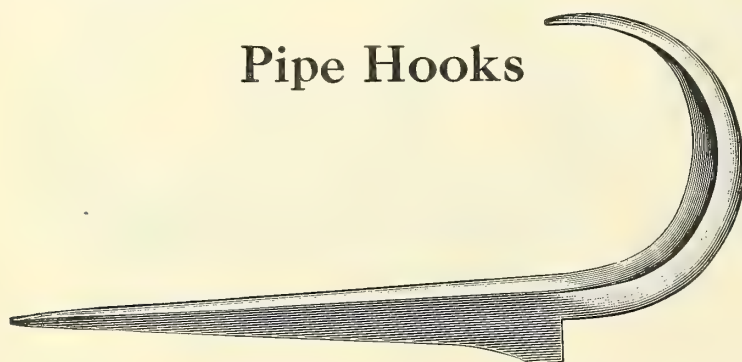
No. 15 ⅜-inch wrought steel, japanned, 7½ inches long, dozen. . \$2.40

Wrought Awning Hooks



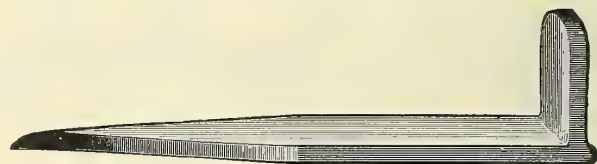
	Round Iron								Square Iron			
Length, inches.....	1¼	1½	1¾	2	2½	3	3½		4x¼	4½x¼	5x¼	6x¼
Plain, per gross.....	\$2.70	3.00	3.40	3.60	4.00	5.00	6.00		9.00	10.00	11.00	13.00
Galvanized, per gross.....	3.70	4.00	4.40	4.80	6.50	7.00	8.00		12.50	14.00	16.00	18.00

Pipe Hooks



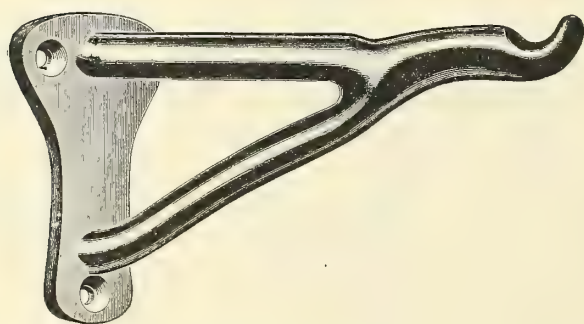
For pipe, inches.....	¼	¾	1½	¾	1	1¼
Plain, per 100.....	\$1.00	1.00	1.00	1.20	1.20	1.50
Galvanized, per 100.....	2.00	2.00	2.00	2.00	2.20	2.50

Wrought Sign or Jamb Hooks



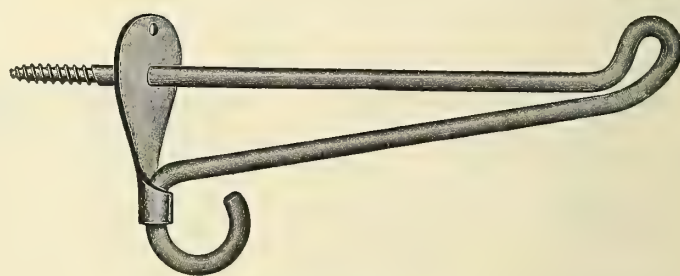
Inches.....	6	8	10
Plain, per dozen.....	\$2.10	2.50	3.00
Galvanized, per dozen.....	2.70	3.25	4.10

Fire-Pail Hooks



Cast Iron, Very Heavy

No. 100 Japanned, 7½-inch projection, dozen..... \$2.50



Steel Wire No. 4 Gauge

No. 1000 Japanned, 8-inch projection, per gross..... \$16.00

Store Rack Hooks



Cast Iron

No. 10 Japanned, projection 10½ inches, per dozen..... \$2.20
No. Y10 Bronze-plated, projection 10½ inches, per dozen..... 7.00

Fancy Hooks

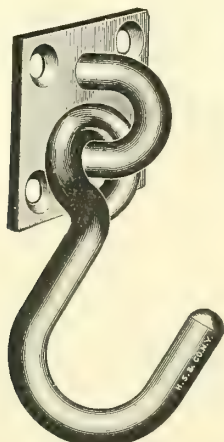


Cast Brass

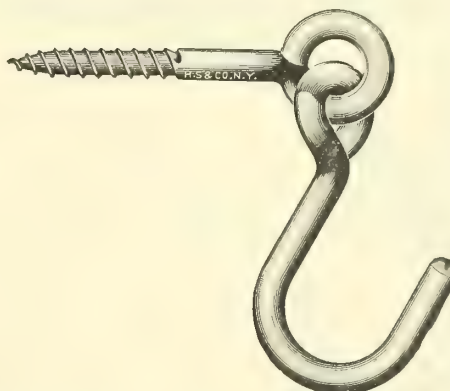
No. 100 Old brass finish, 8-inch projection, per dozen..... \$7.50

Wrought Steel Hammock Hooks

Half Size Cuts



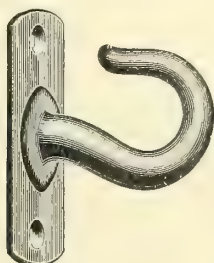
No. 268



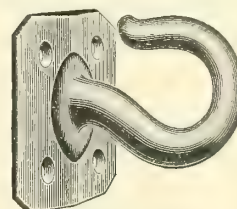
No. 278

With plate, $\frac{3}{8}$ -inch wire, galvanized, dozen \$2.60 With screw, $\frac{5}{16}$ -inch wire, galvanized, dozen \$2.00

Clothes Line Hooks



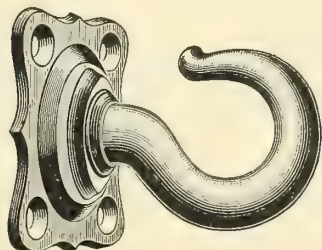
No. 23. Cast Iron



No. 22. Cast Iron

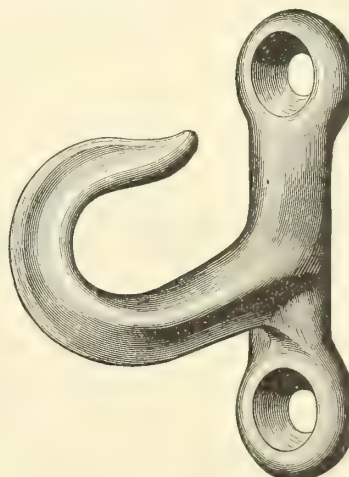
Galvanized, 2-inch projection, dozen \$.78

Galvanized, 2-inch projection, dozen \$.92



No. 21. Cast Iron

Galvanized, 3-inch projection, dozen \$1.85



No. 211. Cast Iron

Galvanized, $1\frac{5}{8}$ -inch projection, dozen \$.50

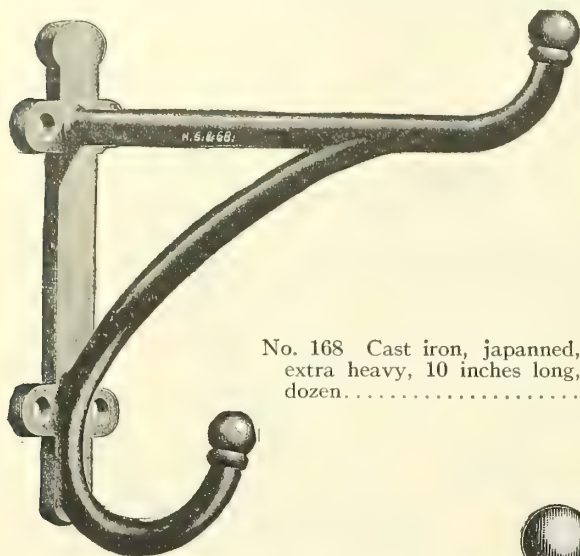


No. 85 For wood. Wrought steel, galvanized, $4\frac{1}{2}$ inches long, dozen \$.80

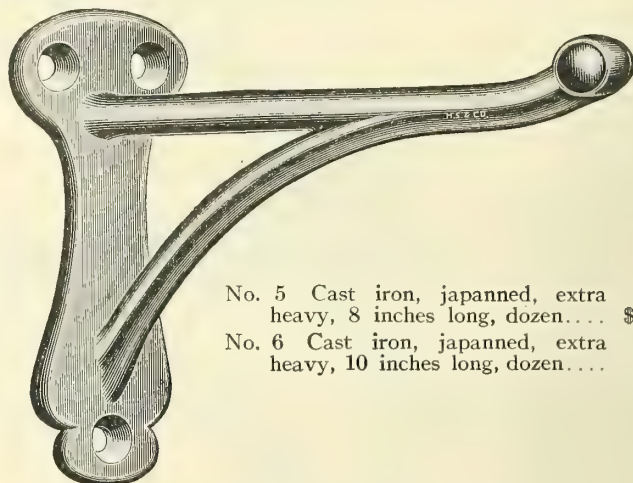


No. 87 For brick. Wrought steel, galvanized, $4\frac{1}{2}$ inches long, dozen \$.80

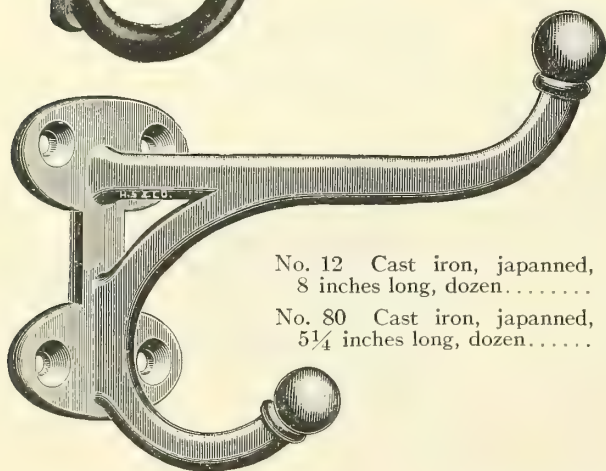
Harness Hooks



No. 168 Cast iron, japanned,
extra heavy, 10 inches long,
dozen..... \$4.00

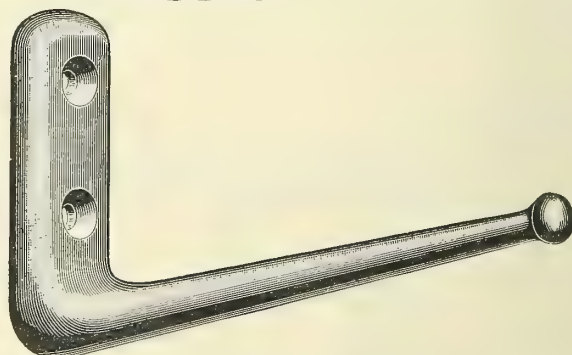


No. 5 Cast iron, japanned, extra
heavy, 8 inches long, dozen.... \$1.60
No. 6 Cast iron, japanned, extra
heavy, 10 inches long, dozen.... 2.00



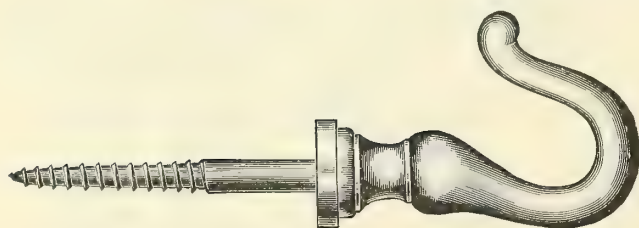
No. 12 Cast iron, japanned,
8 inches long, dozen..... \$1.45
No. 80 Cast iron, japanned,
5 1/4 inches long, dozen..... 1.00

Baggage Hooks



No. 9 Cast iron, japanned, 5 1/2-inch projection, dozen..... \$.80

Chandelier Hooks



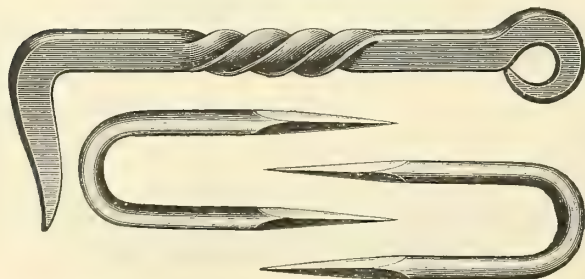
Nos. 861 and 861 1/2

No. 861 1/2 Cast iron, japanned, length of screw 3 inches, dozen. \$.81
No. 861 Cast brass, polished, length of screw 3 inches, dozen. 4.86



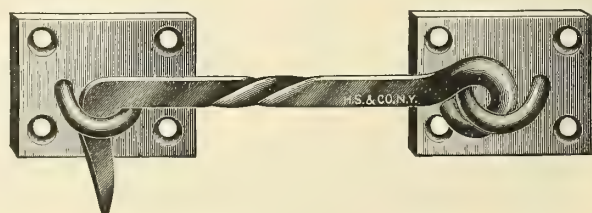
No. 11035 Malleable iron, male, for 3/8-inch iron pipe, each.. \$.10
No. 11037 Malleable iron, female, for 3/8-inch iron pipe, each.. .10

Wrought Iron Hooks and Staples



Length of hook, inches.....	4	6
Plain, gross.....	\$10.00	\$14.00
Galvanized, gross.....	14.50	21.00

Wrought Iron Hooks and Staples on Plates

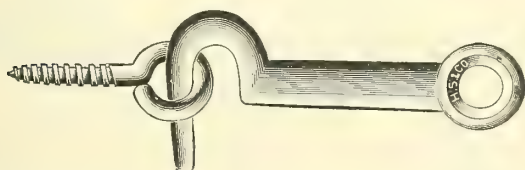


Length of hook, inches.....	4	6
Plain, gross.....	\$19.00	\$24.00
Galvanized, gross.....	27.00	34.00

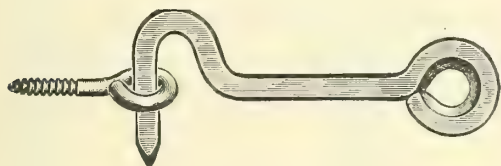
Hooks and Eyes



Length of hook, inches.....	$\frac{3}{4}$	1	1$\frac{1}{4}$	1$\frac{1}{2}$
No. 61 Brass, gross.....	\$2.50	2.75	3.00	3.25
No. 61N Brass, nickel-plated, gross.....	3.75	4.25	4.50	5.00



Length of hook, inches.....	1½	1¾	2	2½	3
No. 60 Brass, heavy, gross.....	\$...	4.00	4.75	3.50	



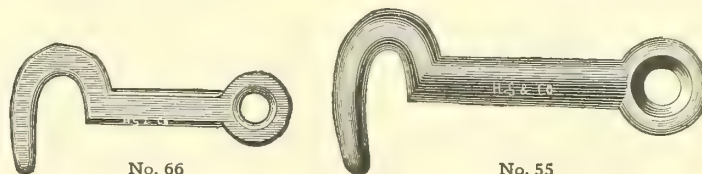
Length of hook, inches	1½	2	2½	3
No. 150 Polished steel, gross.....	\$1.50	2.00	2.75	3.75

Gate Hooks and Eyes



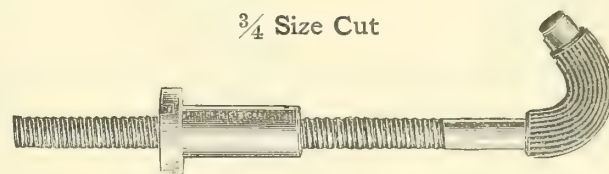
Length of Hook Inches	Gross		Length of Hook Inches	Gross	
	Iron	Brass		Iron	Brass
1	\$6.50	\$24.00	7	\$36.00	\$130.00
1½	6.50	24.00	8	36.00	130.00
2	8.00	30.00	9	42.00	150.00
2½	10.00	36.00	10	42.00	150.00
3	12.00	46.00	11	48.00	170.00
3½	14.50	58.00	12	48.00	170.00
4	17.00	64.00	13	55.00	180.00
4½	20.00	76.00	14	55.00	180.00
5	24.00	82.00	15	70.00	200.00
5½	30.00	110.00	16	70.00	200.00
6	30.00	110.00			

Hooks Only



		No. 155						
Inches	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	
No. 66 Brass, gross . .	\$1.70	1.80	2.00	2.25				
No. 66N Brass, nickel-plated, gross	2.55	2.70	3.00	3.40				
No. 55 Malleable iron, gross . . . . .	....	....	....	.85	1.30	2.00	3.00
No. 155 Polished steel, gross . . . . .	....	....	....	.85	1.30	2.00	

Typewriter Desk Hooks



No. 3704	Bright iron wire, rubber ferrule, malleable iron nut,	
	gross.....	\$10.00

Cornice Hooks



Length of Hook Inches	Gross	Length of Hook Inches	Gross
2	\$14.00	6	\$23.00
2½	14.00	7	27.00
3	14.00	8	27.00
3½	17.00	9	32.00
4	17.00	10	32.00
4½	20.00	11	38.00
5	20.00	12	38.00
5½	23.00		

Brass Shouldered Cup Hooks



No. 281. Cut Full Size of $\frac{5}{8}$ -inch Hook

Size, inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Gross.....	\$3.75	3.85	4.00	4.50	5.25
Size, inches.....	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Gross.....	\$7.00	9.00	11.00	15.00	18.00

Brass Shouldered Screw Hooks

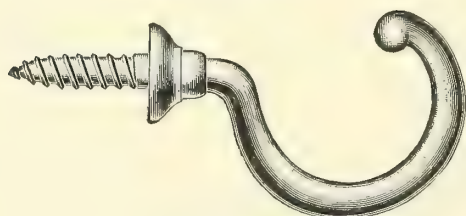


No. 2412. Cut Full Size of $\frac{5}{8}$ -inch Hook

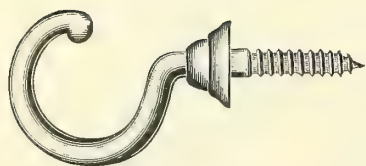
Size, inch.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Gross.....	\$3.75	3.85	4.00	4.50	5.25
Size, inches.....	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Gross.....	\$7.00	9.00	11.00	15.00	18.00

Cast Brass Cup Hooks

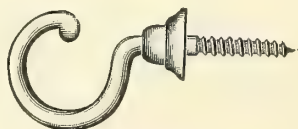
Cuts Full Size



Nos. 5880 and 5880N



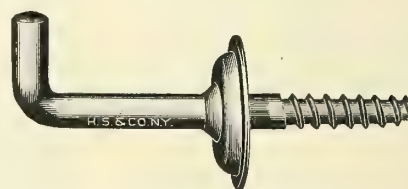
No. 5881



No. 5882

No. 5880	Cast brass, polished, gross.....	\$18.50
No. 5880N	Cast brass, nickel-plated, gross.....	20.35
No. 5881	Cast brass, polished, gross.....	14.00
No. 5882	Cast brass, polished, gross.....	11.50

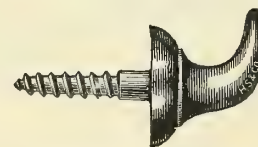
Heavy Square Shouldered Hooks



No. 17. Cut Full Size

Made of No. 7 gauge brass wire, nickel-plated, gross..... \$4.80

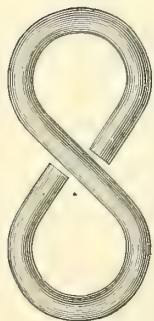
Brush or Duster Hooks



No. 10. Cut Full Size

Cast brass, polished, with steel screw, gross..... \$7.80

Bright Steel Wire S Hooks



No. $\frac{1}{2}$



No. $2\frac{1}{2}$



No. 4



No. $\frac{1}{2}$



No. $2\frac{1}{2}$



No. 4



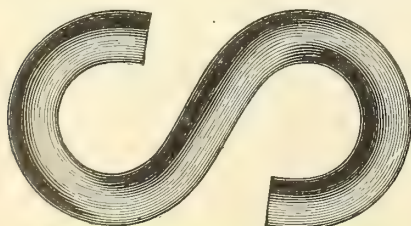
No. 6

Number.....	$\frac{1}{2}$	$2\frac{1}{2}$	4
Gross.....	\$1.50	1.30	1.10

Brass S Hooks

Full Size Cuts

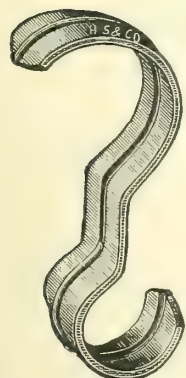
Number.....	$\frac{1}{2}$	$2\frac{1}{2}$	4	6
Gross.....	\$3.25	2.00		
Nickel-plated, gross.....	4.00	2.80	2.00	1.65



Wrought Iron S Hooks

Size, inches.....	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3
Plain, gross.....	\$4.00	4.75	5.50	6.50	7.50	9.50
Galvanized, gross.....	6.00	7.25	8.75	9.50	12.00	14.00

Picture Hooks



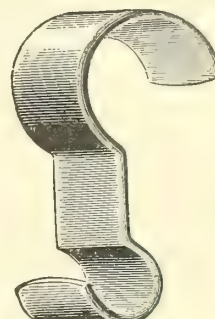
Polished Brass
No. 07 To fit 1 1/4 inch
moulding, gross.... \$2.60
No. 09 To fit 1 1/2 inch
moulding, gross.... 3.15



No. 90
Brass-plated, to fit
1 1/2-inch mould-
ing, gross..... \$1.00



No. 0030
Brass-plated, to fit
1 1/2-inch mould-
ing, gross..... \$1.10



No. 199
White, to fit 1 1/2-
inch moulding,
gross..... \$3.00



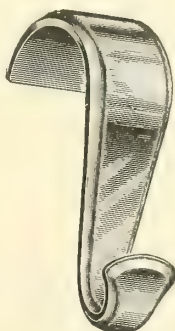
No. 576
Polished brass, to fit
1 1/2-inch mould-
ing, gross..... \$9.40



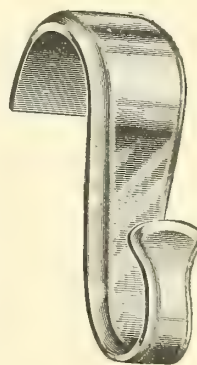
No. 4072
Brass-plated, made
to fit 1 1/2-inch or
2-inch moulding,
gross..... \$3.50



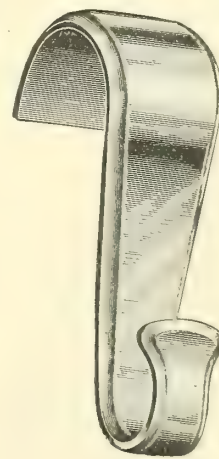
Numbers from 10 to 17 indicate gauge
thickness of material. Dipped brass.
To fit moulding,
inches..... 1 1/4 1 1/2 2 2 1/2
No. 10 Gross.. \$5.40 7.40 9.30
No. 14 Gross.. 4.00 4.00
No. 17 Gross.. 3.00 3.00
No. 6214 Polished brass, to fit
1 1/2 or 2-inch moulding, gross. \$13.00



No. 6223
Polished brass
To fit 1 1/2-inch
moulding
Gross..... \$10.00

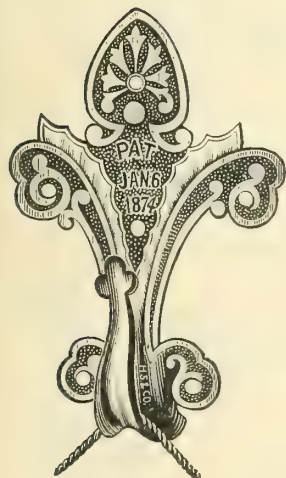


No. 5976
Polished brass, to fit
1 1/2-inch mould-
ing, gross..... \$15.00



No. 5935
Polished brass, to fit
2-inch moulding,
gross..... \$20.00

Wall Picture Hooks



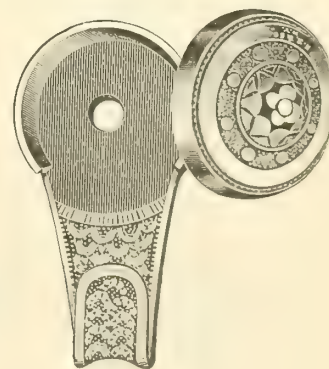
Niles No. 1
Brass dipped, gross.. \$4.30



Niles No. 2
Brass dipped, gross.... \$3.80



No. 1 1/2
Wrought brass, gross.. \$3.00



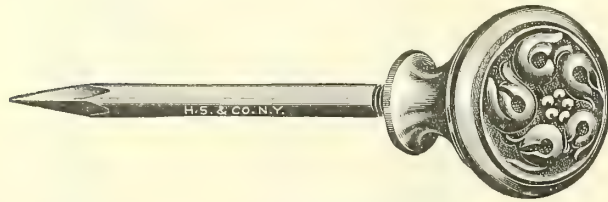
No. 2 1/2
Wrought brass, gross.. \$6.00

SINCE
1848

HAMMACHER SCHLEMMER & CO.

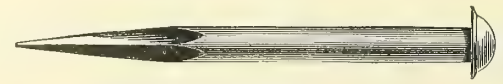
NEW
YORK

Picture Nails



No. 1089

A brass head screws onto coppered steel pin, 2½ inches long,
dozen..... \$2.50



Brass Capped

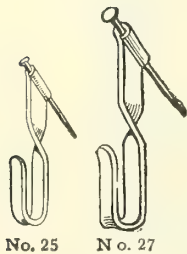
Length, inches.....	1	1½	2	2½	3	4
Gross.....	\$.98	1.12	1.50	1.73	2.12	3.06

Pushless Hangers

Moore

Cuts Full Size

Made of brass. Has great holding
power in wood or plaster.



No. 25

No. 27

No. 25	Per card of 6.....	\$.10
No. 27	Per card of 4.....	.10
No. 28	Per card of 3.....	.10



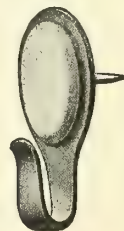
No. 28

Hook Tacks

A Combination Hook and Thumb Tack.
The hook is brass and head of tack is celluloid,
colored white or blue. For hanging pictures and
other small articles on the wall or in show
windows.

Mounted six on a block.

Per block.....	\$.10
Gross.....	2.25



Glass Push Pins

Moore



No. 1

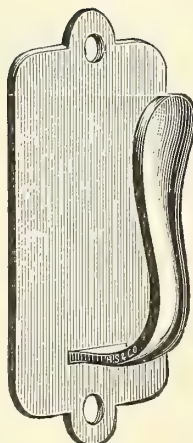
No. 1	Per card of 6.....	\$.10
No. 2	Per card of 6.....	.10



No. 2

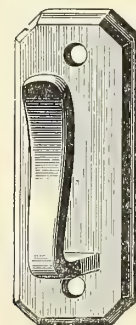
Tassel Hooks

Cuts Full Size



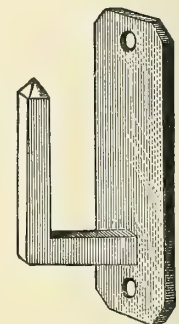
No. 1450

Brass, polished, gross..... \$8.00



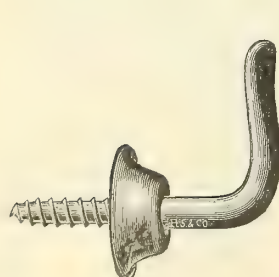
No. 469

Brass, polished and gold lacquered, gross \$8.00



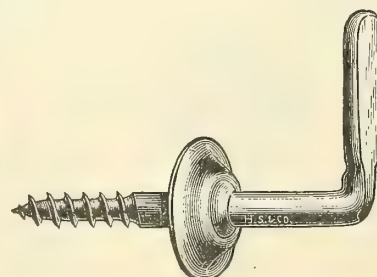
No. 465

Brass, polished, gross..... \$5.50



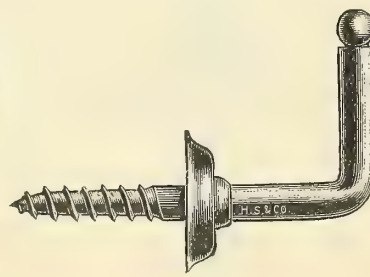
No. 318

Polished brass, gross.... \$3.80



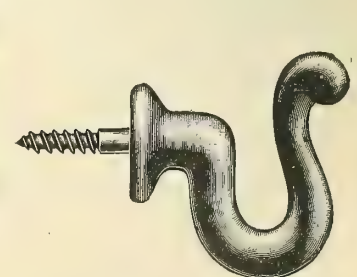
No. 125

Polished brass, gross.... \$7.50



No. 129

Polished brass, gross.... \$7.50



No. 666

Polished cast brass, gross. \$15.00

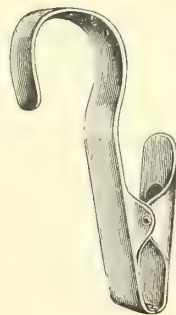
Display Hooks

Cuts Full Size



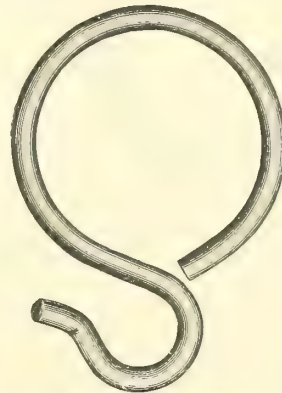
No. 113

Brass dipped, gross \$2.20
Nickel dipped, gross 2.20



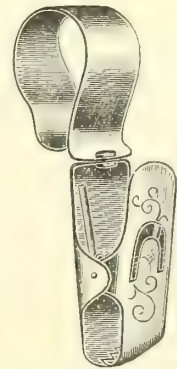
N112

Stamped tin, gross... \$1.50



No. 115

Made of No. 00 gauge
brass wire, gross..... \$10.00



No. 137

Stamped tin, gross..... \$3.00

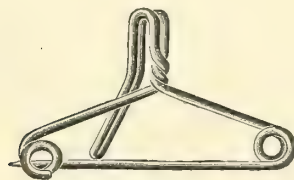
Drapery Pins

Cuts Full Size



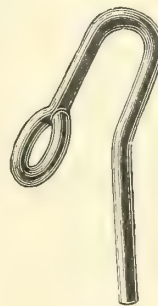
No. 318

Brass, gross..... \$.52



No. 327B

Brass, gross..... \$.88



No. 326 3/4

Brass, gross..... \$.88



No. 326

Brass, gross..... \$.56

Picture Wire



No. 0



No. 1



No. 2



No. 3



No. 4



No. 5

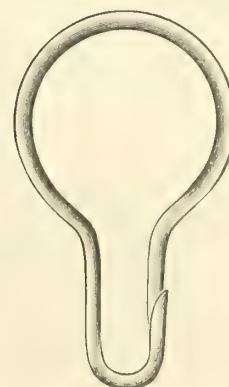
Tinned. 25 yards in a piece. Each piece in a box.

Number	0	1	2	3	4	5
Dozen pieces.....	\$2.50	3.50	5.00	6.50	8.00	10.00

For heavy pictures we recommend copper wire (see Index), which is soft and pliable and has the requisite strength.

Shower Curtain Pin

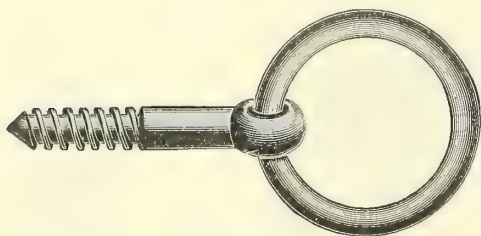
Cuts Full Size



No. 5614

Brass, nickel-plated, gross \$2.90

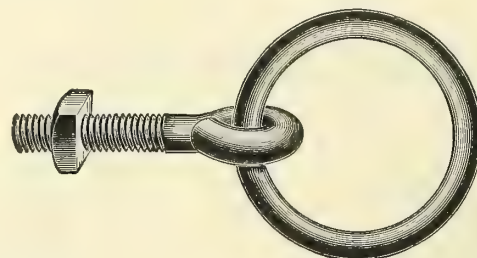
Hitching Rings



No. 17

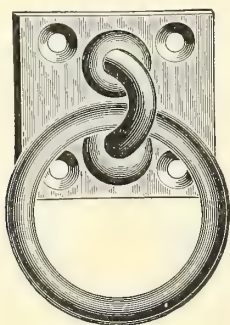
Wrought steel screw and ring, galvanized, solid forged eye. Screw is $2\frac{1}{2}$ inches long.

Diameter of ring, inches.....	$2\frac{1}{2}$	$2\frac{3}{4}$	3
Dozen.....	\$2.30	2.50	2.90



Wrought steel screw and ring, with nut, galvanized.

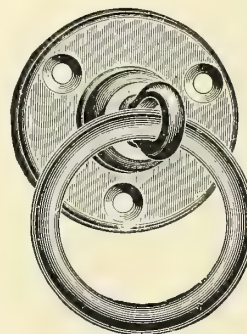
No. 127 Diameter of ring $2\frac{3}{4}$ inches, length of screw under eye $2\frac{1}{2}$ inches, dozen.....	\$3.00
No. 147 Diameter of ring 3 inches, length of screw under eye 4 inches, dozen.....	4.10



No. 247

All wrought steel, galvanized. Plate is 2 inches square and swivel projects $\frac{3}{4}$ inch. Ring is $2\frac{1}{2}$ inches in diameter.

Dozen.....	\$2.50
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No. 236

Wrought steel ring and swivel, japanned. Ring is $2\frac{1}{2}$ inches in diameter.

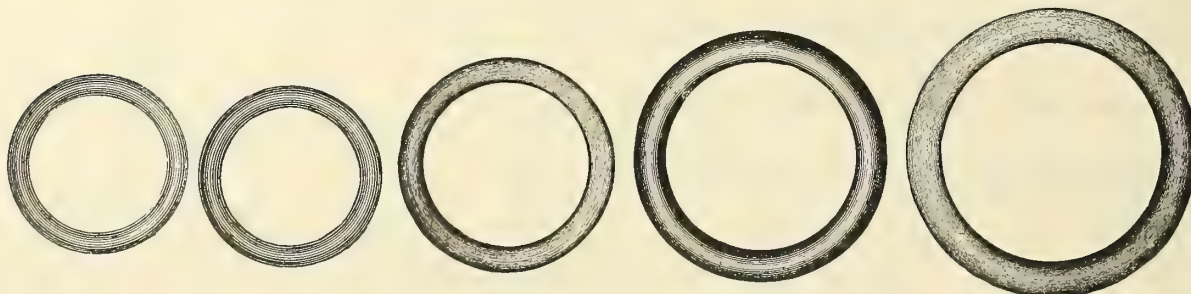
Dozen.....	\$1.75
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Wrought Iron Trap Door Rings

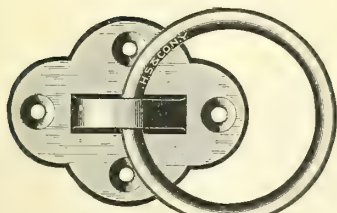
Inside measure, inches.....	$1\frac{1}{2} \times \frac{1}{4}$	$2 \times \frac{1}{4}$	$2\frac{1}{2} \times \frac{1}{4}$	$3 \times \frac{5}{16}$
Plain, gross.....	\$11.50	13.50	16.50	23.00
Galvanized, gross.....	14.50	17.00	21.00	27.00

Malleable Iron Harness Rings



Inside diameter, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Japanned, gross.....	\$.54	.54	.58	.68	.86	.96	1.14	
Galvanized, gross.....	.62	.62	.72	.86	1.06	1.16	1.38	

Plate Rings



Half size cut

No. 202 Cast brass, polished, dozen..... \$4.50

Screw Rings



No. 48

Cut is full size of 3/8-inch ring. Made of solid brass, brazed and polished.

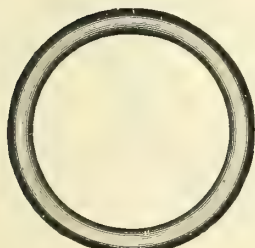
Inside diameter of ring, inch.....	1/2	3/8	5/16
Gross.....	\$5.00	4.50	4.00



Full size cut of 3/8-inch ring. Ring is made of brass with steel screw.

Number.....	16	18	18
Inside diameter of ring, inch.....	1/2	7/16	3/8
Gross.....	\$.88	.60	.45

Brass Curtain Rings



No. 10
1 Inch



No. 16
3/4 Inch



No. 16
5/8 Inch



No. 16
1/2 Inch



No. 18
3/8 Inch



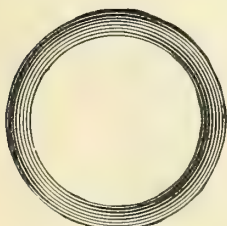
No. 20
5/16 Inch

Gauge number.....	20	20	18	18	18	18
Inside diameter, inch.....	1/4	5/16	3/8	7/16	1/2	5/8
Great gross.....	\$1.60	1.75	2.12	2.20	2.40	3.00

Gauge Number.....	18	16	16	16	16	16
Inside diameter, inch.....	3/4	1/2	5/8	3/4	7/8	1
Great gross.....	\$3.50	3.00	3.50	4.50	5.50	7.00

Gauge Number.....	14	10	8	8	3/16
Inside diameter, inch.....	1	1	1 1/8	1 1/4	1 1/2
Great gross.....	\$8.00	14.00	15.60	18.00	27.00

Solid Brazed Curtain Rings



1/2 Inch



3/4 Inch



1/2 Inch

Made of Brass

Inside diameter, inches.....	1/2	5/8	3/4	7/8	1	1 1/4
Gross.....	\$1.25	1.35	1.70	2.20	2.55	3.40

Vestibule Rod Rings



No. 30



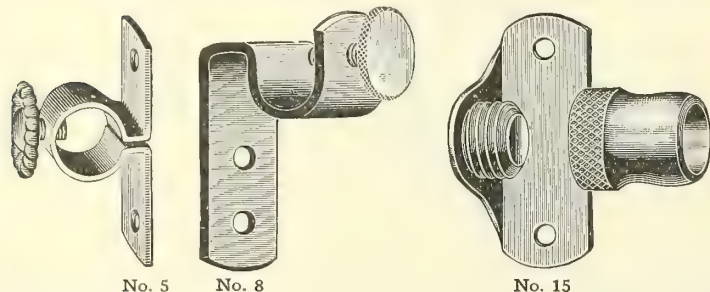
No. 6160

Polished Brass

Diameter, inch.....	5/16	3/8	7/16	1/2	5/8	3/4
No. 30 Gross.....	\$2.35	2.55	2.70	2.85	3.25	3.50
No. 6160 Gross.....	2.10	2.20	2.35	2.50	2.75	3.00

Vestibule Rod Brackets

Packed with Pins



For diameter rod, inch		$\frac{1}{4}$	$\frac{3}{8}$
No. 5 Polished brass, dozen pairs		\$.35	.40
No. 8 Polished brass, dozen pairs		.35	.40
No. 15 Polished brass, dozen pairs		.65	.75

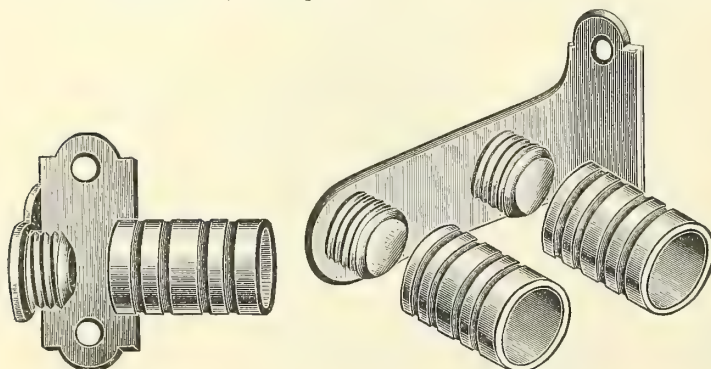
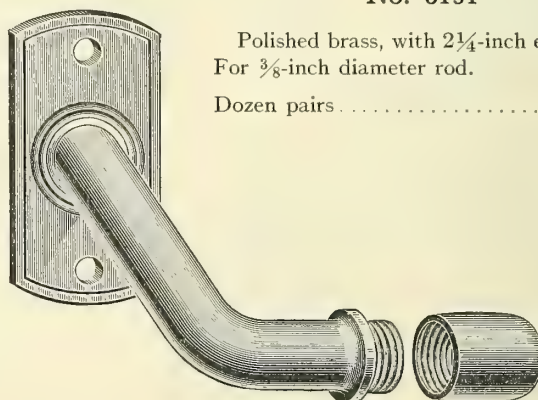
Goose-Neck Brackets

Packed with Screws

No. 6151

Polished brass, with $2\frac{1}{4}$ -inch extension.
For $\frac{3}{8}$ -inch diameter rod.

Dozen pairs \$3.60



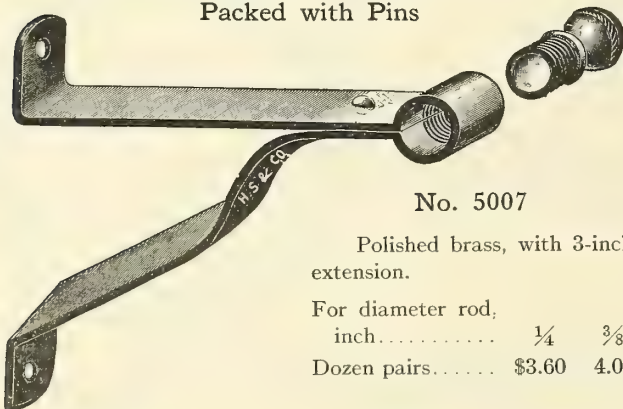
No. 5867

No. 5865
With $1\frac{1}{2}$ -inch Extension

For diameter rod, inch		$\frac{3}{8}$	$\frac{1}{2}$
No. 5865 Polished brass, dozen pairs		\$5.30	7.30
No. 5867 Polished brass, dozen pairs		4.15	5.15

Extension Brackets

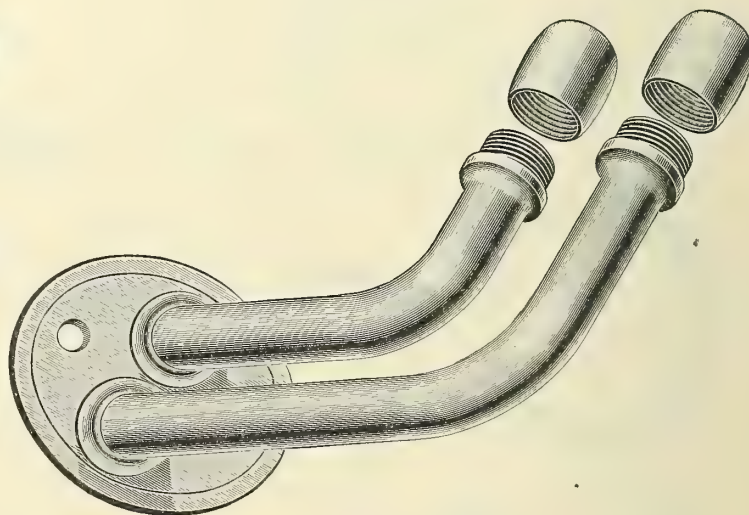
Packed with Pins



No. 5007

Polished brass, with 3-inch extension.

For diameter rod, inch		$\frac{1}{4}$	$\frac{3}{8}$
Dozen pairs		\$3.60	4.00

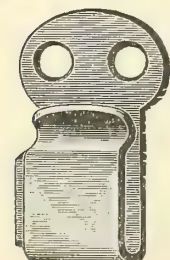


No. 6109 Double

Polished brass. Inside bracket has extension of $1\frac{1}{2}$ inches; outside has $2\frac{1}{2}$ inches. For $\frac{1}{4}$ or $\frac{3}{8}$ -inch diameter rod. Specify which size is desired.

Dozen pairs \$6.60

Panel Rods and Brackets



Full Size Cut

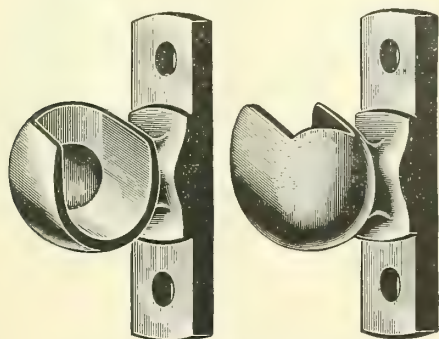
No. 557 Bracket, brass, polished.
Per pair \$.35
Packed with screws



Full size cut, except length

No. 21 Rod only, steel, brass-plated, polished, $\frac{1}{2}$ inch wide, per foot \$.10
Bracket No. 570 $\frac{1}{2}$ Polished brass, as illustrated above, pair40

Curtain Rod Brackets

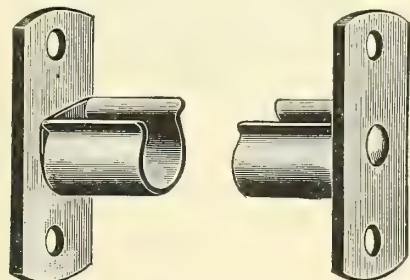


Cut Full Size

Cast Brass, Polished

- No. 508 $\frac{3}{8}$ For $\frac{3}{8}$ -inch rod, per pair..... \$.50
 No. 508 $\frac{1}{2}$ For $\frac{1}{2}$ -inch rod, per pair..... .60

Packed with screws.



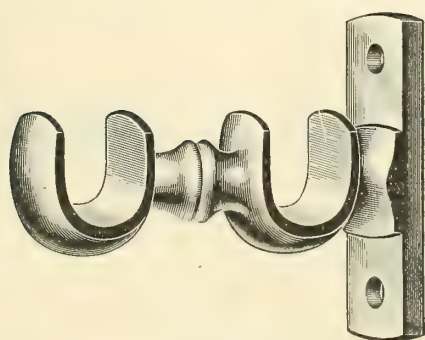
Cut Full Size

Brass Polished

- No. 516 $\frac{3}{8}$ For $\frac{3}{8}$ -inch rod, per gross pairs..... \$12.00
 Rods snap securely into place.
 Packed with pins.

Center Supports and Brackets

For Curtain Rods

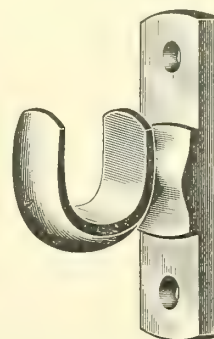


Cut Full Size

Cast Brass, Polished

- No. 511 $\frac{3}{8}$ For $\frac{3}{8}$ -inch rod, per pair..... \$.70
 No. 511 $\frac{1}{2}$ For $\frac{1}{2}$ -inch rod, per pair..... .90

Six pairs in a box, with screws.



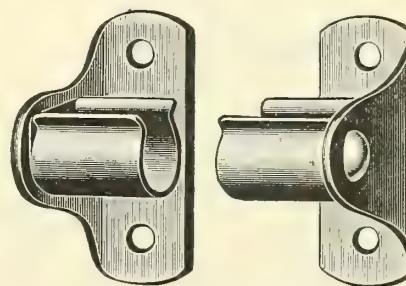
Cut Full Size

Center Support or Bracket

Cast Brass, Polished

- No. 510 $\frac{3}{8}$ For $\frac{3}{8}$ -inch rod, per pair..... \$.45
 No. 510 $\frac{1}{2}$ For $\frac{1}{2}$ -inch rod, per pair..... .55

Packed with screws.



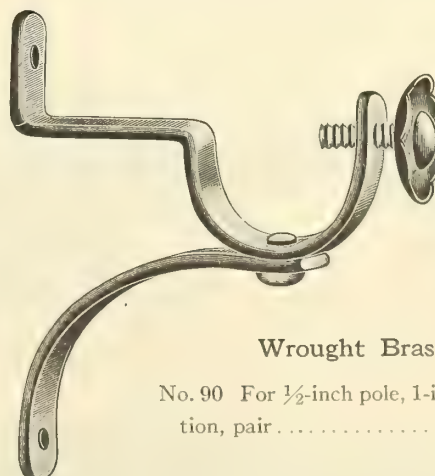
Cut Full Size

Brass Polished

- No. 515 $\frac{3}{8}$ For $\frac{3}{8}$ -inch rod, per gross pairs..... \$12.00
 Rods snap securely into place.
 Packed with pins.

Pole Brackets

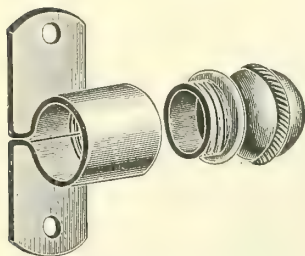
Packed with Pins



Wrought Brass

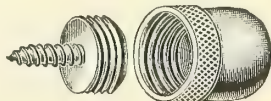
- No. 90 For $\frac{1}{2}$ -inch pole, 1-inch projection, pair..... \$.33

Vestibule Rod Sockets

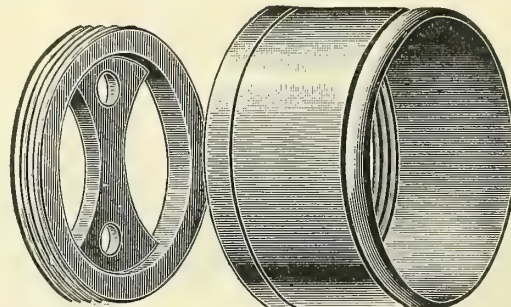


No. 500

For diameter rod, inch.....		
No. 350 Polished brass, with pins, dozen pairs....	\$.50	.60
No. 500 Polished brass, with pins, dozen pairs....	.60	.70



No. 350



No. 5632

Cast brass, polished.		
For diameter poles, inch.....	$\frac{1}{2}$	1
Dozen pairs.....	\$4.00	6.00

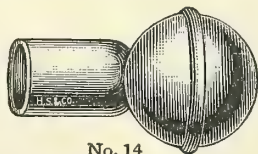
Spring Sockets

Little Giant



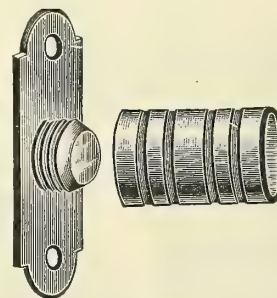
With rubber tips.		
For diameter rod, inch.....	$\frac{1}{4}$	$\frac{3}{8}$
Gross pairs.....	\$20.00	22.50

Vestibule Rod Ends



No. 14

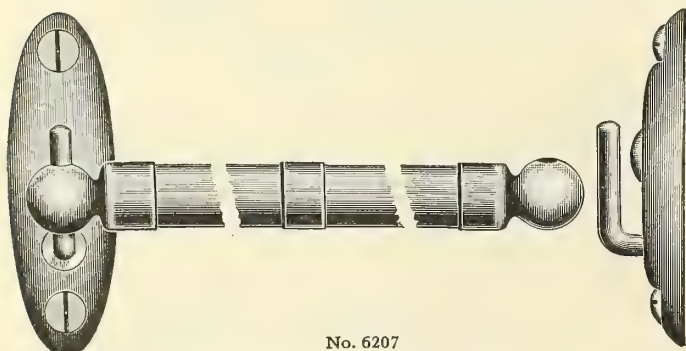
Polished brass.		
For diameter rod, inch.....	$\frac{1}{4}$	$\frac{3}{8}$
Dozen pairs.....	\$.80	.80



No. 5866

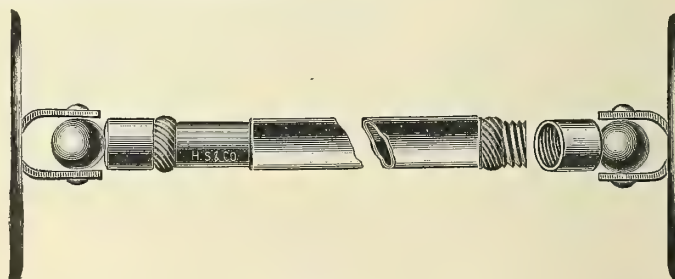
Wrought brass.		
For diameter rod, inch.....	$\frac{3}{8}$	$\frac{1}{2}$
Dozen pairs, with pins.....	\$4.40	5.40

Extension Vestibule Rods

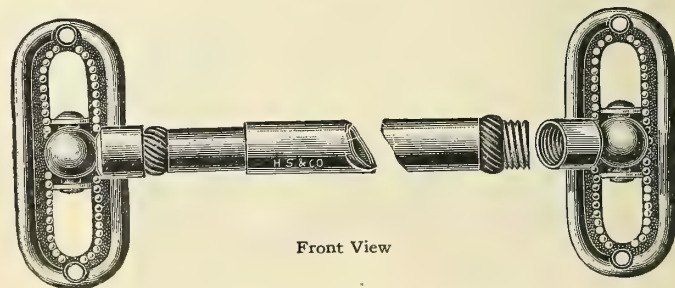


No. 6207

Made of brass. Extends from 24 to 44 inches.	
Dozen.....	\$2.00



Side View



Front View

No. 4044

Made of brass. Extends from 24 to 44 inches; $\frac{1}{2}$ -inch tube, $1\frac{1}{2}$ -inch end.	
Dozen.....	\$7.00

Made of brass. Extends from 24 to 44 inches.	
Dozen.....	\$2.30

Vestibule Rod

In 12 Foot Lengths

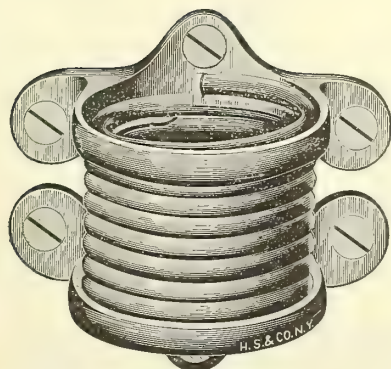


$\frac{1}{4}$ inch diameter, brass covered, 1000 feet.....	\$22.50
$\frac{3}{8}$ inch diameter, brass covered, 1000 feet.....	36.00
$\frac{1}{2}$ inch diameter, iron lined brass tubing, 100 feet.....	7.50

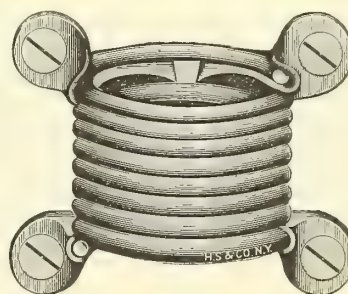
B. & B. Patent Rocker Springs

Half Size Cuts

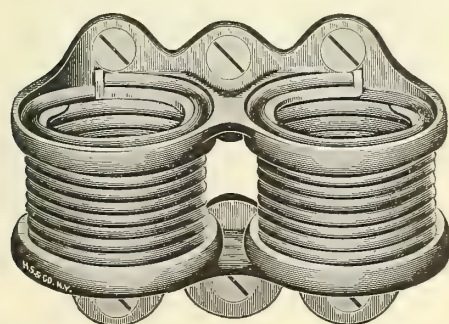
These Springs are oil-tempered and japanned, and are tested to 6 inches extension



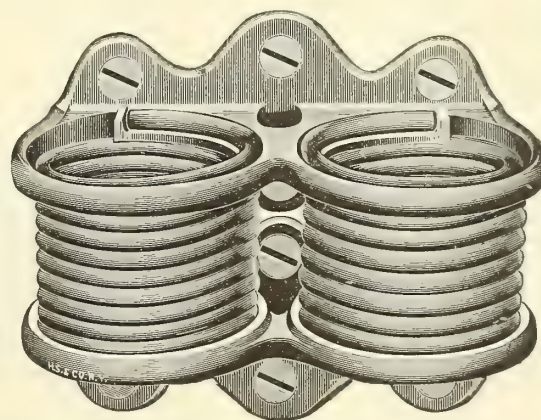
No. 1 In dozen set lots, per set..... \$.42
Approximately 125 sets in a barrel.



No. 4 1/2 In dozen set lots, per set..... \$.30
Approximately 150 sets in a barrel.

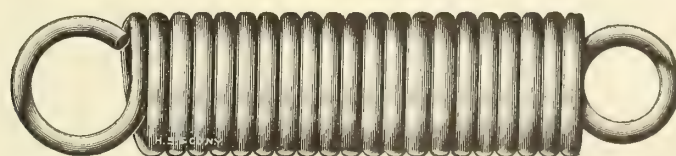


No. 8 In dozen set lots, per set..... \$.60
Approximately 125 sets in a barrel.

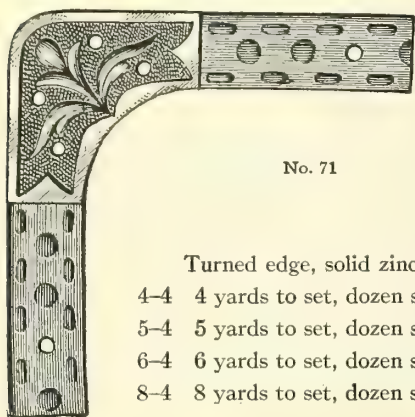


No. 9 In dozen set lots, per set..... \$.75
Approximately 100 sets in a barrel.

Coil Rocker Springs



Number of rings.....	22	28
3/4-inch diameter, tempered steel, japanned, 100.....	....	\$4.80
7/8-inch diameter, tempered steel, japanned, 100.....	....	5.25
1-inch diameter, tempered steel, japanned, 100.....	....	\$6.00



No. 71

Turned edge, solid zinc, $\frac{3}{8}$ inch wide.

4-4	4 yards to set, dozen sets	\$2.40
5-4	5 yards to set, dozen sets	3.00
6-4	6 yards to set, dozen sets	3.60
8-4	8 yards to set, dozen sets	4.80



No. 57

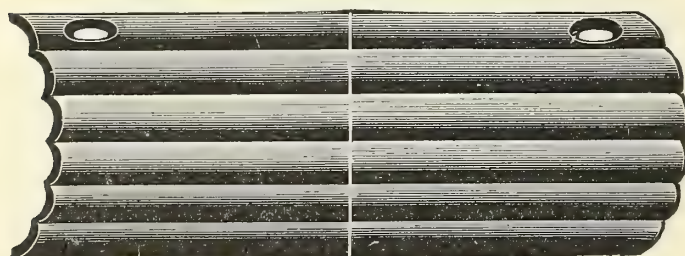
Cuts are full size of widths and thicknesses. For covering seams.

Polished Brass

Width, inches	$\frac{3}{4}$	1	$1\frac{1}{4}$	2
Thickness, B. & S. gauge	22	22	22	22
Foot	\$.07	.08	.10	.18

Furnished in any length up to 12 feet, also in coils of 75 feet.
Pierced with holes for pins.

Stair Nosings



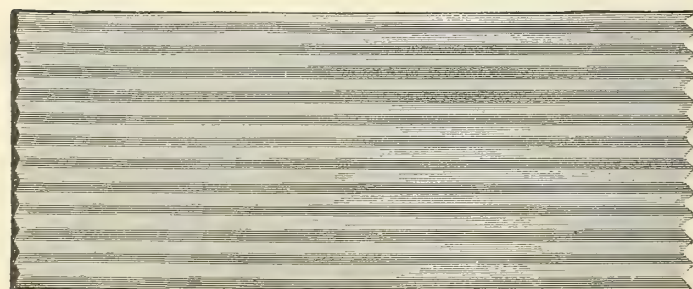
No. 51

Cut is full size of width and thickness. $1\frac{1}{4}$ inches wide, 18 B. & S. gauge thick. In lengths of 18, 20, 22, 24, 27, 30, 36 and 44 inches.

On special order, will be supplied with ends rounded at regular price.

Zinc, foot	\$.07
Brass, foot	.14

Rubber Matting



For stair treads, floor coverings, etc. About 50 yards to a roll. 36 inches wide, first quality.

$\frac{3}{8}$ -inch thick, per square yard	\$1.50
$\frac{1}{8}$ -inch thick, per square yard	2.00

Oil Cloth and Linoleum Binding



No. 53

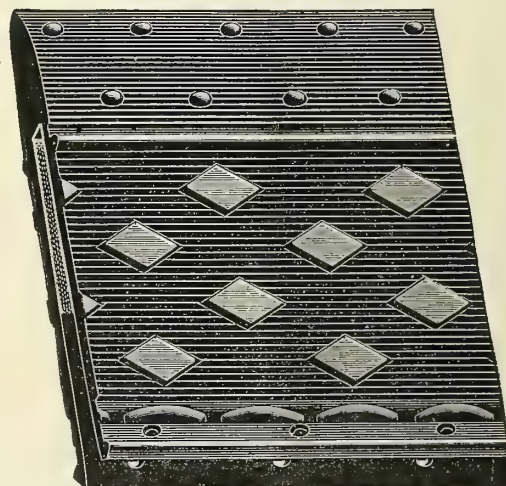
Cuts are full size of widths and thickness

Polished Brass

Width, inches	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$
Thickness, B. & S. gauge	22	20	20	20
Foot	\$.06	.09	.12	.15

Furnished in any length up to 12 feet, also in coils of 75 feet.
Pierced with holes for pins.

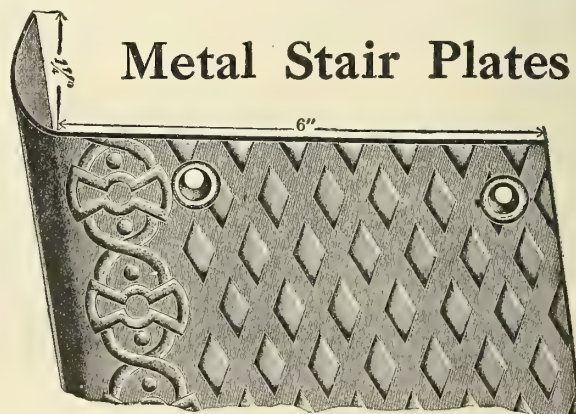
Rubber Binding



For mattings, carpets, etc. This binding is very high grade throughout and is reinforced with canvas, making it exceptionally strong.

Length, inches	27	36	45	54	72
Width, inches	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$
Each, piece	\$.27	.35	.44	.53	.70

Metal Stair Plates



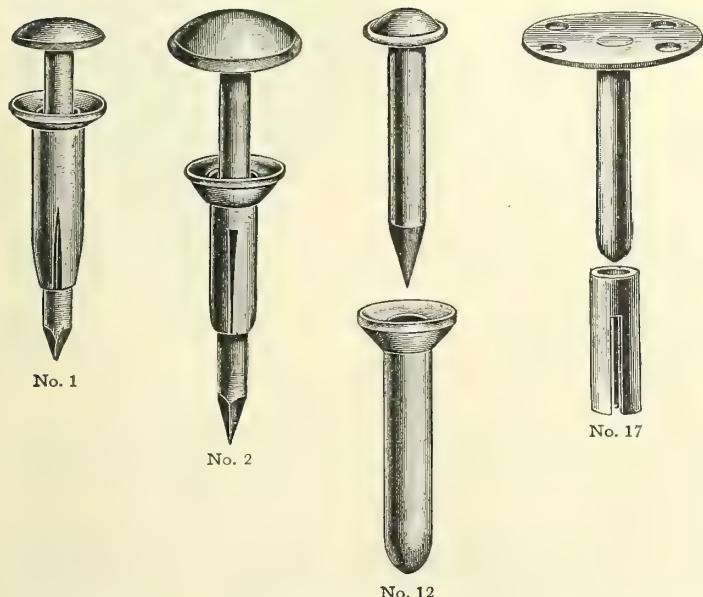
No. 42

Made of zinc, 6 inches wide; 16 B. & S. gauge thick. In lengths of 18, 20, 22, 24, 27, 30, 36 and 84 inches. Approximately 72 square inches to a pound.

Pound	\$.25
-------	--------

Carpet Sockets and Pins

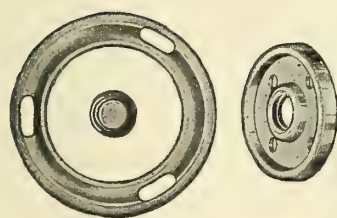
Cuts Full Size



- No. 1 Brass head, polished steel pin, brass socket, gross. . . . \$3.75
 No. 2 Brass capped, polished brass dipped pin, brass socket, gross. . . . 4.50
 No. 12 Solid brass pin, brass socket with closed end forcement floors, gross. . . . 3.50
 No. 17 Steel pin and brass socket, pin can be sewed to under-side of carpet or rug, gross. . . . 4.00

Rug Fasteners

New Sultan



These Fasteners hold the rug firmly in place, but are easily detached by slight upward pull. They are not in sight when the rug is down.

Gross. \$10.00

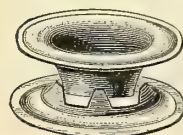


Drugget Pins

Stamped Brass. Polished

Number	Diameter Inch	Gross
5169	$\frac{5}{8}$	\$1.40
5179	$\frac{3}{4}$	1.80

Tooth Grommets or Eyelets

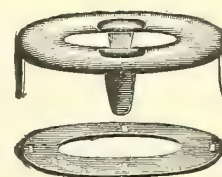


For carpets, rugs, etc. Made of brass

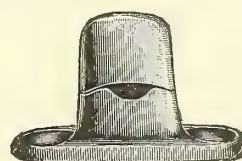
Number	1	2	3
Size of hole, inch	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$
Gross	\$.84	1.00	1.40

We carry in stock the necessary tools for applying tooth grommets or eyelets.

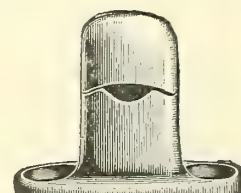
Curtain Fasteners



Oval Eyelet and Perforated Back Plate



No. 6
For Single Curtains



No. 7
For Double Curtains

Made of brass, with stamped base

No. 6	Polished, gross	\$6.00
No. 6G	Gunmetal, gross	6.80
No. 7	Polished, gross	7.50
No. 7G	Gunmetal, gross	8.50

Carriage Knobs



No. 75

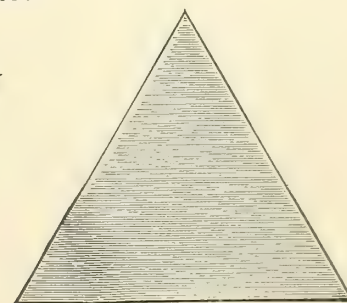
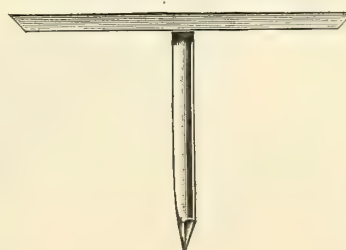


No. 374

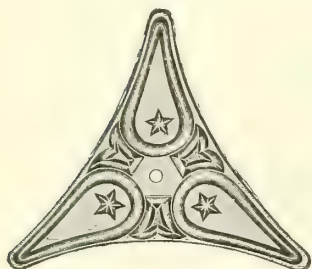
No. 75	Cast iron, japanned, gross	\$.80
No. 374	Cast brass, polished, with barbed nail, gross	5.90

Stair Corners

Steel



No. 06222	Brass-plated, gross	\$7.50
No. 06222AC	Antique copper, gross	8.50
No. 06222N	Nickel-plated, gross	8.00



Stair Corners

Brass Dipped

Packed with Pins No. 100[†]
gross \$3.60

Stair Buttons

Cut is full size of No. 0204. No.
0203 is same design, but larger.

No. 0204

1 $\frac{5}{8}$ inches in diameter,
brass, dipped, gross ... \$3.80

No. 0203

1 $\frac{5}{8}$ inches in diameter,
antique copper, gross.. 4.50



Stool Screws

H. S. & Co.

Our No. 100 Revolving Stool Screw is especially unique in two features: The nut and screw are so tapped and threaded as to permit the flange to turn down to within $\frac{1}{2}$ inch of the top of the nut. The top opening of the nut is only as large as the shoulder of the screw and thus in raising and lowering the stool seat there is no wobbling nor side motion nor rattling, so common and so annoying.

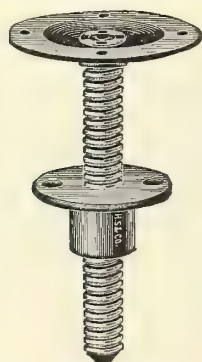
The screw is made of cold rolled steel and the threads are cut square and deep, giving an excellent bearing, and the flanges are tumbled, removing all burrs and nibs and making a clean, smooth, presentable finish, and the four holes are nicely countersunk.

The head of the screw is tapered and readily seats into the flange, and thus the stool seat is easily removed for packing, etc.

The flange is 3 $\frac{1}{8}$ inches square. The screw proper projects below the flange 6 $\frac{3}{4}$ inches and the clearance between the top of the nut and the under side of the flange permits of a 4 $\frac{1}{4}$ -inch extreme raise of the stool seat.

Dozen. \$3.50

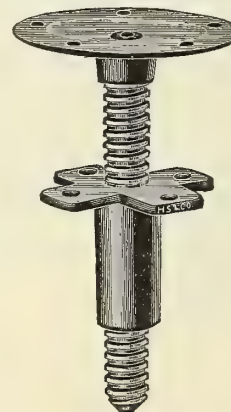
Stool Screws



No. 20 $\frac{7}{8}$ -inch wrought iron screw, square thread, dozen \$6.10

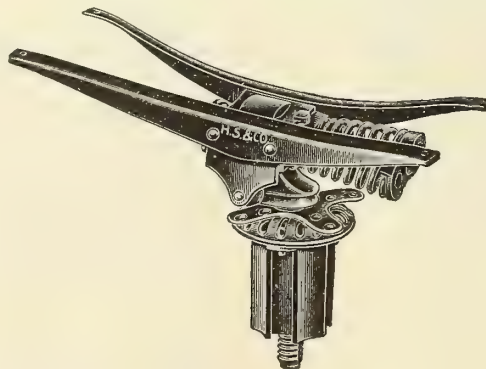
No. 21 1-inch, wrought iron screw, square thread, dozen..... 7.00

Chair Screws



No. 11 1-inch wrought iron screw, square thread, dozen \$10.00

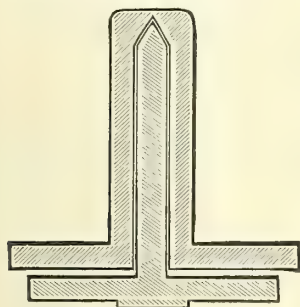
Chair Spiders



No. 17 $\frac{1}{2}$ H Japanned, dozen..... \$20.00

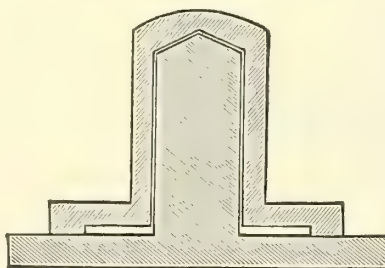
Pivots

These Pivots are made for mounting revolving desks and stands of all kinds, such as used by banks and hotels for carrying registers, used by artists when moulding or carving, etc.



Diameter of outside plate $2\frac{1}{2}$ inches; diameter of inside plate $2\frac{1}{4}$ inches; diameter of pin $\frac{9}{16}$ inch; length of pin $3\frac{1}{8}$ inches.

No. 300 Iron complete, each..... \$1.25

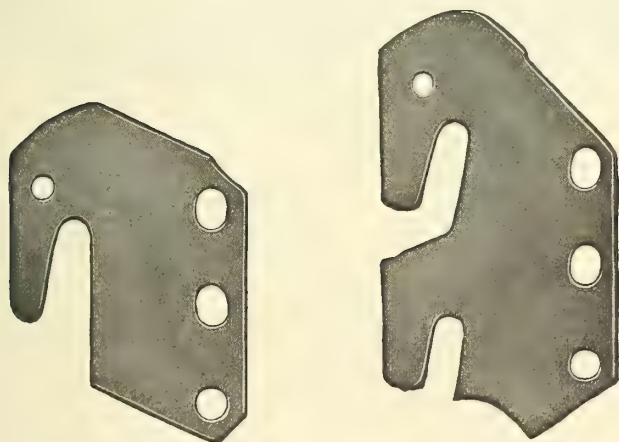


Diameter of outside plate 3 inches; diameter of inside plate 4 inches; diameter of pin $\frac{3}{4}$ inch; length of pin $1\frac{3}{8}$ inches.

No. 600 Bronze, complete, each..... \$3.00

Bed Fasteners

One-half Size Cuts

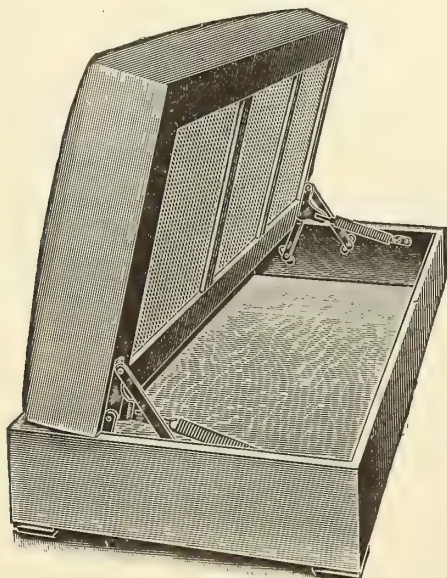


No. 6

No. 4

No. 4 $4 \times 2\frac{1}{2}$ inches, wrought steel, per dozen sets..... \$2.00
No. 6 $3 \times 2\frac{1}{2}$ inches, wrought steel, per dozen sets..... 1.60

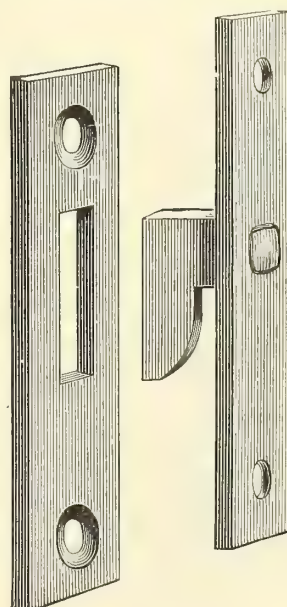
Post and rail pins are included in these prices



Bed Joints

No. 400, eight hooks and eight eyes constitute a set. Wrought iron, dozen sets..... \$4.00

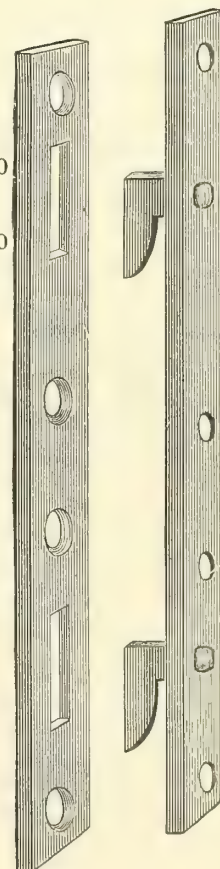
No. 800, four hooks and four eyes constitute a set. 6-inch, wrought iron, dozen sets..... 6.90



No. 400

No. 800

Full Size Cuts



Seat-Raising Attachments

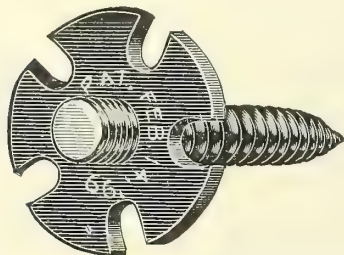
Seng

This attachment is a simple contrivance for raising the seats of box couches. Easily attached and nothing to get out of order. As the seat rises it recedes from the wall and will balance at any point.

No. 60 Pair..... \$.80

Toilet Fasteners

Tillotson



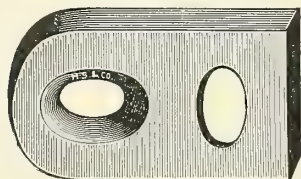
This method of fastening is a great improvement over other methods. All boring is done in the factory, to gauge, and the nuts are inserted by the case-maker. They cannot drop out or be lost. The screw is placed in the standard at the factory, so that dealer or user has only to put in position and tighten the nut with a nail or piece of wire.

- No. 1 Bolt $\frac{1}{4}$ x $2\frac{1}{4}$ inches, nut $1\frac{3}{16}$ inches diameter, per 1000.. \$30.00
 No. 2 Bolt $\frac{5}{16}$ x $2\frac{1}{4}$ inches, nut $1\frac{3}{16}$ inches diameter, per 1000.. 33.00
 No. 3 Bolt $\frac{5}{16}$ x3 inches, nut $1\frac{3}{8}$ inches diameter, per 1000.... 36.00
 No. 4 Bolt $\frac{5}{16}$ x $3\frac{1}{2}$ inches, nut $1\frac{3}{8}$ inches diameter, per 1000.. 48.00
 No. 5 Bolt $\frac{5}{16}$ x4 inches, nut $2\frac{1}{4}$ inches diameter, per 1000.... 60.00

Nos. 1, 2 and 3 will answer for all but the very heaviest work.

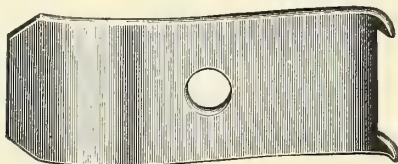
Desk Clips

Full Size Cut



- No. 1 Iron, coppered, per 1,000..... \$7.00

Table Top Clips



Front View

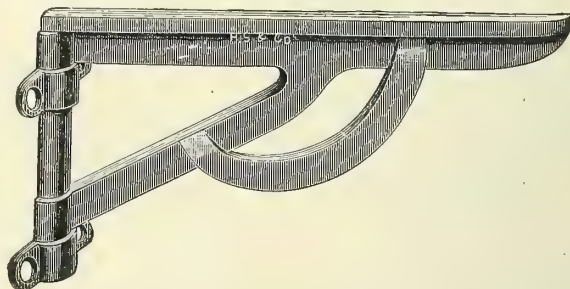


Side View

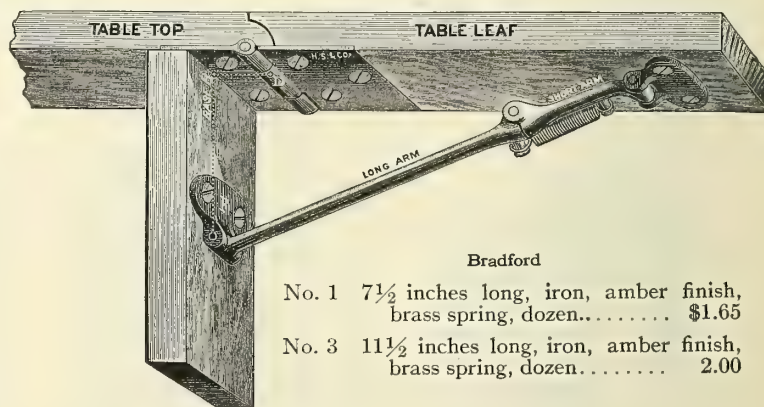
Full Size Cuts

- No. 101 $\frac{3}{4}$ -inch, wrought steel, per 1000..... \$3.50

Table Leaf Supports



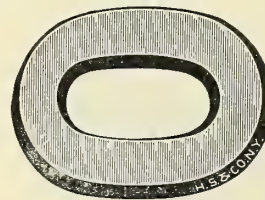
- No. 2 8x4 inches, iron, with loops, dozen..... \$1.10
 Extra loops, dozen..... .24



Bradford

- No. 1 $7\frac{1}{2}$ inches long, iron, amber finish, brass spring, dozen..... \$1.65
 No. 3 $11\frac{1}{2}$ inches long, iron, amber finish, brass spring, dozen..... 2.00

Shrinkage Plates

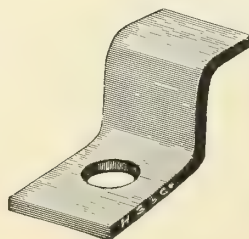
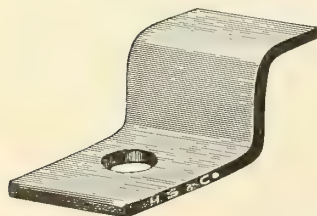


- No. 0 Iron, coppered, per 1,000..... \$7.50

Panel Irons

Made of Wrought Steel

Used in the manufacture of tables, desks, counters, etc., where there is objection to rigidly attaching the tops by screws. They require less machine work and smaller screws, thus compensating for their cost.



Full Size Cuts

- Size, inch..... $\frac{1}{2}$ $\frac{3}{4}$
 Per 1000..... \$6.00 8.00

Wrought Iron Pivot Cleats



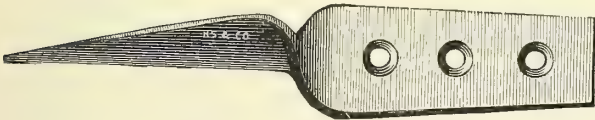
Length, inches.....	37⁄8
Diameter, inch.....	3⁄8
Gross.....	\$6.00

Plate Eyes



Wrought iron, 3 inches, gross..... \$12.00

Hold Fast



No. 1	Slim, wrought iron, 4 inches, 1 screw-hole, gross.....	\$5.00
No. 2	Slim, wrought iron, 5 inches, 1 screw-hole, gross.....	5.00
No. 3	Regular, wrought iron, 4 inches, 1 screw-hole, gross....	5.00
No. 4	Regular, wrought iron, 5 inches, 2 screw-holes, gross...	5.25
No. 5	Regular, wrought iron, 6 inches, 3 screw-holes, gross...	5.40
No. 6	Extra heavy, wrought iron, 6 inches, 2 screw-holes, gross.	7.50
No. 7	Extra heavy, wrought iron, 8 inches, 3 screw-holes, gross.	8.50

Sign or Partition Braces

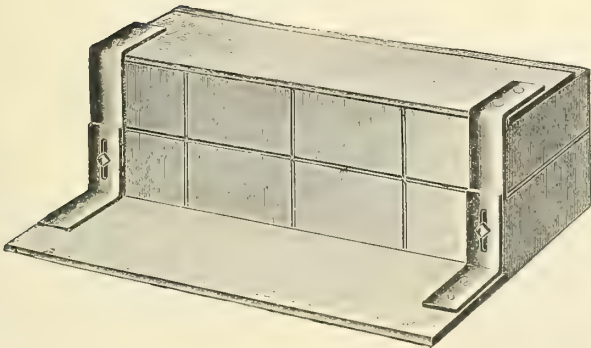
Wrought Iron



Length, inches.....	24	30	36
Diameter inch.....	1⁄2	1⁄2	5⁄8
Dozen.....	\$3.20	3.40	4.00

Storm Stoop Irons

Wrought Iron

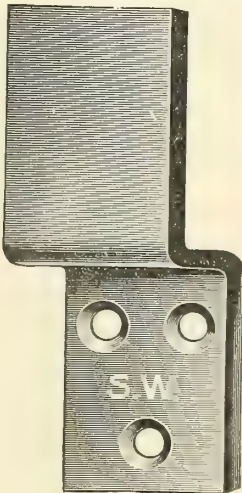


Iron, 1½x1⁄8 inch; single slot, 3½x8 inches; double slot, 4x6 inches. Galvanized, four pieces to one set.

Dozen sets..... \$7.50

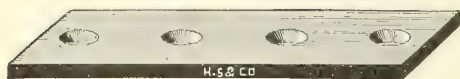
Wrought Steel Bar Holders

Japanned



Width, inches.....	1¼	1¾
Projection, inches.....	2	2
Length of sides, inches..	2½	2½
Dozen pair.....	\$2.00	3.00

Straight Plates



No. 995. Wrought Steel

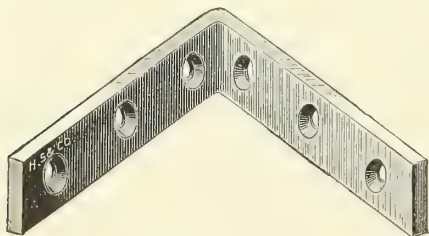
Length, inches.....	2	2½	3	4	5	6
Width, inches.....	⅝	⅝	¾	⅞	1	1⅛
Gross.....	\$1.68	1.92	2.16	2.40	2.64	2.88



No. 60. Wrought Brass

Length, inches.....	2	3	3	4	5
Width, inch.....	½	½	¾	¾	1
Gross.....	\$3.60	8.00	10.00	12.00	11.35

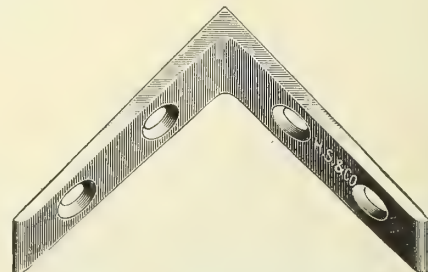
Corner Braces



No. 997. Wrought Steel

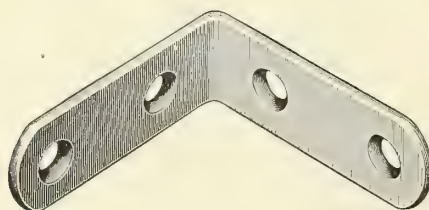
5 inch size may be secured galvanized, but must be so ordered

Length of sides, inches..	1	1½	2	2½	3	4	5	6
Width of sides, inches..	½	½	⅝	⅝	¾	⅞	1	1⅛
Gross.....	\$2.40	3.60	4.20	5.40	6.60	10.80	15.60	18.00
Galvanized, gross.....							25.20	



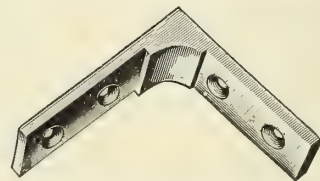
No. 70. Malleable Iron

Length of sides, inches..	2	2½	3	3½	4¼	5	6
Width of sides, inches..	¾	⅝	¾	¾	1½	1	1⅛
Gross.....	\$1.80	3.60	4.30	4.80	7.60	15.00	23.00



No. 998C. Wrought Steel, Brass-plated

Length of sides, inches.....	1	1½	1½
Width of sides, inch.....	¾	¾	1
Gross.....	\$7.20	7.80	8.40



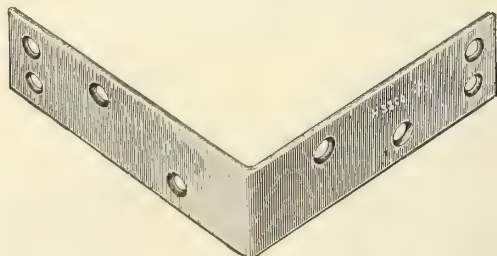
Cast Brass, Polished

Number.....	1	2
Length of sides, inch.....	⅝	⅝
Width of sides, inches.....	2¼	3
Dozen.....	\$2.00	3.30

No. 40. Wrought Brass

Length of sides, inches.....	1	1½	2	2	3
Width of sides, inch.....	½	½	½	¾	¾
Gross.....	\$3.40	4.60	5.90	9.80	13.30

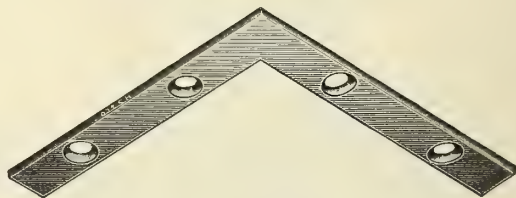
Corner Irons



No. 996. Wrought Steel

Length of sides, inches.....	4½	4½	4½	4½	4½
Width, inches.....	¾	⅞	1	1⅛	1¼
Gross.....	\$4.80	5.04	5.28	5.76	6.36

Angle Plates



No. 50. Wrought Brass

Length of sides, inches.....	2	2½	3½
Width of sides, inch.....	½	⅝	¾
Gross.....	\$6.30	7.70	11.60

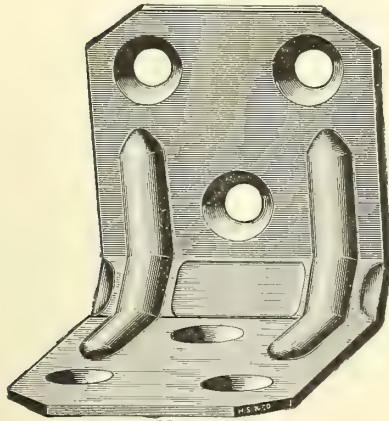
No. 999. Wrought Steel

Length of sides, inches.....	2	2½	3	3½	4	5
Width of sides, inch.....	⅝	½	½	⅝	⅝	⅞
Gross.....	\$2.64	3.24	3.48	4.32	4.56	6.96

No. 80. Malleable Iron

Length of sides, inches..	2	2½	3	3½	4	4½	5	6
Width of sides, inch....	½	½	½	¾	¾	¾	⅞	⅞
Gross.....	\$2.00	2.30	3.60	5.90	7.10	8.00	9.00	13.60

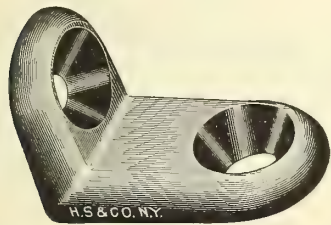
Corner Braces



No. 997 1/2

Full size cut of 1 5/8 x 1 1/2-inch size.
Wrought steel.

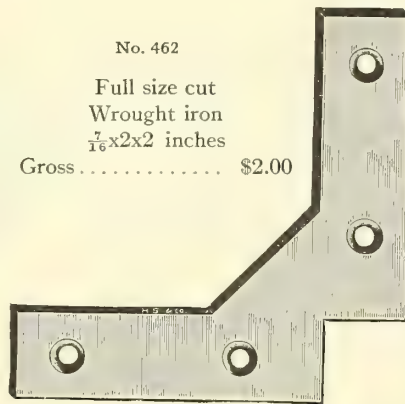
Inches.....	1x1	1 5/8x1 1/2	2 1/4x1 3/4
Gross.....	\$3.24	3.60	4.80



No. 135

Full size cut. Iron, coppered.

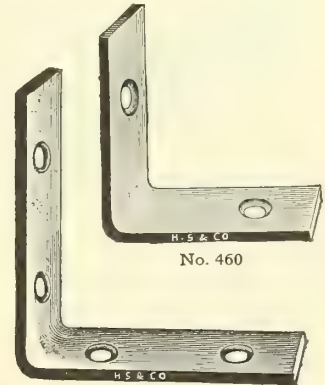
1x1 1/2 inches, gross.....	\$2.40
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No. 462

Full size cut
Wrought iron
1 7/8 x 2 x 2 inches

Gross.....	\$2.00
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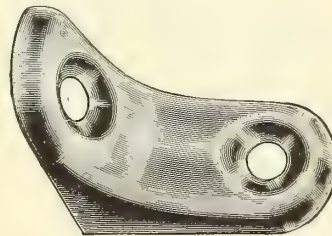


No. 460

No. 461

Full size cuts. Wrought iron.

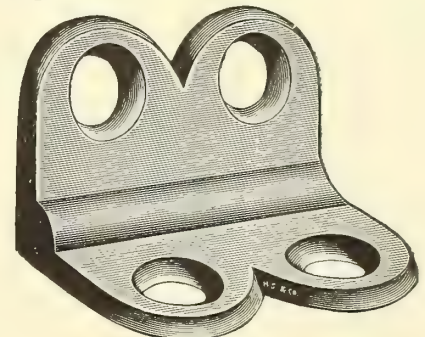
No. 460	Size 1 1/8 x 1 x 1 inch, gross	\$1.50
No. 461	Size 1 3/8 x 1 3/8 x 1 3/8 inches, gross	1.70



No. 215

Full size cut. Cast steel, extra strong.

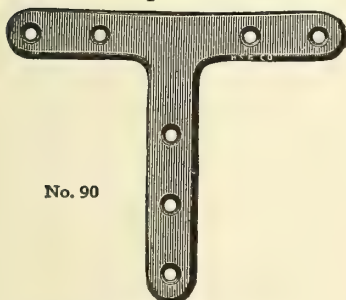
1 1/4 x 1 1/4 inches, 1000	\$10.00
1 1/4 x 2 1/4 inches, 1000	15.00



No. 03651

Full size cut. Cast iron, japanned. 1 1/2-inch, gross.....	\$5.00
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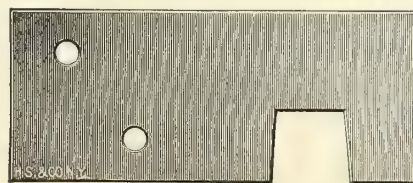
T-Plates



No. 90

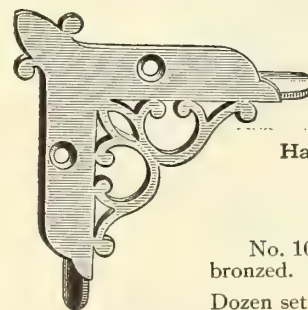
No 90 Malleable iron. 4 1/2 x 5 inches. Gross.....	\$7.50
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Floor Plates



Half size cut. Wrought steel, 2 1/2 inches long. 1000.....	\$7.75
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Screen Corners

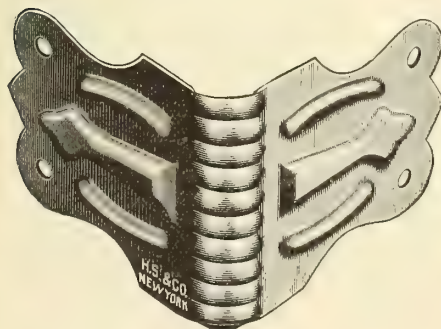


Half Size Cuts

No. 100. Cast iron, Tuscan bronzed. Packed with screws. Dozen sets.....	\$2.60
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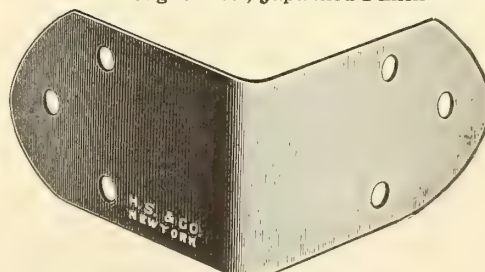
Trunk Corners

Half Size Cuts
Wrought Steel, Japanned Finish



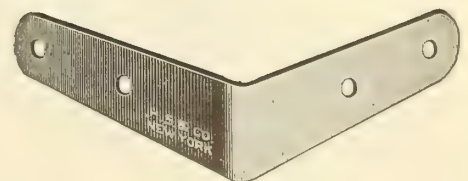
No. 15

2 1/2 x 2 1/2 inches. Gross.....	\$3.00
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No. 18

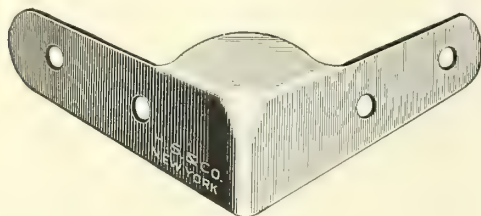
2 3/8 x 2 3/8 inches. Gross.....	\$3.30
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No. 5A

2 3/8 x 2 3/8 inches. Gross	\$2.70
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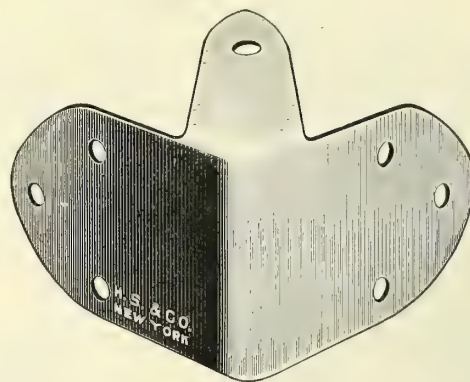
Trunk Corners



No. 37

Half size cut. Wrought steel, japanned, $2\frac{1}{2} \times 2\frac{1}{2}$ inches.

Gross \$3.00



No. 16

Half size cut. Wrought steel, japanned, $2\frac{1}{2} \times 2\frac{1}{2}$ inches.

Gross \$5.00

Screen Springs



No. 40

Two-thirds size cut. Blued steel.

Gross \$2.40

Show Case Springs



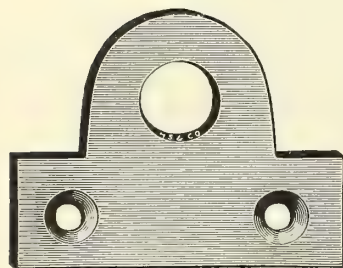
No. 345

Two-thirds size cut. Blued steel.

Gross \$4.00

Padlock Eyes

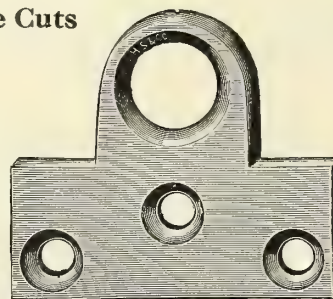
Full Size Cuts



No. 829

Wrought steel, $1\frac{3}{8} \times 1\frac{3}{4}$ inches.

Dozen \$.60



No. 830

$1\frac{3}{8} \times 1\frac{1}{2}$ inches

No. 3350 Malleable iron, japanned, dozen \$.80

No. 3350 $\frac{1}{4}$ Malleable iron, brass-plated, dozen 1.20

No. 830 Cast brass, polished, dozen 2.10

$2\frac{1}{4} \times 2$ inches

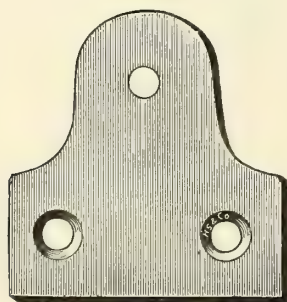
No. 3351 Malleable iron, japanned, dozen 1.20

No. 3351 $\frac{1}{4}$ Malleable iron, brass-plated, dozen 1.80

No. 831 Cast brass, polished, dozen 2.80

Hanger Plates

Full Size Cuts



No. 4

No. 03 Width $1\frac{1}{8}$ inches, heavy wrought steel, brass-plated, gross \$1.50

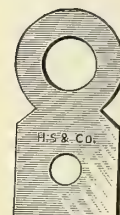
No. 3 Width $1\frac{1}{8}$ inches, heavy struck brass, gross 2.00

No. 4 Width $1\frac{1}{2}$ inches, heavy struck brass, gross 2.80

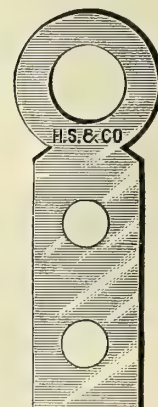
No. 14 Width $1\frac{3}{4}$ inches, heavy struck brass, gross 7.00



No. 11



No. 36



No. 360

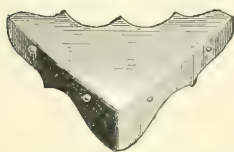
No. 11 Sheet brass, gross \$.70

No. 36 Sheet brass, gross 1.00

No. 360 Sheet brass, polished, gross 2.20

Tray or Box Corners

Half Size Cuts



Size $\frac{7}{8} \times 1\frac{5}{8} \times 1\frac{5}{8}$ Inches

No. 1 Brass, polished, gross \$5.00
No. 1N Brass, nickel-plated, gross . . 5.50

Size $\frac{3}{4} \times 1\frac{1}{8} \times 1\frac{1}{8}$ Inches

No. 2 Brass, polished, gross \$3.70
No. 2N Brass, nickel-plated, gross . . 4.00



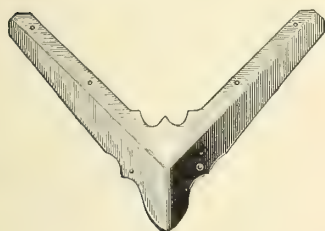
Size $1\frac{1}{4}$ Inches

No. 3192 Brass, nickel-plated, gross . . \$6.70



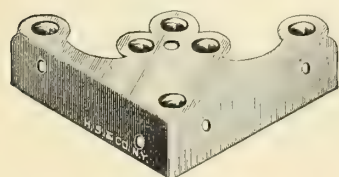
Size $1\frac{1}{2}$ Inches

No. 01776 Brass, polished, gross . . . \$6.00



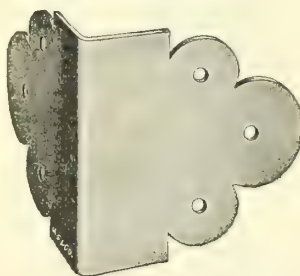
Size $\frac{3}{4} \times 2\frac{3}{8} \times 2\frac{3}{8}$ Inches

No. 10 Brass, polished, gross \$8.00
No. 10N Brass, nickel-plated, gross . . 8.80



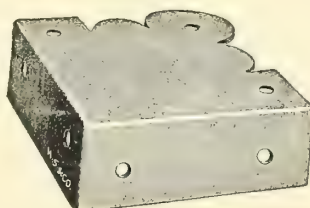
Size $\frac{3}{4} \times 2\frac{1}{2} \times 2\frac{1}{2}$ Inches

No. 1360 Brass, polished, gross . . . \$10.00



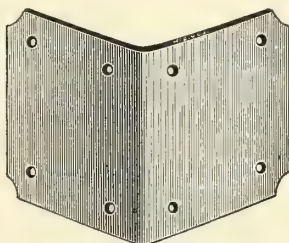
Size $2\frac{1}{2} \times 2\frac{1}{2} \times 2\frac{1}{2}$ Inches

No. 1739 Brass, polished, gross . . . \$17.40



Size $\frac{7}{8} \times 2\frac{1}{2} \times 2\frac{1}{2}$ Inches

No. 1740 Brass, polished, gross . . . \$20.00



Size $1\frac{1}{2} \times 1\frac{1}{2} \times 1\frac{1}{2}$ Inches

No. 8 Brass, polished, gross \$16.00



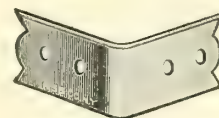
Size $\frac{7}{8} \times 1\frac{5}{8} \times 1\frac{5}{8}$ Inches

No. 1220 Brass, nickel-plated, gross \$25.20



Size $\frac{7}{8} \times 1\frac{5}{8} \times 1\frac{5}{8}$ Inches

No. 1223 Brass, nickel-plated, gross \$21.60



Size $\frac{3}{4} \times 1\frac{1}{2} \times 1\frac{1}{2}$ Inches

No. 1224 Brass, nickel-plated, gross \$14.00

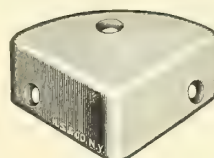


Size $\frac{3}{4} \times 1\frac{5}{8} \times 1\frac{5}{8}$ Inches

No. 1221 Brass, polished, gross . . . \$14.70
No. 1221N Brass, nickel-plated, gross 16.00

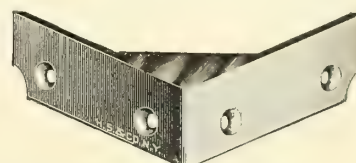
Size $1 \times 1\frac{1}{2} \times 1\frac{1}{2}$ Inches

No. 1222 Brass, polished, gross . . . \$17.30
No. 1222N Brass, nickel-plated, gross 19.00



Size $1 \times 1\frac{1}{2} \times 1\frac{1}{2}$ Inches

No. 3 Cast brass, polished, gross . . \$23.00
No. 3N Cast brass, nickel-plated, gross 25.00



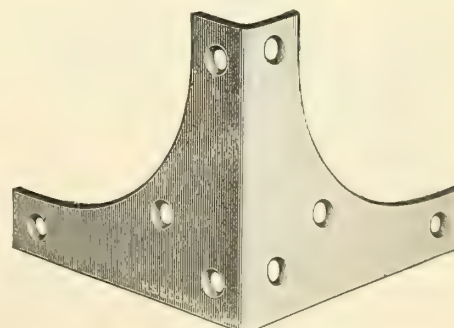
Size $\frac{7}{8} \times 2\frac{1}{2} \times 2\frac{1}{2}$ Inches

No. 6672 Cast brass, polished, dozen . . \$3.50



Size $\frac{3}{4} \times 2\frac{3}{4} \times 2\frac{3}{4}$ Inches

No. 6673 Brass, polished, dozen . . . \$1.60



Size $3 \times 3\frac{1}{4} \times 3\frac{1}{4}$ Inches

No. 6674 Brass, polished, dozen . . . \$4.30

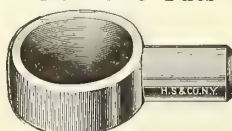
Shelf Blocks

Full Size Cuts



Iron, Coppered

No. 1 * $\frac{1}{16}$ -inch shank, per 1000..... \$3.40
No. 4 * $\frac{1}{4}$ -inch turned shank, per 1000 5.60



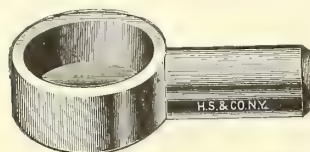
Iron, Coppered

No. 2 * $\frac{5}{16}$ -inch shank, per 1000..... \$4.70
No. 5 * $\frac{1}{4}$ -inch turned shank, per 1000 8.00



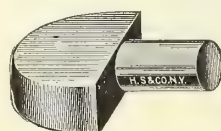
Iron, Coppered

No. 21 * $\frac{1}{4}$ -inch turned shank, per 1000..... \$6.00



Iron, Coppered

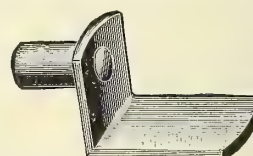
No. 3 * $\frac{3}{8}$ -inch shank, per 1000..... \$6.40



Cast Brass, Polished

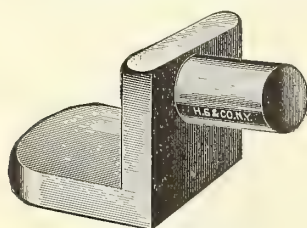
No. 7 $\frac{1}{4}$ -inch turned shank, per 1000. \$40.00

Cast Bronze, Polished
No. 9 $\frac{1}{4}$ -inch turned shank, per 1000. \$54.00



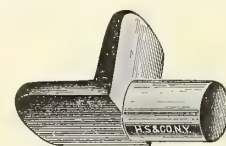
Wrought Steel, Nickel-Plated

No. 15451 $\frac{1}{8}$ -inch shank, per 1000.. \$8.30



Iron, Coppered

No. 19 $\frac{3}{8}$ -inch turned shank, per 1000 \$16.00



Iron, Coppered

No. 13 $\frac{1}{4}$ -inch shank, per 1000..... \$2.80
No. 14 $\frac{5}{16}$ -inch shank, per 1000..... 3.20



Steel, Brass-Plated

No. 30 $\frac{1}{4}$ -inch shank, per 1000..... \$9.50

Cast Bronze, Polished

No. 28P $\frac{3}{8}$ -inch turned shank, per gross..... \$40.00

Cast Brass, Polished

No. 17 $\frac{1}{4}$ -inch turned shank, per 1000..... \$40.00

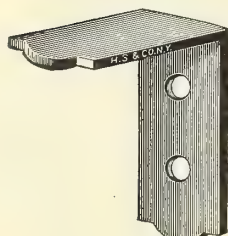
Steel, Nickel-Plated

No. 30N $\frac{1}{4}$ -inch shank, per 1000.... \$9.50

*When used under glass shelves, rubber buttons, No. 9 (see Index), will prevent scratching and slipping of the shelves.

Shelf Supports

Full Size Cuts



No. 103

Wrought brass, dipped,
 $1\frac{1}{8} \times 1$ inches.

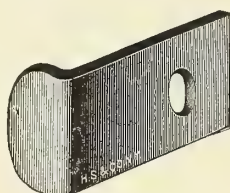
Gross..... \$4.00



No. 101

Wrought brass, dipped,
 $\frac{3}{4} \times \frac{1}{2}$ inch.

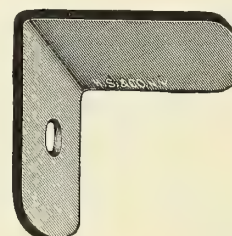
Gross..... \$1.60



No. 15440

Wrought brass, nickel-plated, $1 \times 1\frac{1}{8}$ inch.

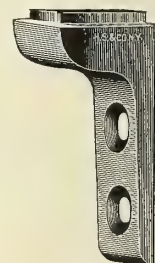
Gross..... \$11.50



No. 470

Wrought steel, brass-plated, 1×1 inch.

Gross..... \$1.44



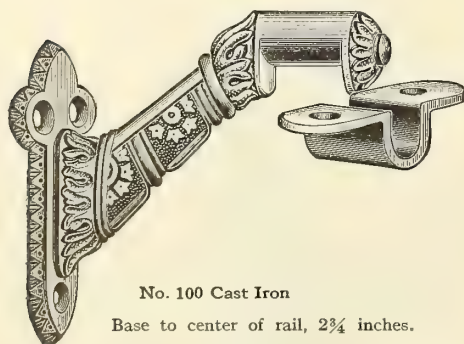
No. 15450

Cast brass, polished,
with a leather top; $1\frac{1}{4} \times \frac{3}{4}$
inches.

Gross..... \$20.00

Hand Rail Brackets

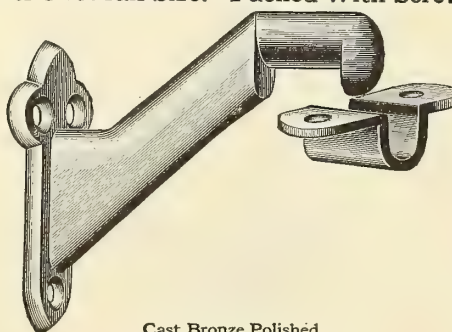
Cuts One Half Size. Packed With Screws



No. 100 Cast Iron

Base to center of rail, $2\frac{3}{4}$ inches.

Number	Finish	Dozen
100	Amber Bronze	\$1.95
CC100	Coppered	2.30
101	Base to center of rail, 4 inches Amber Bronze	2.55
CC101	Coppered	2.95

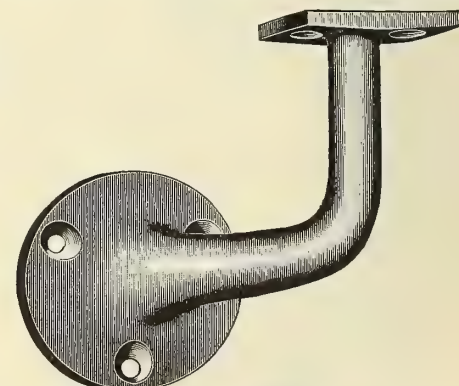


Cast Bronze Polished

No. 0100 $\frac{1}{2}$

Base to center of rail, $2\frac{3}{4}$ inches.

Dozen..... \$15.00



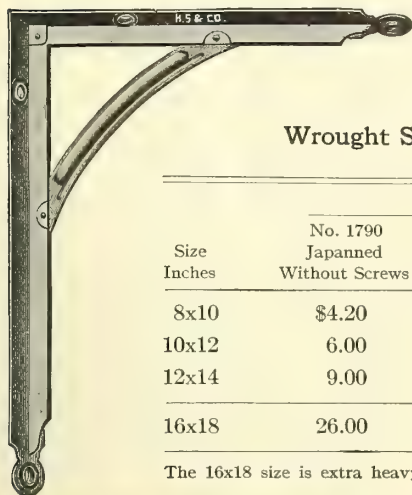
Base to center of rail, 2 inches.

No. 0102 $\frac{1}{2}$ Cast bronze, polished,
dozen \$15.00

Base to center of rail, 2 inches.

No. N102 $\frac{1}{2}$ Cast iron, bronze-plated,
dozen 5.55

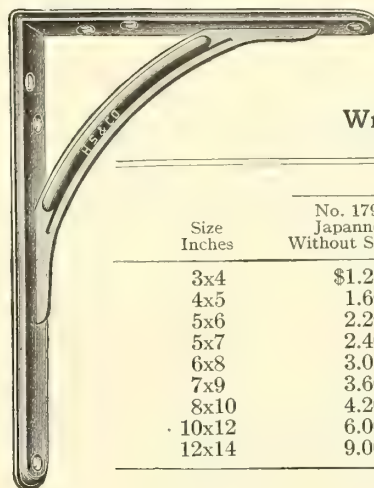
Shelf Brackets



Wrought Steel, Heavy

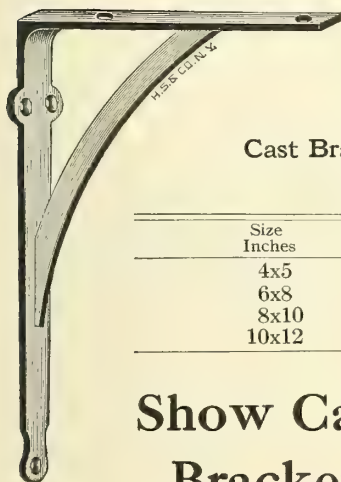
Size Inches	Dozen Pairs		
	No. 1790 Japanned Without Screws	No. 1490A Bronze-plated With Screws	No. 1490N Nickel-plated With Screws
8x10	\$4.20	\$9.00	\$9.00
10x12	6.00	12.00	12.00
12x14	9.00	13.00	13.00
16x18	26.00	60.00	60.00

The 16x18 size is extra heavy.



Wrought Steel

Size Inches	Dozen Pairs		
	No. 1792 Japanned Without Screws	No. 1492A Bronze-plated With Screws	No. 1492N Nickel-plated With Screws
3x4	\$1.20	\$3.75	\$3.75
4x5	1.60	4.40	4.40
5x6	2.20	5.00	5.00
5x7	2.40	6.20	6.20
6x8	3.00	8.20	8.20
7x9	3.60	8.70	8.70
8x10	4.20	9.00	9.00
10x12	6.00	12.00	12.00
12x14	9.00	13.00	13.00



Cast Brass, Old Brass Finish

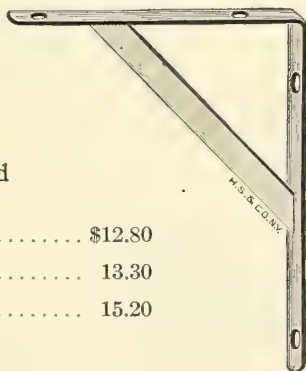
No. OB392

Size Inches	Dozen Pairs With Screws
4x5	\$9.60
6x8	14.00
8x10	22.00
10x12	32.00

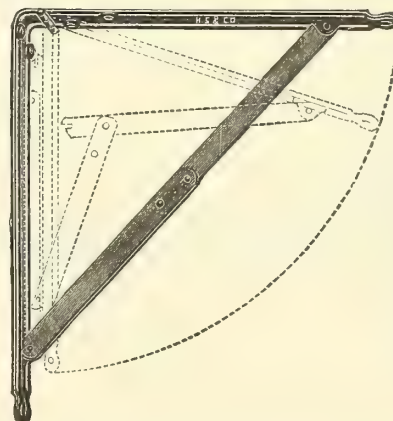
Show Case Brackets

Wrought Brass, Dipped

No. 1441	2½x3 inches, gross.....	\$12.80
No. 1443	3 x3½ inches, gross.....	13.30
No. 1444	3½x4½ inches, gross.....	15.20



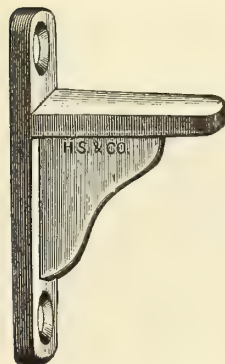
Folding Brackets



This Bracket locks automatically when open, and can be let down out of the way quickly and easily.

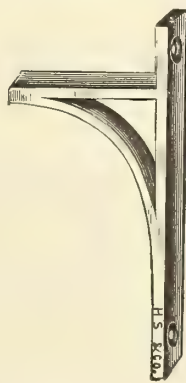
Size Inches	Dozen Pairs		
	No. 1794 Japanned Without Screws	No. 1494A Bronzed With Screws	No. 1494N Nickel-plated With Screws
8x8	\$8.00	\$12.00	\$14.00
12x12	12.00	17.00	20.00
16x16	20.00	25.00	30.00

Show Case Brackets



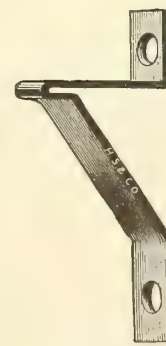
Iron, Coppered

No. 1	1½x1¾ inches, gross.....	\$1.10
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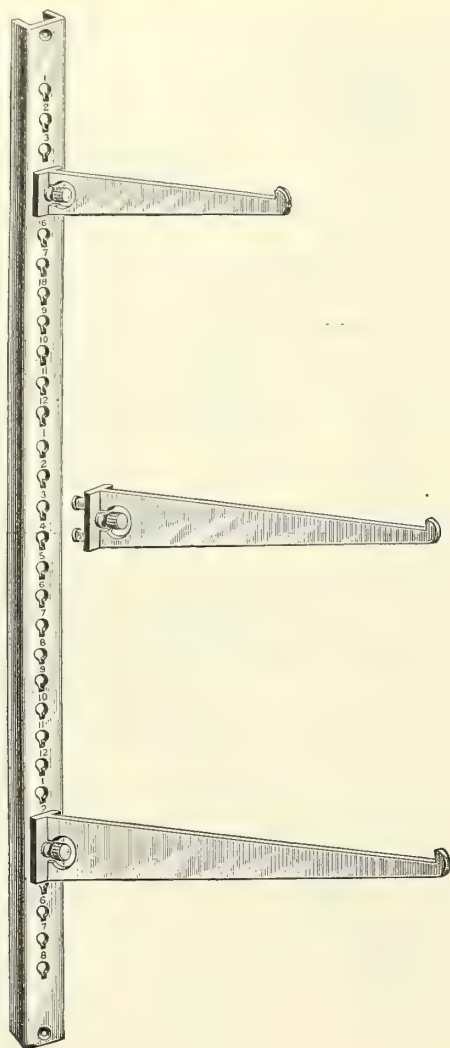
Cast Bronze, Polished

No. 355	¾x1⅞ inches, gross.....	\$13.50
No. 360	1¾x3¼ inches, gross.....	18.50
No. 365	2¾x4 inches, gross.....	30.80



Wrought Brass, Dipped

No. 370	¾x1¾ inches, gross.....	\$4.00
No. 375	1¾x4 inches, gross.....	7.50



Adjustable Showcase Brackets and Standards

"Reliance" Keyhole Pattern

These Brackets and Standards are made entirely from wrought steel, combining strength, durability and cheapness. Brackets are inserted from face of standard and are removable and adjustable independently. Absolute rigidity is obtained by tightening the adjusting screw. They are used either with or without the adjustable rests shown below. In ordering state size of brackets, and whether wanted for loose or stationary shelving; rests wanted, if any; size of standard and finish.

Brackets

Size, inches	4	6	8	10	12
Dozen	\$3.00	3.00	3.25	3.50	3.70

Can also be furnished in 14, 16, 18 and 20-inch sizes.

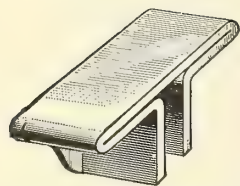
Standards

Width $\frac{7}{8}$ inch, drilled and countersunk for No. 8 Flat Head Screw.

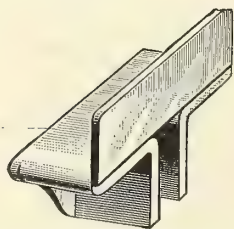
Length, inches	24	30	36
Dozen	\$3.90	4.90	5.85

Can also be furnished to order in 40, 42, 48, 54 and 60-inch sizes.

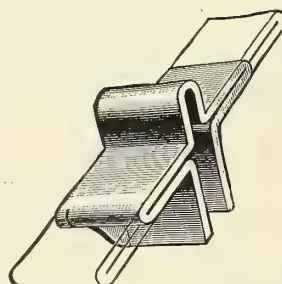
Adjustable Rests and Sockets



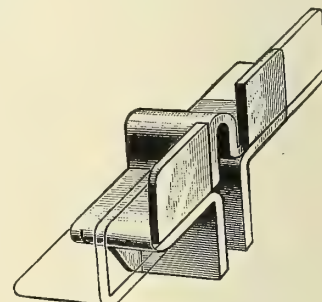
Style "A" Rest, $1\frac{1}{8}$ inches long; for loose shelves on center.



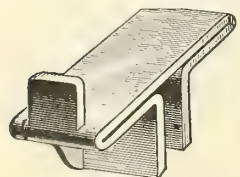
Style "B" Rest, $1\frac{1}{8}$ inches long; for loose shelves on end.



Style "C" Rest, $1\frac{1}{8}$ inches long. Style "C1" Rest, 2 inches long; for loose shelves on center; with dividing lug for parted shelves.



Style "D" Rest, $1\frac{1}{8}$ inches long. Style "D1" Rest, 2 inches long; for loose shelves on end; with dividing lug for parted shelves.



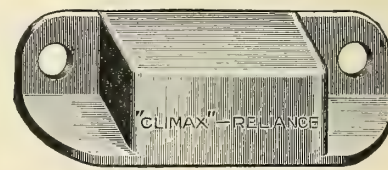
Style "F" Rest, $1\frac{1}{8}$ inches long; for loose shelves at end of case.



Style "G" Rest, $1\frac{1}{4}$ inches long; for stationary wood shelves, used in connection with brackets, when made with indentations for wood shelving. See illustration, upper bracket.



Style "J" Bottom Socket. This style socket may also be used at top of case.



Style "J1" Top Socket

Style	A	B	C	C1	D	D1	F	G	J	J1
Dozen	\$.30	.60	.60	.75	.60	.75	.45	.15	.90	1.20

Telephone Brackets

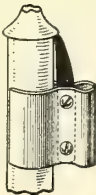
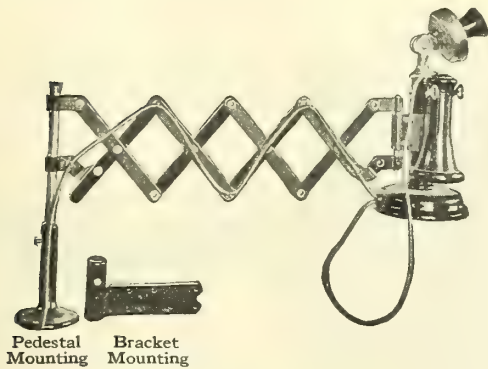
Burns

An extremely effective device and a great time-saver. Handy when you want it—out of the way when you don't. Note how the cord is carried through eyelets on the arm. These eyelets fit through hollow rivets so that the cord can be put on the arm without disturbing the connections.

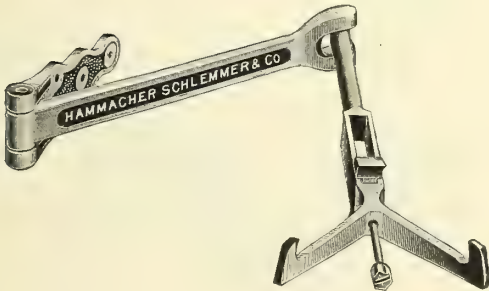
The method of suspension partially insulates outside noise, making the bracket particularly valuable in noisy offices and shops.

Number	Number of Links	Length Closed Inches	Length Extended Inches	Mounting	Each
1073	10	7	28	Pedestal	\$4.00
1074	10	7	28	Bracket	4.00
1275	12	9	32	Pedestal	4.50
1276	12	9	32	Bracket	4.50

Nickel-plated Japanned Base. Will sustain any telephone without sagging.



We furnish with all Burns brackets the device as shown, which is mounted between the jaws with the curved part towards the desk stand. Tip prevents slipping down when clamp is not screwed tight. Obviates service trouble through interference with hook.



H. S. & Co.

Cast iron. 21-inch projection.

Antique copper finish, each.....	\$2.00
Old brass finish, each.....	2.00

Wardrobe Bars

Slide-Easy

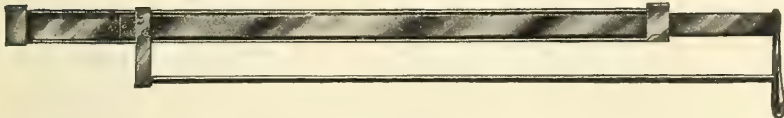


For wardrobes and house-closets

Hang half a dozen coat or suit hangers on it, and the bar is easily drawn forward so as to bring all the clothing out within easy reach.

No. 1 Nickel-plated			
Length, 12 inches.	Dozen.....		\$5.50
Length, 14 inches.	Dozen.....		6.00
Length, 16 inches.	Dozen.....		6.50
Length, 18 inches.	Dozen.....		7.00

Klondike Nickel-plated

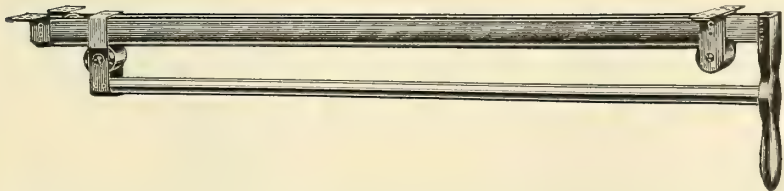


A light bar for light use. Suitable for ladies' waists or jackets, children's clothing, etc.

Length, 24 inches.	Dozen.....	\$16.00
Length, 30 inches.	Dozen.....	18.00

Extension Clothing Carrier

Columbia



All exposed parts nickel-plated on a heavy copper plate. Made from steel, with specially hardened roller bearings.

Length, 36 inches.	Each.....	\$5.00
Length, 42 inches.	Each.....	5.70

Dumbwaiter Fixtures

Springfield



This fixture is adapted for all kinds of dumbwaiters where loads under 300 pounds are to be carried.

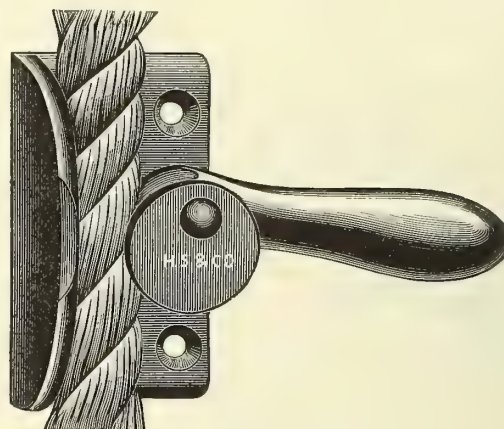
The illustration shows the fixture in position. There are no forked rimmed wheels, rollers, ratchets, or cogs, thus doing away with wearing parts, so far as possible.

The weight of the fixture is 25 pounds; diameter of large wheel, 12½ inches, and of small wheels 3 and 4 inches.

Each set contains 5 small pulleys and 1 large wheel, with full directions for erecting, enabling any one to easily put them in position.

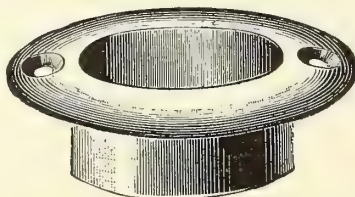
Per set (without weights or ropes) . . . \$7.00

Dumbwaiter Rope Clamps



No. 2 Japanned, for ½ or ⅝-inch rope, dozen \$5.50

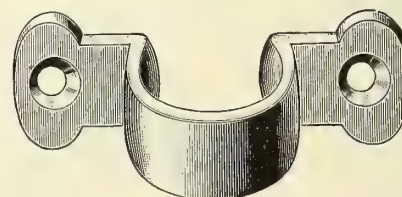
Dumbwaiter Rope Eyes



For floors and ceilings. Inside diameter ⅞ inch.

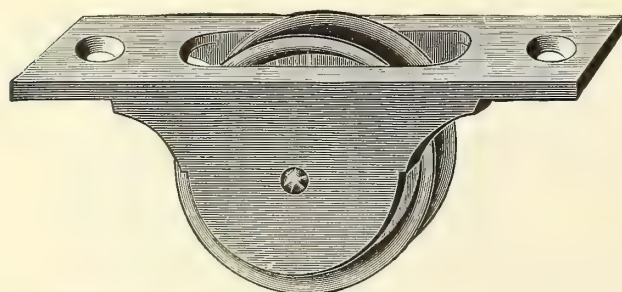
Dozen \$3.00

Dumbwaiter Rope Guides



For Attachment to the Wall

Dozen \$1.00



Dumbwaiter Pulleys

1¼x6-inch face, 3-inch wheel, heavy.

No. 40 Will take ½-inch rope, dozen \$3.30



Frame Dumbwaiter Weights

These Weights are slotted so as to permit addition of inlay weights when necessary

Gray iron, 6x34 inches, approximate weight 30 pounds, pound	\$.07½
Gray iron, 8x33 inches, approximate weight 45 pounds, pound . . . . .	.07½
Inlays for above, approximate weight 3 pounds, pound . . . . .	.07½

Sash Balances

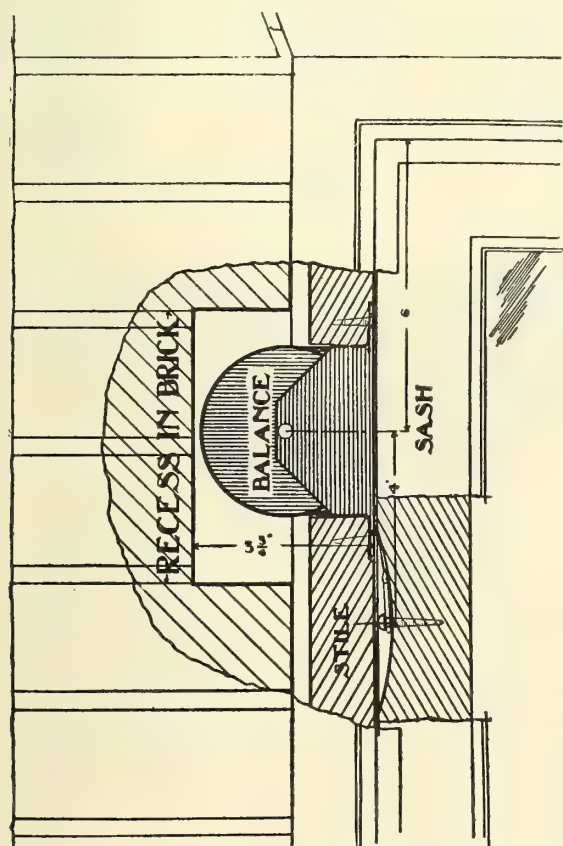
Unit

This is a practical device for balancing window sash in new buildings, replacing unwieldy cords and weights. Made of pressed steel throughout; are light, unbreakable and noiseless. Simple in construction, in shape resembling the ordinary sash pulley, though slightly larger. Consists of a clock spring inside of a revolving drum with a special metal tape wound outside the drum and kept in tension by the spring within. This tape is attached to the sash and as the strength of the spring corresponds to the weight of the sash the window will remain in any desired position.

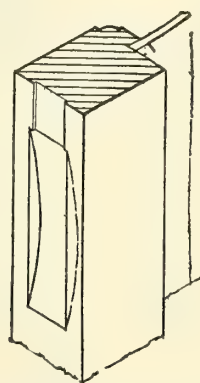
Unit B takes uniform mortise for 4 to 23 pound sash Unit C takes uniform mortise for 16 to 48-pound sash.

Instructions for Ordering

The weight of each sash is usually marked at the mill and the upper and lower sash usually weigh the same. If not, specify the weight of each sash and we will send half sets of the proper sizes. Each unit has sufficient range in a uniform mortise to properly equip all windows ordinarily found in a building. Do not estimate weights, as there is considerable variation in sash of the same dimensions. Be sure there is sufficient space left for the balances.

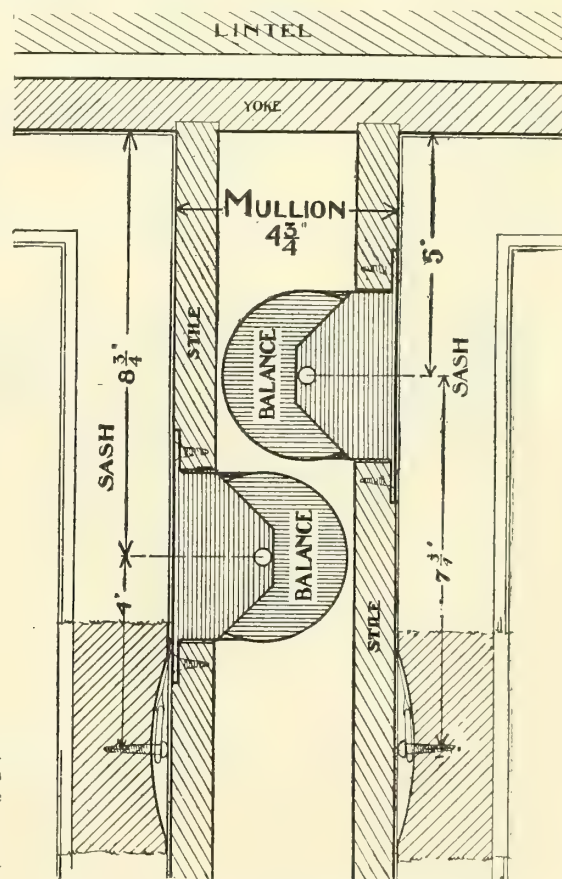


Showing ordinary installation. A small recess in the brick or concrete is all that is required



Detail of groove in rail of sash to receive tape and loop at end. This takes the place of the usual groove for cord.

Unit	B	C
Width of tape, inch ...	$\frac{7}{16}$	$\frac{9}{16}$
Width of loop, inch ...	$\frac{7}{8}$	$1\frac{1}{8}$



Showing method of installation, in group windows, with narrow mullions

For Dwellings, Apartments, Etc.

Unit B, for 4 to 32 Pound Sash

Set of 4 balances for 2 sash, Nos. 0-B to 9-B..... \$2.00

Balance Number	Weight of Each Sash Pounds	Length of Tape Inches
0-B	4 to 6	30
1-B	6 to 7	30
2-B	8 to 9	30
3-B	10 to 11	46
4-B	12 to 13	46
5-B	14 to 15	46
6-B	16 to 17	46
7-B	18 to 19	46
8-B	20 to 21	46
9-B	22 to 23	46

Face plate $5\frac{1}{2} \times 1\frac{1}{4}$ inches
Depth $3\frac{3}{8}$ inches
Finished in dull black lacquer

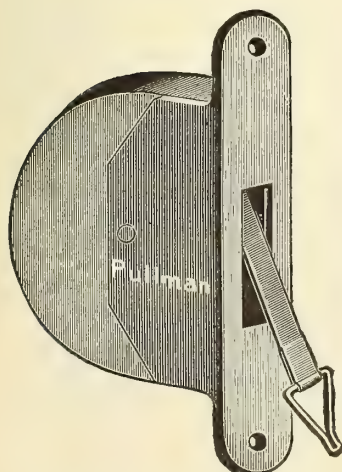
For Factories and Office Buildings

Unit C, for 16 to 48 Pound Sash

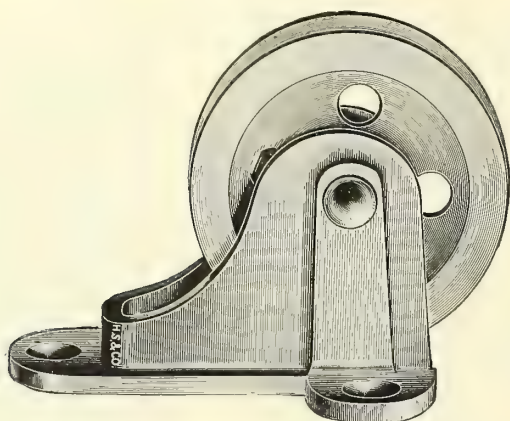
Set of 4 balances, for 2 sash..... \$3.75

Balance Number	Weight of Each Sash Pounds	Length of Tape Inches
6-C	16 to 17	46
7-C	18 to 19	46
8-C	20 to 21	46
9-C	22 to 23	46
10-C	24 to 26	54
11-C	27 to 29	54
12-C	30 to 32	54
13-C	33 to 35	54
14-C	36 to 38	54
15-C	39 to 41	54
16-C	42 to 44	54
17-C	45 to 48	54

Face plate $6\frac{7}{8} \times 1\frac{1}{8}$ inches
Depth $4\frac{3}{8}$ inches
Finished in dull black lacquer



Wall Case Pulleys



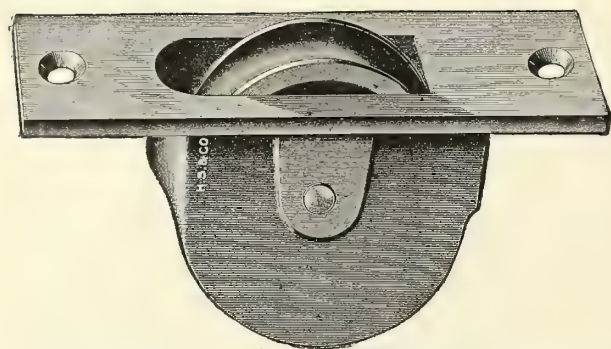
Number	Style	Diameter Wheel Inches	Dozen
3	Morton	2½	\$5.00
5	Western	2½	2.50
7	Morton	4	6.90

Nos. 3 and 7 have iron frames and iron turned wheels. No. 5 has steel frame and iron turned wheels.

They are all made to fit sash or cable chains.

Sash Pulleys

Noiseless



Cut shows No. 77, P177, P1177¼ with square end frame. Turned and polished wheel, with round groove for sash cord.

As Illustrated

Diameter wheels, inches.....	2	2¼	2½
Size fronts, inches.....	4½x1 1/16	5½x1 3/16	5¾x1 3/16
No. 77 Amber bronze front, dozen...	\$1.32	1.47	1.83
No. P177 Bronze plated front, polished steel wheels, dozen.....	2.40	2.58	3.00
No. P1177¼ Wrought bronze front, bronze-plated wheels, dozen.....	3.00	3.30	3.90

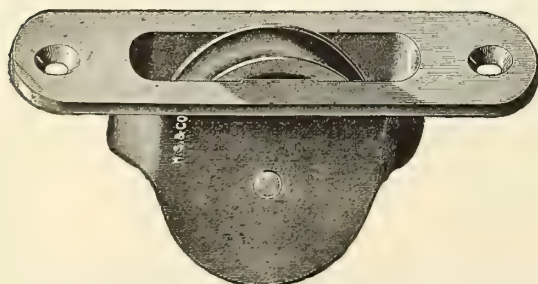
Same as Above Except with Round End Frame

Diameter wheels, inches.....	2	2¼	2½
Size fronts, inches.....	4½x1	5½x1 1/8	5¾x1 1/4
No. 77½ Amber bronze front, dozen..	\$1.32	1.47	1.83
No. P177½ Bronze-plated front, polished steel wheels, dozen.....	2.40	2.58	3.00
No. P1177¾ Wrought bronze front, bronze-plated wheels, dozen.....	3.00	3.30	3.90

The above pulleys can be furnished with anti-friction or ball bearings. Prices on application

Plain

Round End Frame, Polished Wheel, with Round Groove for Sash Cord

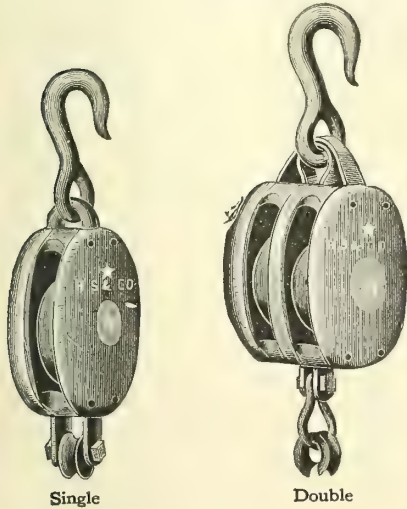


Number	Dimensions of Plain Front Inches	Diameter of Wheel Inches	Dozen
127	4½x1	1¾	\$.40
412	4¾x1	2	.48

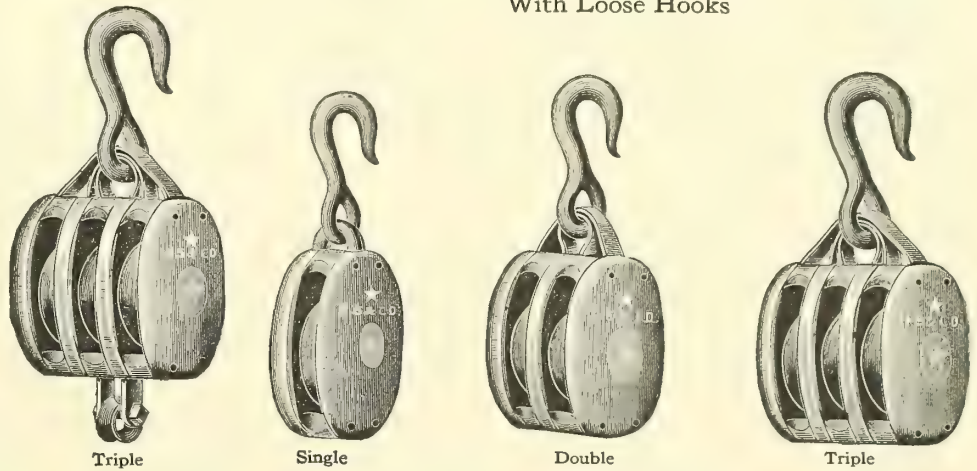
Tackle Blocks

Inside Iron Strapped

With Loose Hook and Becket



With Loose Hooks



List per Block, With or Without Beckets

Iron Bushed

Size	Size of Sheaves Inches	For Diameter Rope Inches	Mortise Inches	Single Each	Double Each	Triple Each
3	1 3/4 x 1 1/2 x 3/8	3/8	9/16	\$.70	\$1.30	\$1.75
3 1/2	2 x 1 1/2 x 3/8	3/8	9/16	.75	1.45	2.00
4	2 1/4 x 5/8 x 3/8	1/2	1 1/16	.85	1.60	2.15
5	3 x 3/4 x 3/8	5/8	7/8	.90	1.75	2.25
6	3 1/2 x 1 x 1/2	3/4	1 1/8	1.10	2.00	2.90
7	4 1/4 x 1 x 1/2	7/8	1 1/8	1.30	2.40	3.50
8	4 3/4 x 1 1/8 x 5/8	1	1 1/4	1.65	2.85	4.25
9	5 1/2 x 1 1/8 x 5/8	1	1 1/4	1.85	3.40	4.75
10	6 1/4 x 1 1/4 x 5/8	1 1/8	1 3/8	2.75	4.50	6.25
11	7 1/4 x 1 1/4 x 3/4	1 1/8	1 3/8	4.45	7.50	10.65
12	8 x 1 3/8 x 3/4	1 1/4	1 1/2	4.45	7.50	10.65
13	9 x 1 1/2 x 3/4	1 1/4	1 1/2	7.00	10.50	15.00
14	9 1/2 x 1 5/8 x 7/8	1 3/8	1 3/4	7.00	10.50	15.00
15	10 x 1 5/8 x 7/8	1 1/2	1 3/4	8.00	13.00	18.00
16	11 x 1 3/4 x 7/8	1 5/8	1 7/8	10.00	15.00	22.00

Six-Roller Bushed

Size	Size of Sheaves Inches	For Diameter Rope Inches	Mortise Inches	Single Each	Double Each	Triple Each
3	1 3/4 x 1 1/2 x 3/8	3/8	9/16	\$1.10	\$2.00	\$2.90
3 1/2	2 x 1 1/2 x 3/8	3/8	9/16	1.15	2.20	3.15
4	2 1/4 x 5/8 x 3/8	1/2	1 1/16	1.20	2.25	3.25
5	3 x 3/4 x 3/8	5/8	7/8	1.25	2.35	3.50
6	3 1/2 x 1 x 1/2	3/4	1 1/8	1.50	2.85	4.40
7	4 1/4 x 1 x 1/2	7/8	1 1/8	1.70	3.35	5.00
8	4 3/4 x 1 1/8 x 5/8	1	1 1/4	2.25	4.15	6.00
9	5 1/2 x 1 1/8 x 5/8	1	1 1/4	2.50	4.70	7.25
10	6 1/4 x 1 1/4 x 5/8	1 1/8	1 3/8	3.50	6.00	8.50
11	7 1/4 x 1 1/4 x 3/4	1 1/8	1 3/8	5.30	9.20	13.20
12	8 x 1 3/8 x 3/4	1 1/4	1 1/2	5.30	9.20	13.20
13	9 x 1 1/2 x 3/4	1 1/4	1 1/2	8.15	12.80	18.45
14	9 1/2 x 1 5/8 x 7/8	1 3/8	1 3/4	8.15	12.80	18.45
15	10 x 1 5/8 x 7/8	1 1/2	1 3/4	9.25	15.50	21.75
16	11 x 1 3/4 x 7/8	1 5/8	1 7/8	11.50	18.00	26.50

A suitable working load is not the greatest load which the blocks will sustain, but is one under which the blocks may be safely used until worn out. We suggest the following loads as a guide in ordering, but do not assume any responsibility for same:

Size	Diameter Rope Inches	Two Singles Pounds	Two Doubles Pounds	Two Triples Pounds
5	9/16	150	250	400
6	3/4	250	400	650
8	7/8	750	1,200	1,900
10	1	2,000	4,000	6,000
12	1 1/8	4,000	8,000	12,000
14	1 1/4	7,000	12,000	19,000

Snatch Blocks

Wood



Size of Sheave Inches	For Diameter Rope Inches	Length of Shell Inches	Common Iron Bushed Each	Patent Roller Bushed Each
3 x 1 1/8 x 1/2	7/8	6	\$4.00	\$4.65
3 1/2 x 1 1/4 x 1/2	7/8	7	4.75	5.50
4 1/2 x 1 3/8 x 5/8	1	8	5.75	6.60
5 x 1 3/8 x 5/8	1 1/8	9	6.75	7.75
5 3/4 x 1 7/8 x 3/4	1 1/4	10	8.50	10.00
6 3/4 x 2 1/8 x 3/4	1 1/2	12	10.00	11.50

When ordering Snatch Blocks, be sure to specify style number (as shown in illustration) and size of sheave.



Differential Block

Yale

This Block handles heavy loads readily and on account of its reliability and simplicity is especially adapted for use on farms, in shops, and for all ordinary hoisting purposes where extreme high power and durability are not required.

Three men pulling 216 pounds can lift 2,000 pounds, or one man can do the work which would require several men with rope-tackle, jacks, skids, crow-bars and rollers. Heat and cold do not affect it and it will stand all kinds of weather.

Capacity in Tons 2,240 Pounds to the Ton	Price Complete	Regular Hoist in Feet	Extra Hoist Price per Foot*	Minimum Distance Between Hooks Inches
1/8	\$18.00	5	\$2.80	16
1/4	18.00	6	2.80	17
1/2	21.00	7	2.80	21
1	28.00	8	3.00	26
1 1/2	36.00	8 1/2	3.20	32
2	45.00	9	3.40	39
3	60.00	9 1/2	4.00	44

*Each foot of extra hoist includes 4 feet of chain.

Duplex Blocks

Yale

Where extreme high speed is not required, we recommend this Block.

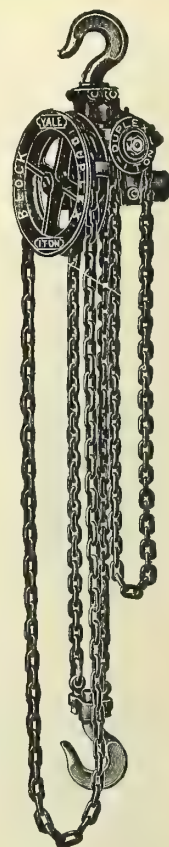
It is especially adapted for portable use, being light in weight, compact in head-room, powerful and durable. Suitable for setting machinery.

The Yale Duplex Block has an efficiency 25 per cent higher than ordinary screw hoists.

With it, one man by pulling only 87 pounds, can lift 2,000 pounds.

Capacity in Tons 2,240 Pounds to the Ton	Price Complete	Regular Hoist in Feet	Extra Hoist Price per Foot*	Minimum Distance Between Hooks Inches
1/2	\$25.00	8	\$1.20	13
1	30.00	8	1.50	16
1 1/2	40.00	8	1.75	19
2	50.00	9	2.00	21
3	75.00	10	2.20	25
4	95.00	10	2.40	29
5	140.00	12	3.00	31
6	180.00	12	3.75	33
8	210.00	12	4.00	36
10	275.00	12	4.25	45

*"Extra Hoist Per Foot" includes sufficient hand and load chain to increase the travel of the lower hook 1 foot.



Triplex Blocks

Yale

The One-ton Block will stand, without breaking, a one-ton load dropped into the bottom hook from a height of 25 inches.

The line is standardized so that all sizes are made up of the parts of the 1/2, 1, 1 1/2 and 2-ton blocks. This simplifies the renewal of parts. The parts of the 2-ton block fit the 4-ton block, and all sizes above.

Rated Capacity in Tons 2,240 Pounds to the Ton	Complete Block with Standard Hoist	Regular Hoist in Feet	Extra Hoist per Foot*	Minimum Distance Between Hooks Inches
1/4	\$35.00	8	\$.90	15
1/2	35.00	8	.90	15
1	45.00	8	.95	17
1 1/2	60.00	8	1.00	19 1/2
2	70.00	9	1.05	24
3	90.00	10	1.50	32
4	110.00	10	1.60	37
5	140.00	12	2.15	45
6	165.00	12	2.15	46
8	200.00	12	2.70	51
10	240.00	12	3.25	57
12	300.00	12	4.30	57
16	360.00	12	5.40	61
20	425.00	12	6.50	77

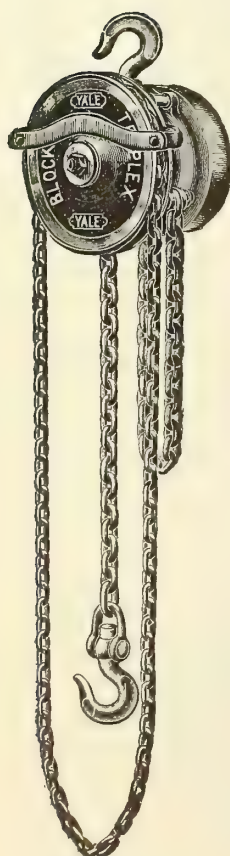
*"Extra Hoist per Foot" includes sufficient hand and load chain to increase the travel of the lower hook 1 foot.

Automatic Lock Tackle Blocks

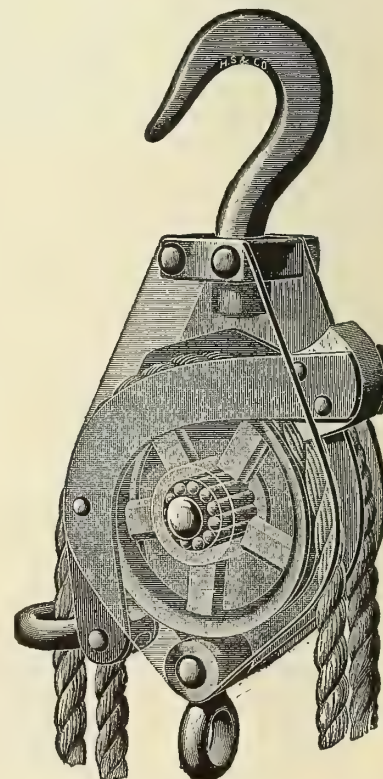
The cases are of steel, galvanized, and the sheaves are anti-friction roller, bushed. A special feature is the automatic lock which holds the load at any point.

The lock moves with the rope in acting—does not slide over it. As the lock is positively controlled by the position of hauling rope, and not by gravity the block is equally well adapted for use vertically, horizontally, or at any angle.

Number	Number of Sheaves	Size Rope	Pounds One Man Can Hoist	Pounds Capacity	List Without Rope
80	2 and 1	1/2	300	600	\$3.00
85	2 and 2	1/2	450	800	4.00
90	2 and 1	5/8	350	1000	5.50
100	2 and 2	5/8	500	1500	6.00
110	3 and 2	5/8	625	2000	6.80
120	3 and 3	5/8	750	3000	7.60
130	4 and 3	5/8	900	3500	8.35
140	2 and 1	3/4	350	1250	6.50
150	2 and 2	3/4	500	1800	7.00
160	3 and 2	3/4	625	2500	8.00
170	3 and 3	3/4	750	3700	9.00
180	4 and 3	3/4	900	4000	10.00



Triplex Blocks
Style of 1/2 to 2 tons

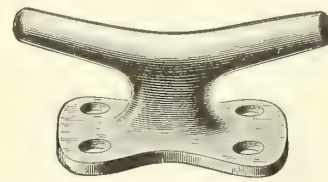


Automatic Lock Tackle Block

Line Cleats



No. 111	1 7⁄8-inch cast iron, galvanized, dozen.....	\$.55
No. 121	1 7⁄8-inch cast brass, polished, dozen.....	3.10
No. 123	2 1⁄2-inch cast brass, polished, dozen.....	3.90



No. 117	3 3⁄8-inch cast iron, galvanized, dozen.....	\$1.75
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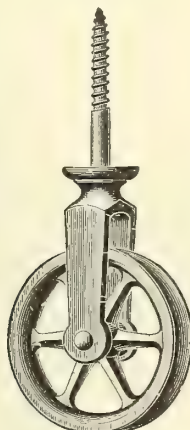


No. 114	4 1⁄2-inch malleable iron, galvanized, dozen.....	\$.62
No. 381	4 1⁄2-inch cast brass, polished, dozen.....	3.20



No. 115	5 7⁄8-inch malleable iron, galvanized, dozen.....	\$.92
No. 116	7 7⁄8-inch malleable iron, galvanized, dozen.....	1.35

Screw

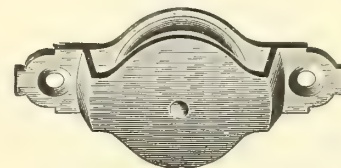


No. 45 Japanned, Single Wheel

Size, diameter wheel, inches.....	1	1 1⁄4	1 1⁄2	1 3⁄4	2
For rope, inch.....	1⁄4	1⁄4	1⁄4	5⁄16	5⁄16
Dozen.....	\$.48	.52	.63	.74	.96
Size, diameter wheel, inches.....	2 1⁄4	2 1⁄2	3	4	5
For rope, inch.....	3⁄8	3⁄8	7⁄16	5⁄8	3⁄4
Dozen.....	\$1.20	1.30	2.00	4.60	9.20

Pulleys

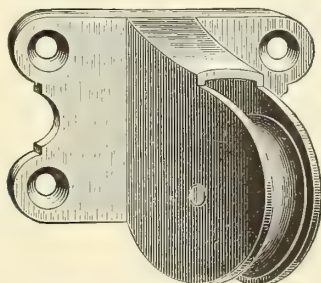
Side



No. 25 Japanned, Single Wheel

Size, diameter wheel, inches.....	1	1 1⁄4	1 1⁄2	1 3⁄4	2
For rope, inch.....	1⁄4	1⁄4	1⁄4	5⁄16	5⁄16
Single wheel, dozen.....	\$.74	.80	.90	1.00	1.30
Size, diameter wheel, inches.....	2 1⁄4	2 1⁄2	3	4	5
For rope, inches.....	3⁄8	3⁄8	7⁄16	5⁄8	3⁄4
Single wheel, dozen.....	\$1.80	2.00	3.00	7.40	12.80
No. 26	2 1⁄4 inches, for sash chain.				

Hot House



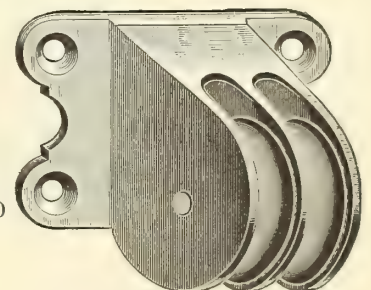
No. 85 Japanned, Single Wheel

Size, diameter wheel, inches.....	1 3⁄4	2	2 1⁄4
For rope, inch.....	1⁄4	5⁄16	5⁄16
Dozen.....	\$1.85	2.20	3.00

No. 86 Japanned, Single Wheel

Size, diameter wheel, inches.....	2 1⁄4
For sash chain, dozen.....	\$5.25

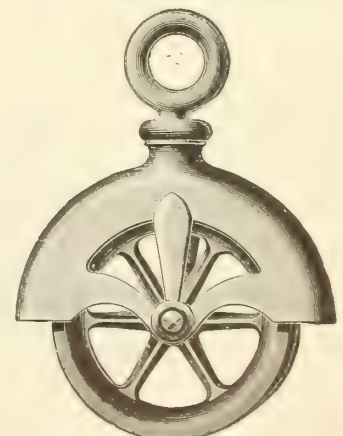
Size, diameter wheel, inches	1 3⁄4	2	2 1⁄4
For rope, inch	1⁄4	5⁄16	5⁄16
Dozen	\$3.00	3.50	5.00



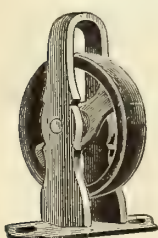
No. 87 Japanned, Double Wheel

Encased Swivel

2 1⁄2-inch wheel, for 5⁄16-inch rope, dozen.....	\$2.20
3-inch wheel, for 3⁄8-inch rope, dozen.....	2.80



No. 42 Japanned, Swivel Eye

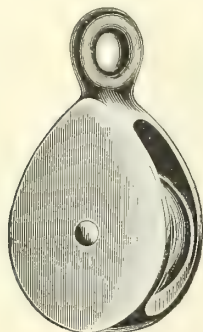


No. 55 Japanned

Upright

Size, diameter wheel, inches.....	1 3⁄4	2
For rope, inch.....	1⁄4	5⁄16
Dozen.....	\$.95	1.15

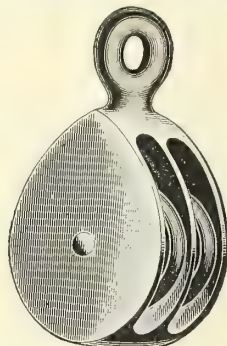
Pulleys Tackle or Awning



No. 174

Galvanized, single wheel.

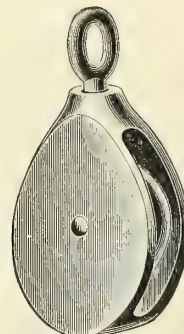
Diameter wheel, inch...	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
For rope, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
Dozen.....	\$.42	.54	.59
Diameter wheel, inches..	1	$1\frac{1}{4}$	$1\frac{1}{2}$
For rope, inch.....	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$
Dozen.....	.67	.80	1.00



No. 176

Galvanized, double wheels.

Diameter wheels, inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$
For rope, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{1}{4}$
Dozen.....	\$1.20	1.30	1.55	1.80



No. 173

Galvanized, single wheel, swivel eye.

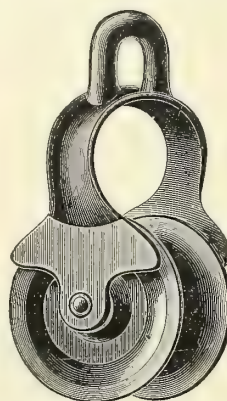
Diameter wheel, inch...	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
For rope, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
Dozen.....	\$.78	.90	1.15



No. 178

Galvanized, double wheel, swivel eye.

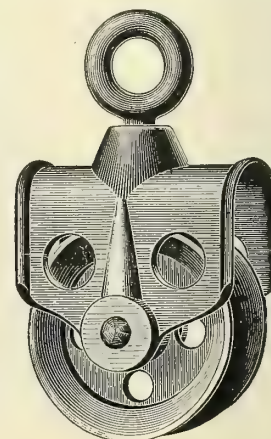
Diameter wheels, inch...	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
For rope, inch.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
Dozen.....	\$.90	.98	1.35



No. 161

Galvanized, with large opening so as to allow knotted rope to pass freely.

Diameter wheel, inches.....	2	$2\frac{1}{2}$
For rope, inch.....	$\frac{1}{2}$	$\frac{5}{8}$
Dozen.....	\$1.50	2.40



No. 162

Galvanized, for $\frac{3}{8}$ -inch rope, swivel eye, diameter of wheel $2\frac{1}{2}$ inches.

Dozen.....	\$3.70
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Side

Full Size Cuts

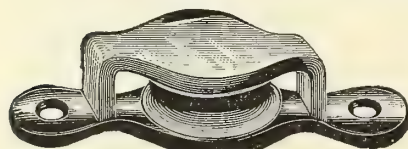
Upright

Swing

Full Size Cuts
Cast Brass

No. 62 Single wheel,
dozen..... \$1.00

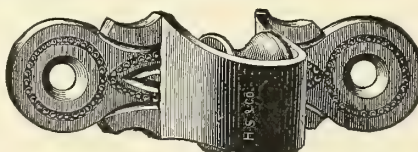
No. 64 Double wheels,
dozen..... 1.60



No. 2

$\frac{5}{8}$ -inch wheels.

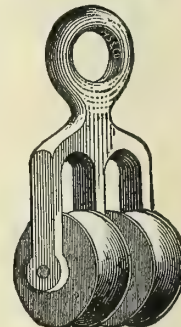
No. 2 Cast brass, gross.....	\$13.50
No. 12 Bronzed iron, gross.....	6.00



No. 12



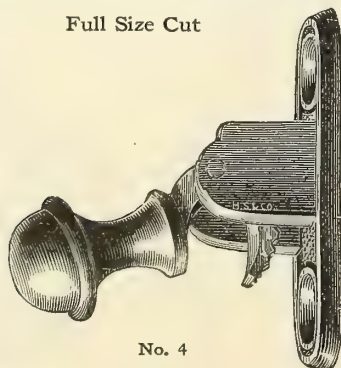
No. 62



No. 64

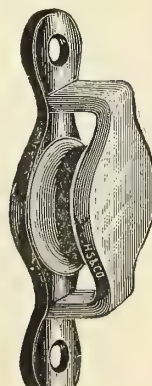
Cord Clamps

Full Size Cut



No. 4

Cast brass, polished, dozen..... \$3.00



No. 38

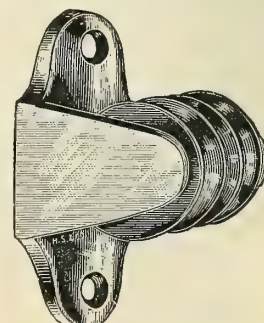
Concave Back

Full Size Cuts

Cast Brass

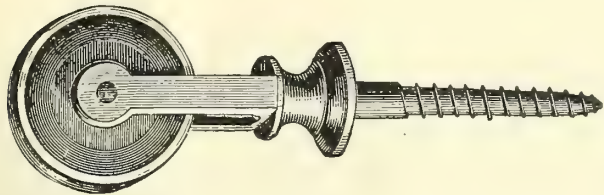
No. 38 Single wheel,
dozen..... \$2.40

No. 39 Double wheels,
dozen..... 3.20



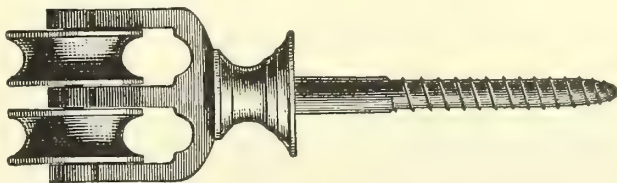
No. 39

Screw Pulleys



No. 35

Cast brass, polished. Single wheel.				
Diameter wheel, inch.....	1/2	5/8	3/4	1
For rope, inch.....	1/8	1/8	3/16	1/4
Dozen.....	\$1.45	1.70	1.90	2.40



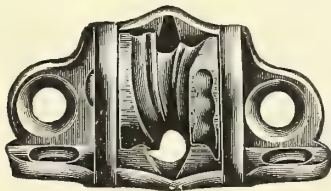
No. 37

Cast brass, polished. Double wheel.				
Diameter wheel, inch.....				5/8
For rope, inch.....				1/8
Dozen.....				\$3.30

Stop Pulleys



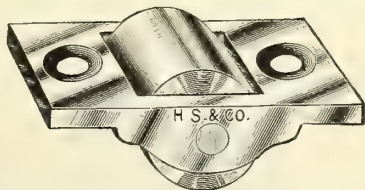
To make cord fast, pull to side; to liberate, pull to center.
Bronzed iron.



No. 21	Diameter wheel 5/8 inch, gross.....	\$5.00
No. 23	Diameter wheel 5/8 inch, gross.....	5.00

Sash Rollers

Full Size Cut of 3/4 Inch Size



Cast Brass, Polished and Lacquered

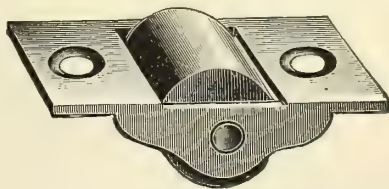
Width of plate, inch.....	5/8	3/4	7/8	1
No. 15 Dozen.....	\$1.50	1.65	1.80	2.00

Cast Iron, Japanned

Width of plate, inches.....	5/8	3/4	7/8	1	1 1/4
No. 10 Iron wheel, gross.....	\$2.70	3.20	4.20	5.40	7.70
No. 30 Lignumvitæ wheel, gross ..		3.60	5.00	6.50	

Cast Iron, Japanned, Extra Heavy

Number.....	1	2	3
Width of plate, inches.....	1	1 1/4	1 1/2
Gross.....	\$8.00	12.00	19.00

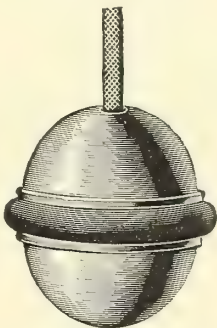


Wrought Steel Turned Wheels

Width of plate, inch.....	5/8	3/4	7/8	1
No. 17059 Gross.....	\$5.00	6.00	7.00	8.00

Traverse Tassels

Full Size Cut

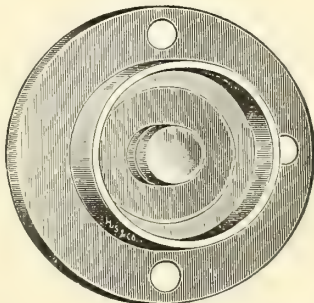


No. 233

Polished brass, loaded. Soft rubber buffer.				
Dozen.....				\$2.00

Roller Guides

Full Size Cut

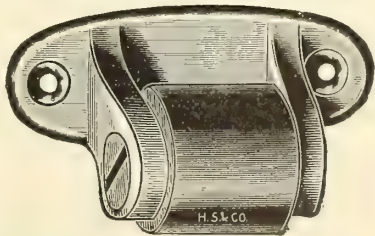


No. 1060

For sliding sash doors.				
Wrought steel, 1 1/2 inches diameter, gross.....				\$8.50

Door-Guide-Rollers

Full Size Cut

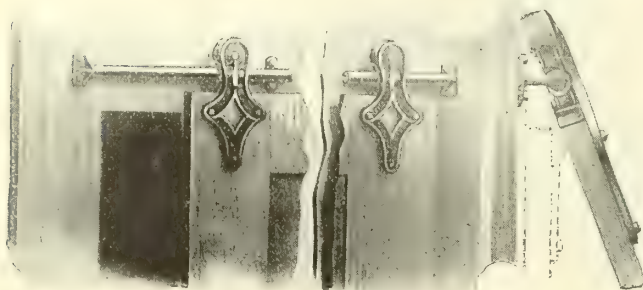


No. 19

Polished cast bronze, soft rubber roller. Packed with screws.				
Dozen.....				\$4.20

Barn or Garage Door Hangers and Tracks

Reliable



For each 2 pieces of 6 ft. track we furnish 5 center brackets
 For each 2 pieces of 8 ft. track we furnish 7 center brackets
 For each 2 pieces of 10 ft. track we furnish 9 center brackets
 No. 1 Track with brackets every 2 ft. will carry 250-lb. doors
 No. 1 Track with brackets every 18 in. will carry 400-lb. doors
 No. 2 Track with brackets every 2 ft. will carry 600-lb. doors
 No. 2 Track with brackets every 18 in. will carry 1000-lb. doors

The Upper Wheel, with perfectly grooved tread, has hardened steel axle, washers, and roller bearings packed in the highest grade graphite lubricant, making the hanger absolutely anti-friction and very durable.

The Lower Wheel by contact with the track should the door be raised, prevents derailing or binding.

The Track is regularly made in single lengths of six, eight and ten feet. It is a high carbon, heavy round steel tube, with a three-eighths inch slot in the back, allowing the insertion of the track brackets. This shape makes it much stronger and more rigid than other styles of track and always allows a perfect bearing for the wheel with no side friction. It cannot get out of line or sag.

The Brackets are malleable iron, fitting inside of the track tightly and may be spaced to suit any requirements. One center bracket is used to connect two lengths or sections of track, making the joint as strong as any other part of the track.

Hangers, track and track brackets, all finished in durable black enamel, baked on.

No. 1 Hanger frame, 4 inches wide, 9½ inches long, upper wheel 2 inches in diameter.

No. 2 Hanger frame, 6 inches wide, 12 inches long, upper wheel 2½ inches in diameter.

No. 1 Track, ¾ inch in diameter. In lengths 6, 8 and 10 feet.

No. 2 Track, 1⅛ inches in diameter. In lengths 6, 8 and 10 feet.



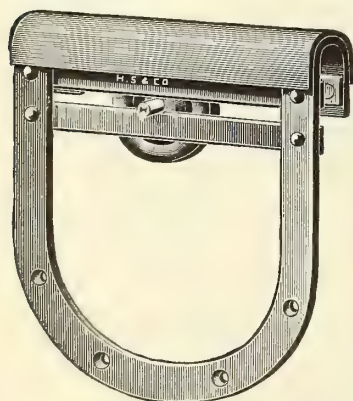
No. 18

For heavier doors space the brackets proportionally closer. If door weighs more than 200 pounds and not over 500 pounds, use No. 2 track in preference to No. 1.

Nos. 1C, 1E, 2C and 2E track brackets are for doors 2 inches thick and under, and Nos. 2C3, 2E3 and 2C4 for doors 2 to 2⅜ inches thick.

No. 18 Hanger Wheel and upper part of frame same size as No. 2. Made without pendent for attaching to doors with steel or angle iron frame.

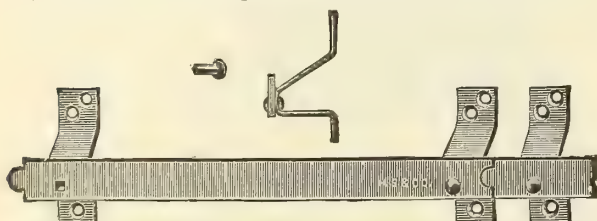
The Hanger Frame is made of thoroughly annealed malleable iron of one solid piece, ribbed and reinforced, with no bolts or rivets to break or loosen.



Lane

The rivet holes are square, which prevents the brackets from turning. May be secured in lengths of 4, 5, 6, 7 and 8 feet.

1¼ inches x ⅜ inch, per foot \$.09



Lane

This Hanger is made with a heavy steel cover applied outside of the regular hanger frame. The axle has a very broad bearing surface and the steel cover carries the eave drip clear from the axle and ways, as well as protecting the wheel.

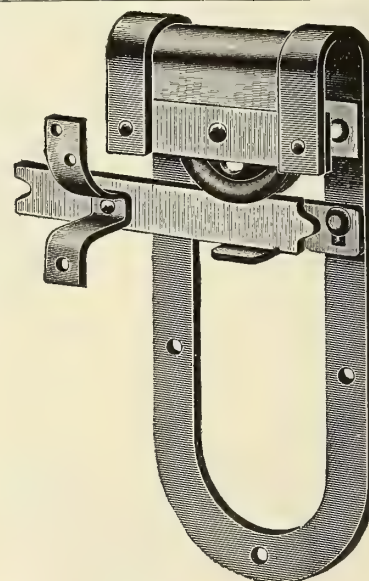
No. 11 For doors which slide 5 feet;
dozen pairs \$16.50

No. 12 For doors which slide 10 feet;
dozen pairs 27.50

Track for Lane Hanger O. N. T.

(This track also fits the Richards-Wilcox Hanger listed below.)

The stock is straight and true with brackets one foot apart.



Richards-Wilcox

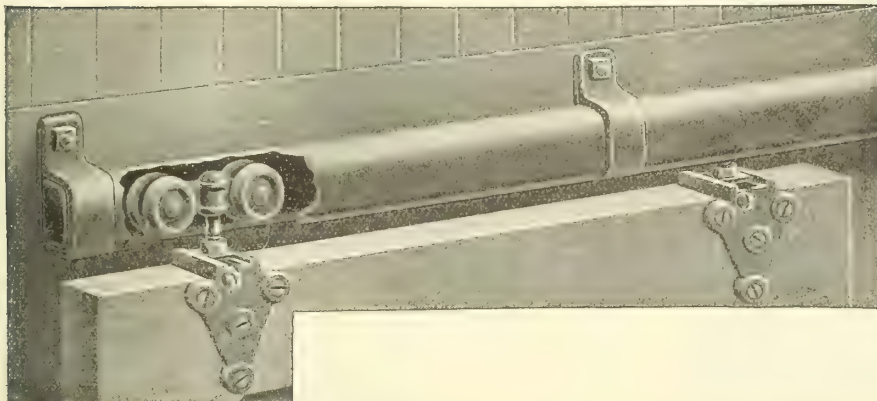
This Hanger is made with a steel cover applied outside of the regular hanger frame and has an adjustable stay-on attachment.

No. 38-1 Pendant 12 x 1 x ⅜ inches; diameter wheel 3 inches; tread ⅜ and ¼ inch; dozen pairs \$15.00

Barn or Garage Door Hangers and Tracks

McCabe

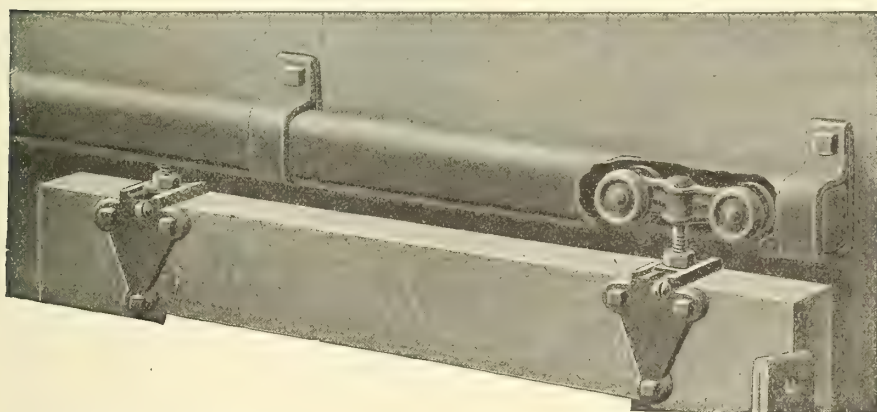
No. 20



With double carriage, apron and track, suitable for doors weighing 300 pounds or under, complete with track, brackets and screws. Brackets four feet apart.

The malleable apron has adjustments from 1 1/4" to 2 1/4" inches (thickness of doors).

Single Doors		Double Doors	
Size of Opening and Under	Complete Set	Size of Opening and Under	Complete Set
3 feet	\$5.00	5 feet	\$9.00
4 feet	5.50	6 feet	9.50
5 feet	6.00	7 feet	10.00
6 feet	6.50	8 feet	10.50
7 feet	7.00	9 feet	11.00
8 feet	7.50	10 feet	11.50
9 feet	8.00	11 feet	12.00
10 feet	8.50	12 feet	12.50
11 feet	9.00	13 feet	13.00
12 feet	9.50	14 feet	13.50



No. 30

With double carriage, apron and track, suitable for doors weighing 300 to 500 pounds, complete with track, brackets and carriage bolts. Brackets 2 feet apart.

The malleable apron has adjustment from 2 3/8" to 3 inches (thickness of doors).

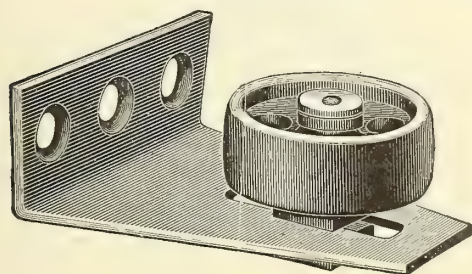
Single Doors		Double Doors	
Size of Opening and Under	Complete Set	Size of Opening and Under	Complete Set
4 feet	\$9.00	6 feet	\$18.00
5 feet	10.00	7 feet	18.00
6 feet	11.00	8 feet	18.00
7 feet	12.00	9 feet	19.00
8 feet	13.00	10 feet	20.00
9 feet	14.00	11 feet	21.00
10 feet	15.00	12 feet	22.00
11 feet	16.00	13 feet	23.00
12 feet	17.00	14 feet	24.00
13 feet	18.00	15 feet	25.00
14 feet	19.00	16 feet	26.00

Complete sets as above include track, brackets, carriages, aprons and screws

When ordering be careful to give the exact thickness of the door, size of opening, and state whether for double or single doors

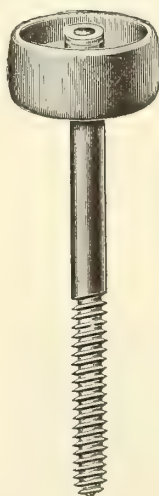
Prices of hangers for heavier doors on application.

Barn or Garage Door Stay Rollers



Adjustable and reversible Cast iron wheel, 2 inches in diameter For inside or outside doors.

No. 153 Dozen..... \$2.00



This style with an expansion shield is used generally where there are concrete floors. Wheel cast iron, 2 inches in diameter; lag screw 1 1/8" x 7 inches.

No. 155 Dozen..... \$1.25

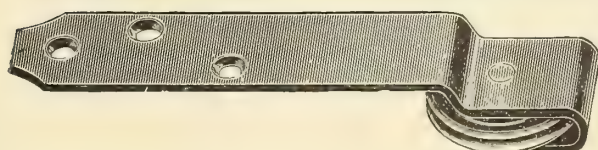
Fusible Links

Inspected and labeled by the national board of underwriters laboratories.

"Yates" Dozen..... \$3.00

Partition Door Hangers

Richards—Wilcox



These Hangers are operated on 3/4-inch sliding door rail which is fixed to the top of a wooden strip (same thickness as door) attached rigidly to wall over door and allowing as small space as possible between door and wooden strip, to prevent hanger jumping the track while in operation.

No. 34 Bronze plate, dozen pairs..... \$14.00

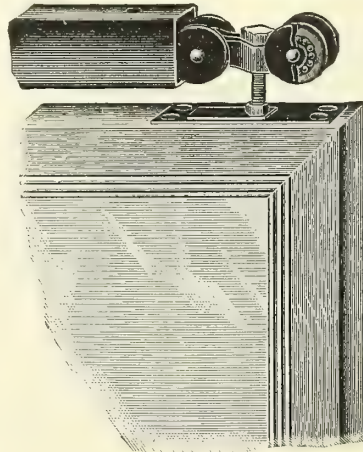
For 3/4-inch Rail to fit these hangers, see page 820.

Partition Door Hangers

Richards—Wilcox



Full Size Cross Section of No. 30
Trolley Track



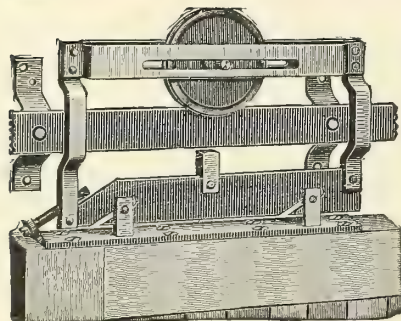
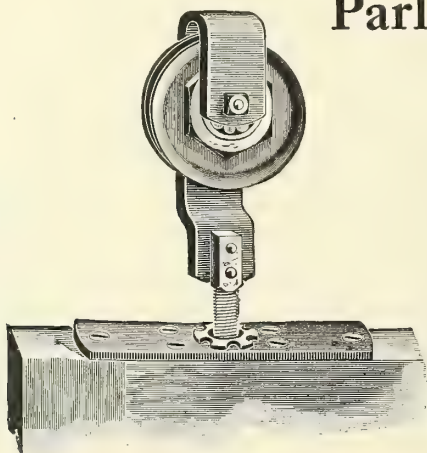
Little Giant

Suitable for light doors $\frac{7}{8}$ to $1\frac{3}{8}$ inches thick. Requires only $2\frac{1}{2}$ inches space above top of door. Furnished with either fibre or steel ball bearing wheels. Can be attached to side with brackets or to ceiling with screws. Lateral and vertical adjustment.

No. 30	Hangers, pair.....	\$2.00
No. 30	Trolley track, foot.....	.20
No. 29	Center side brackets, each.....	.20
No. 30	Left or right end side brackets, each.....	.20

Parlor Door Hangers

Lane



New Champion

Hanger frame made of steel. Wheels are iron with roller bearings. Track made of steel 1 inch wide.

The adjusting nut extends through the base plate and has serrated projecting flanges, both above and below, by which it may be turned.

No. 104	Set, for double doors (four hangers), including 14 feet of track, gravity stops, striking plates, floor guides, and all screws.....	\$4.00
No. 104½	Half-set, for single door (two hangers), including 8 feet of track, floor guide, and all screws.....	2.00

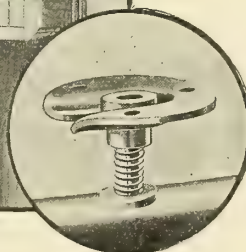
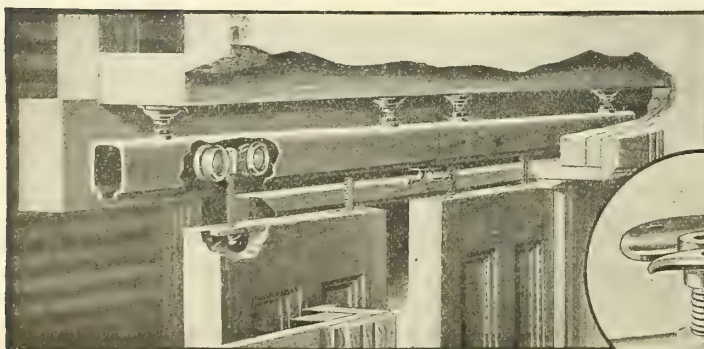
Standard

Heavy hanger frame made of steel. Wheels are iron with steel bearings. Track made of steel $1\frac{1}{4}$ inches wide.

The adjusting screw is on the side and easily accessible.

No. 102	For double doors, each one to slide four feet or less. Set (of four hangers), including 14 feet of track, gravity stops, striking plates, floor guides, and all screws.....	\$6.00
No. 102½	For single door, to slide four feet or less. Half-set (of two hangers), including 8 feet of track, floor guide, and all screws.....	3.00

McCabe—No. 10



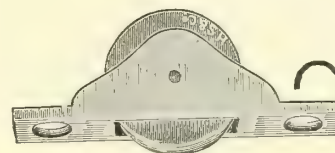
Has steel wheels. Ball bearing. All parts are case hardened. The bearings are constructed with the same care as those in bicycles, thereby reducing friction to a minimum. The track is made of cold drawn steel, with parallel slot having flanges on both sides. The inside surfaces of the track in which the ball-bearing carriages travel are as smooth as it is possible to make them. There is an adjustment on the track, also on the carriages, making adjustment convenient at any time.

Opening Feet	For Single Doors Set	Opening Feet	For Double Doors Set
2½	\$3.00	4	\$6.00
3	3.00	4½	6.00
3½	3.50	5	6.00
4	4.00	5½	6.00
4½	4.00	6	6.00
5	4.00	6½	6.00
5½	4.50	7	7.00
6	4.50	7½	7.00
6½	5.00	8	7.00
7	5.00	9	8.00
7½	5.50	10	9.00
8	5.50		

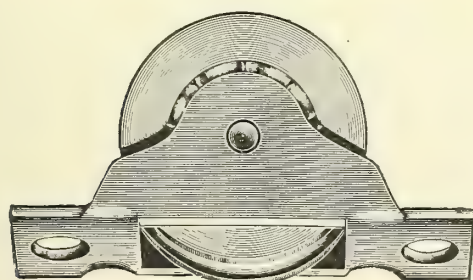
Sliding Door Sheaves



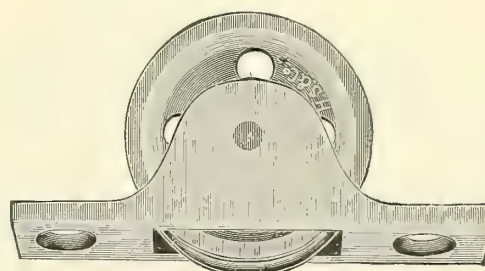
No. 405 $\frac{1}{2}$ Steel, brass-plated, $\frac{5}{8}$ -inch turned wheel, fits No. 880 $\frac{7}{8}$, 1, $1\frac{1}{8}$ -inch and No. 990 rail, gross \$5.00



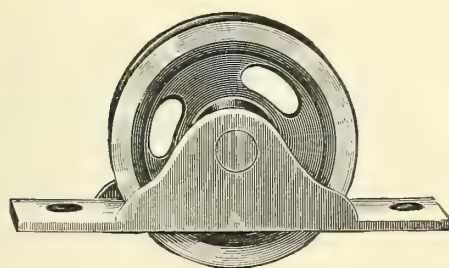
No. 406 $\frac{1}{2}$ Steel, brass-plated, $\frac{5}{8}$ -inch turned wheel, fits $\frac{3}{4}$ -inch and No. 17299 rail, gross \$5.00



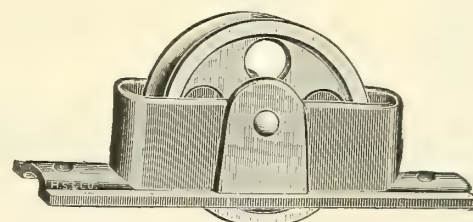
No. 4 Steel frame, $1\frac{3}{8}$ -inch turned ball bearing wheel, fits No. 880 $\frac{7}{8}$, 1, $1\frac{1}{8}$ -inch and No. 990 rail, dozen \$2.34



No. 585 $\frac{1}{4}$ Japanned iron frame, brass polished wheel, $1\frac{1}{4}$ -inch turned wheel, fits No. 880 $\frac{7}{8}$, 1, $1\frac{1}{8}$ -inch and No. 990 rail, dozen \$2.00



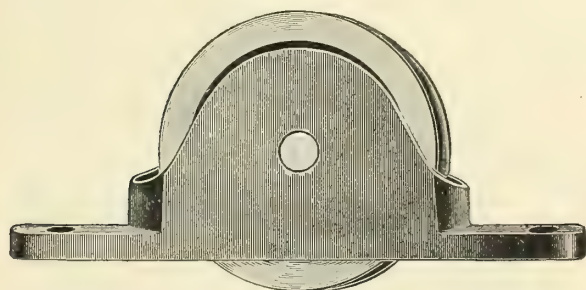
No. 17027 Steel frame, $1\frac{1}{4}$ -inch turned wheel, fits No. 880 $\frac{7}{8}$, 1, $1\frac{1}{8}$ -inch and No. 990 rail, gross \$12.00



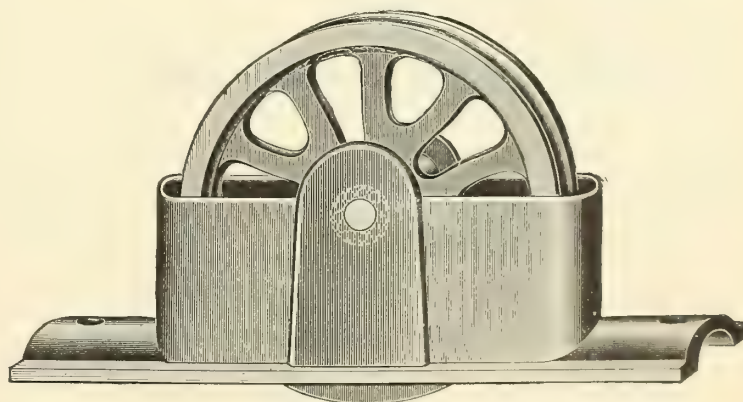
Japanned iron frame and wheel, fits No. 880 $\frac{7}{8}$, 1, $1\frac{1}{8}$ -inch and No. 990 rail.

No. 1 $1\frac{3}{4}$ -inch wheel, $3\frac{3}{4} \times \frac{15}{16}$ inches front, dozen \$1.68

No. 2 $2\frac{1}{4}$ -inch wheel, $4\frac{3}{8} \times \frac{15}{16}$ inches front (turned wheel), dozen 2.88



No. 100 Japanned iron frame, $2\frac{1}{4}$ -inch turned ball bearing wheel, fits No. 880 $\frac{7}{8}$, 1, $1\frac{1}{8}$ -inch and No. 990 rail, dozen \$3.50



Japanned iron frame, coppered wheels, anti-friction, fits 1 and $1\frac{1}{8}$ -inch rail.

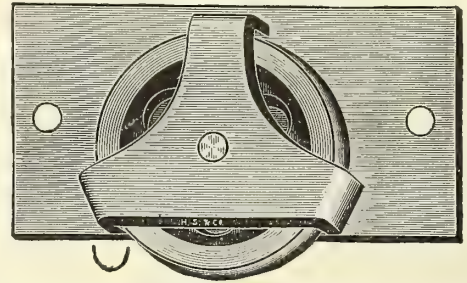
Diameter wheel, inches 3 4

No. 9 Dozen \$3.90 4.38

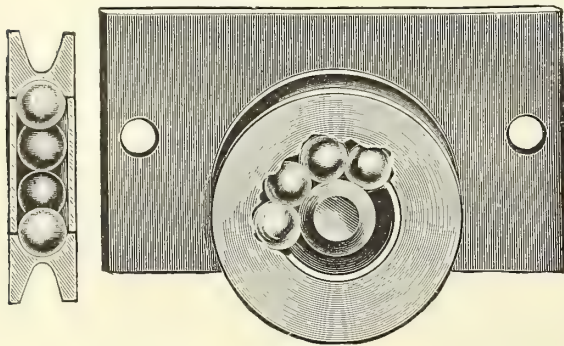
Sliding Door Sheaves



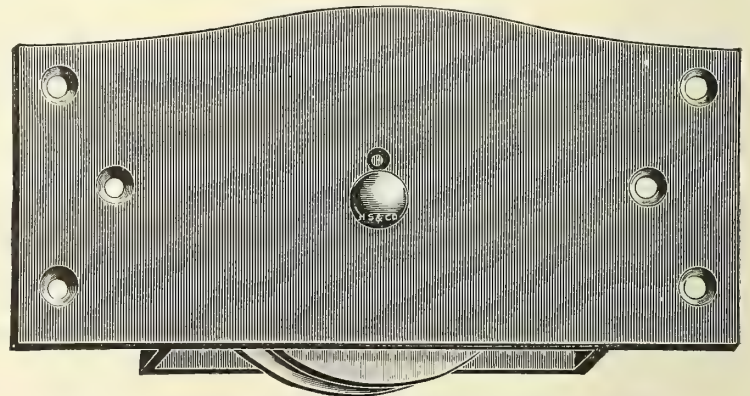
- No. 580 Steel frame, turned wheel.
Diameter wheel $1\frac{1}{2}$ inches, dimensions of case $1\frac{5}{8} \times 3\frac{5}{8}$ inches.
Fits $\frac{3}{4}$ -inch and No. 17299 rail, dozen \$2.59
Diameter wheels $1\frac{3}{4}$ inches, dimensions of case $1\frac{7}{8} \times 3\frac{7}{8}$ inches.
Fits No. 880 $\frac{7}{8}$, 1, $1\frac{1}{8}$ and No. 990 rail, dozen..... 3.24



- No. 490 All iron, plate $2\frac{3}{8} \times 1\frac{3}{16}$ inches, $1\frac{3}{16}$ -inch turned wheel.
Fits $\frac{3}{4}$ -inch and No. 17299 rail, gross \$12.00



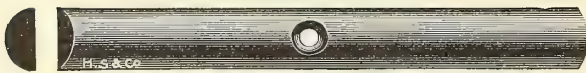
- No. 17074 Steel frame $2\frac{3}{8} \times 1\frac{5}{16}$ inches, $1\frac{3}{8}$ -inch turned ball bearing wheel. Fits $\frac{3}{4}$ -inch and No. 17299 rail, dozen \$18.00



- No. 589 Japanned iron frame, $4 \times 7\frac{1}{2}$ inches, 4-inch turned wheel. Fits $1\frac{1}{8}$ -inch rail, dozen..... \$10.80

Sliding Door Rail

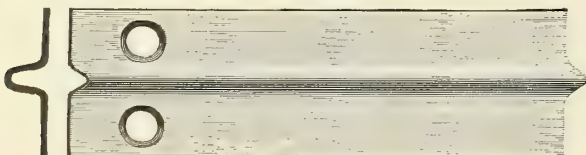
Full Size Cuts



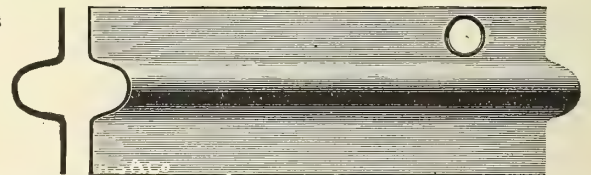
- No. 990 $\frac{5}{16}$ -inch, fits sheaves Nos. 1, 2, 4, 100, $405\frac{1}{2}$, 580, $1\frac{3}{4}$, $585\frac{1}{4}$ and 17027. Regular lengths 5 and 6 feet. Solid brass, per 100 feet..... \$8.25
No. 880 $\frac{1}{4}$ -inch, fits sheaves Nos. 1, 2, 100, 580, $1\frac{3}{4}$, $405\frac{1}{2}$, $585\frac{1}{4}$ and 17027. Regular lengths 5 and 6 feet. Iron, coppered, per 100 feet..... 2.50



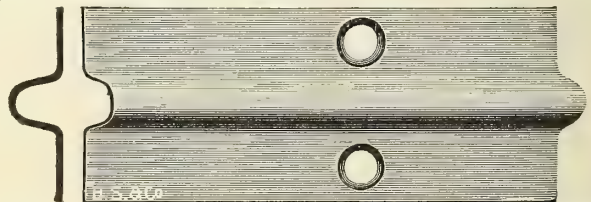
- No. 17299 Fits sheaves Nos. $406\frac{1}{2}$, 490, 580, $1\frac{1}{2}$, 17074, and will fit almost all of the standard sheaves on the market. 10-foot pieces, solid wrought steel, copper-plated, per 100 feet.. \$3.00



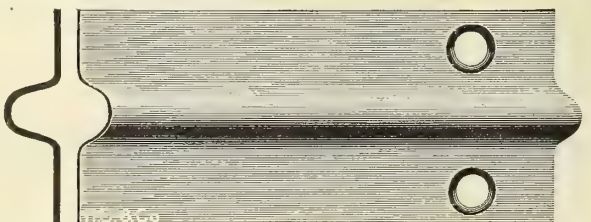
- * $\frac{3}{4}$ -inch. Fits sheaves Nos. $406\frac{1}{2}$, 490, 580, $1\frac{1}{2}$ and 17074. Regular lengths 4, 5, 6 and 7 feet.
Wrought brass, polished, per 100 feet..... \$5.50
Wrought iron, brass-plated, per 100 feet..... 4.50



- $\frac{7}{8}$ -inch. Fits sheaves Nos. 1, 2, 4, 100, $405\frac{1}{2}$, 580, $1\frac{3}{4}$, $585\frac{1}{4}$ and 17027. Regular lengths 5, 6 and 7 feet.
Wrought brass, polished, per 100 feet..... \$6.00



- 1-inch. Fits sheaves Nos. 1, 2, 4, 9, 100, $405\frac{1}{2}$, 580, $1\frac{3}{4}$, $585\frac{1}{4}$ and 17027. Regular lengths 5, 6 and 7 feet.
Wrought brass, polished, per 100 feet..... \$10.00



- $1\frac{1}{8}$ -inch. Fits sheaves Nos. 1, 2, 4, 9, 100, $405\frac{1}{2}$, 580, $1\frac{3}{4}$, 589, $585\frac{1}{4}$ and 17027. Regular lengths 5 and 6 feet.
Wrought brass, polished, per 100 feet..... \$10.50
Wrought iron, brass-plated, per 100 feet..... 6.70

Philadelphia Stem Casters

Full Size Cut

Packed 6 sets in a box. Also supplied in bulk
In ordering, state number and size.

Coppered Iron Horn
Per Set of Four

Size	1	2	3	4	5	6	7
Diameter of wheel, inches	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Kind of Wheel							
No. 95 Coppered Iron	\$.14	.15	.17	.19	.21	.24	.30
No. 96 Lignumvitæ	.16	.17	.19	.22	.24	.26	.40
No. 97 Brass	.25	.28	.34	.42	.44	.58	.78

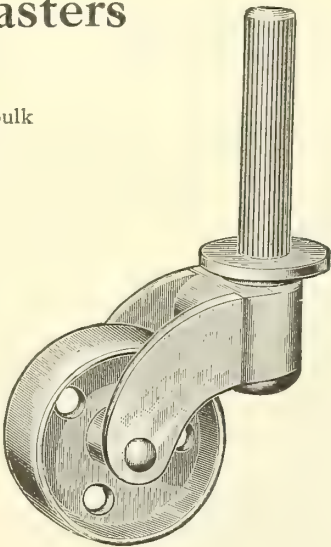
Plain Steel Horn
Per Set of Four

Size	1	2	3	4	5	6	7
Diameter of wheel, inches	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Kind of Wheel							
No. 105 Maple	\$.10	.11	.13	.15	.17	.20	.26
No. 106 Iron	.14	.15	.17	.19	.21	.24	.30
No. 107 Steel	.16	.17	.19	.22	.24	.26	.40
No. 108 Lignumvitæ	.16	.17	.19	.22	.24	.26	.40
No. 109 Brass	.25	.28	.34	.42	.44	.58	.78

Brass-plated Steel Horn
Per Set of Four

Size	1	2	3	4	5	6	7
Diameter of wheel, inches	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Kind of Wheel							
No. 113 Lignumvitæ	\$.28	.29	.34	.40	.45	.47	.54
No. 114 Steel, brass-plated	.34	.36	.40	.45	.50	.55	.65
No. 115 Brass	.35	.40	.49	.62	.68	.86	1.15
No. 116 Leather	.70	.76	.80	.90	1.10	1.40	1.80

Philadelphia Stem Casters can be furnished with stems cut to any length desired.
Rings and Sockets to fit Philadelphia Casters on page 844.



Cast Brass Horn

Per Set of Four

Size	1	2	3	4	5	6	7
Diameter of wheel, inches	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Kind of Wheel							
No. 117 Lignumvitæ	\$.30	.31	.36	.46	.48	.56	.70
No. 118 Brass	.37	.42	.51	.66	.70	.88	1.20
No. 119 Hard Rubber	.58	.65	.75	.85	1.00	1.15	1.50
No. 120 Leather	.70	.76	.80	.90	1.10	1.40	1.80

For Casters of this type with Feltoid Wheels, see page 828.

“Star” Philadelphia Casters

Full Size Cut

Packed 6 sets in a box. Also supplied in bulk.
In ordering, state number and size.

Plain Steel Horn
Per Set of Four

Size	1	2	3	4	5	6
Diameter of wheel, inches	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$
Kind of Wheel						
No. 125 Maple	\$.10	.11	.13	.15	.17	.20
No. 126 Iron	.14	.15	.17	.19	.21	.24

English Casters

Full Size Cut

Packed 4 sets in a box.
In ordering, state number and size.

Cast Brass Horn and Plate

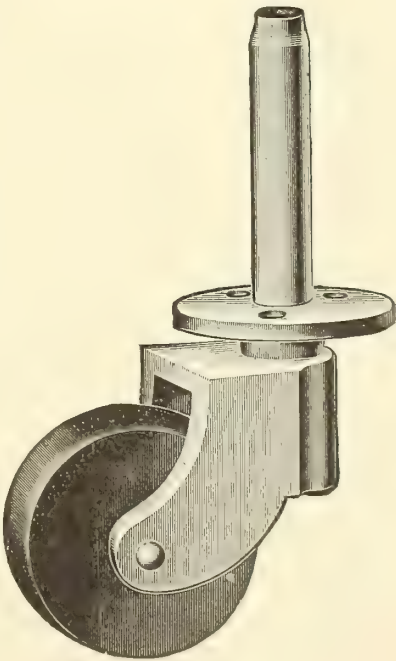
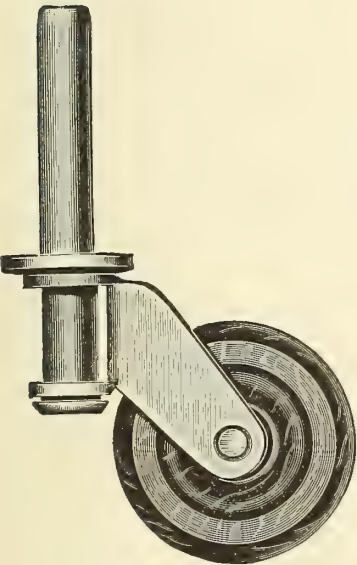
Per Set of Four

Size	0	1	2	3	4
Diameter of plate, inches	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$
Diameter of wheel, inches	1	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{5}{16}$
Kind of Wheel					
No. 561 Cast brass	\$.80	.89	.96	1.12	1.55
No. 562 Hard rubber	1.00	1.05	1.16	1.26	1.62
No. 563 Leather	1.20	1.30	1.40	1.60	1.90

For Casters of this type with Feltoid Wheels, see page 828.

Cast Brass Horn, Coppered Iron Plate, Steel Stem

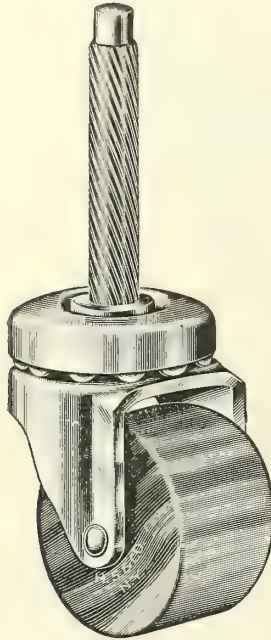
Size	0	1	2	3
Diameter of plate, inches	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Diameter of wheels, inches	$\frac{15}{16}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Kind of Wheel				
No. 571 Cast brass	\$.69	.75	.85	.94
No. 572 Hard rubber	.86	.94	1.06	1.16
No. 573 Leather	1.20	1.28	1.34	1.46



"Steel Gem" Roller-Bearing Casters

Philadelphia Stem

Full Size Cuts



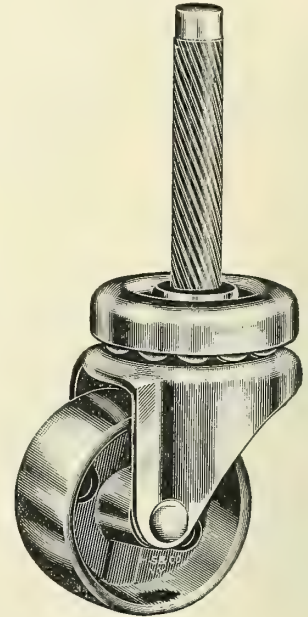
The highest grade of caster construction is found in all "Steel Gem" casters.

The steel rollers revolve at the least touch, do not wear or fall out and add immeasurably to the appearance and life of the caster.

Packed 1 set in a box, or in barrel bulk as follows:

650	sets	sizes 3 and 4
400	"	size 6
325	"	" 7
200	"	" 8
150	"	" 9

In Ordering "Steel Gem" Casters, order by number only, which includes style, size and kind of wheel.



Bright Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
353	3	Iron	1 1/32 x 5/8	1	1 5/8	\$.42
353P	3	Iron, highly polished	1 1/32 x 5/8	1	1 5/8	.42
354	3	Lignumvitæ	1 1/32 x 5/8	1	1 5/8	.42
453	4	Iron	1 3/16 x 5/8	1	1 3/4	.47
453P	4	Iron, highly polished	1 3/16 x 5/8	1	1 3/4	.47
454	4	Lignumvitæ	1 3/16 x 5/8	1	1 3/4	.47
653	6	Iron	1 3/8 x 25/32	1 1/4	2	.53
653P	6	Iron, highly polished	1 3/8 x 25/32	1 1/4	2	.53
654	6	Lignumvitæ	1 3/8 x 25/32	1 1/4	2	.53
753	7	Iron	1 1/2 x 25/32	1 1/4	2 1/8	.60
753P	7	Iron, highly polished	1 1/2 x 25/32	1 1/4	2 1/8	.60
754	7	Lignumvitæ	1 1/2 x 25/32	1 1/4	2 1/8	.60
853	8	Iron	1 1/2 x 1	1 3/4	2 1/4	.90
853P	8	Iron, highly polished	1 1/2 x 1	1 3/4	2 1/4	.90
854	8	Lignumvitæ	1 1/2 x 1	1 3/4	2 1/4	.90
953	9	Iron	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
953P	9	Iron, highly polished	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
954	9	Lignumvitæ	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00

Brass Plated Steel Horn

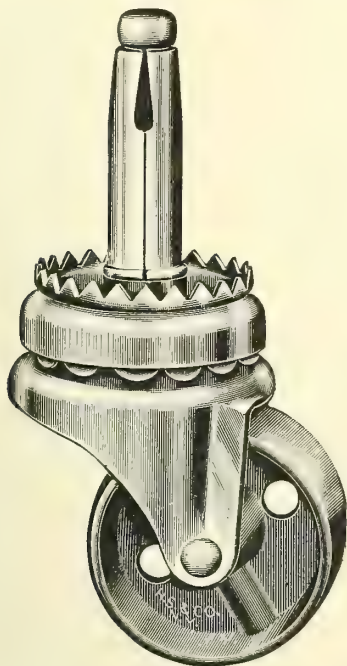
No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
353B	3	Iron, brass plated	1 1/32 x 5/8	1	1 5/8	\$.42
354B	3	Lignumvitæ	1 1/32 x 5/8	1	1 5/8	.42
379B	3	Feltoid	1 1/32 x 5/8	1	1 5/8	.88
453B	4	Iron, brass plated	1 3/16 x 5/8	1	1 3/4	.47
454B	4	Lignumvitæ	1 3/16 x 5/8	1	1 3/4	.47
459B	4	Leather	1 3/16 x 5/8	1	1 3/4	2.00
479B	4	Feltoid	1 3/16 x 5/8	1	1 3/4	1.10
653B	6	Iron, brass plated	1 3/8 x 25/32	1 1/4	2	.53
654B	6	Lignumvitæ	1 3/8 x 25/32	1 1/4	2	.53
679B	6	Feltoid	1 3/8 x 25/32	1 1/4	2	1.34
753B	7	Iron, brass plated	1 1/2 x 25/32	1 1/4	2 1/8	.60
754B	7	Lignumvitæ	1 1/2 x 25/32	1 1/4	2 1/8	.60
759B	7	Leather	1 1/2 x 25/32	1 1/4	2 1/8	2.60
779B	7	Feltoid	1 1/2 x 25/32	1 1/4	2 1/8	1.90
853B	8	Iron, brass plated	1 1/2 x 1	1 3/4	2 1/4	.90
854B	8	Lignumvitæ	1 1/2 x 1	1 3/4	2 1/4	.90
953B	9	Iron, brass plated	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
954B	9	Lignumvitæ	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00

When nickel-plated finish is desired, suffix "N" instead of "B"

“Steel Gem” Roller-Bearing Casters

Grip-Neck Spring Socket

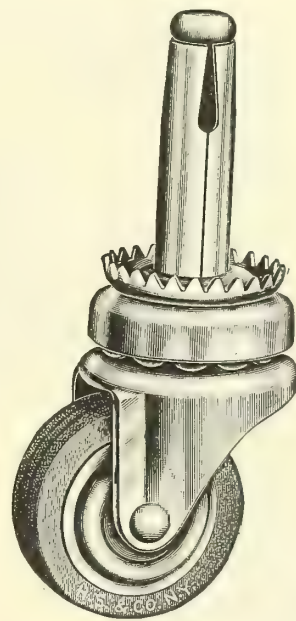
Full Size Cuts



Packed 1 set in a box or in barrel bulk as follows:

650	sets	sizes 3 and 4
400	"	size 6
325	"	" 7
200	"	" 8
150	"	" 9

In Ordering “Steel Gem” Casters, order by number only which includes style, size and kind of wheel.



Bright Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
355	3	Iron	1 $\frac{1}{32}$ x $\frac{5}{8}$	1	1 $\frac{5}{8}$	\$.42
355P	3	Iron, highly polished	1 $\frac{1}{32}$ x $\frac{5}{8}$	1	1 $\frac{5}{8}$	.42
356	3	Lignumvitæ	1 $\frac{1}{32}$ x $\frac{5}{8}$	1	1 $\frac{5}{8}$	.42
455	4	Iron	1 $\frac{3}{16}$ x $\frac{5}{8}$	1	1 $\frac{3}{4}$	.47
455P	4	Iron, highly polished	1 $\frac{3}{16}$ x $\frac{5}{8}$	1	1 $\frac{3}{4}$	.47
456	4	Lignumvitæ	1 $\frac{3}{16}$ x $\frac{5}{8}$	1	1 $\frac{3}{4}$	.47
655	6	Iron	1 $\frac{3}{8}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2	.53
655P	6	Iron, highly polished	1 $\frac{3}{8}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2	.53
656	6	Lignumvitæ	1 $\frac{3}{8}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2	.53
755	7	Iron	1 $\frac{1}{2}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	.60
755P	7	Iron, highly polished	1 $\frac{1}{2}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	.60
756	7	Lignumvitæ	1 $\frac{1}{2}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	.60
855	8	Iron	1 $\frac{1}{2}$ x1	1 $\frac{3}{4}$	2 $\frac{1}{4}$	.90
855P	8	Iron, highly polished	1 $\frac{1}{2}$ x1	1 $\frac{3}{4}$	2 $\frac{1}{4}$	.90
856	8	Lignumvitæ	1 $\frac{1}{2}$ x1	1 $\frac{3}{4}$	2 $\frac{1}{4}$	.90
955	9	Iron	1 $\frac{7}{8}$ x1 $\frac{1}{16}$	1 $\frac{3}{4}$	2 $\frac{9}{16}$	1.00
955P	9	Iron, highly polished	1 $\frac{7}{8}$ x1 $\frac{1}{16}$	1 $\frac{3}{4}$	2 $\frac{9}{16}$	1.00
956	9	Lignumvitæ	1 $\frac{7}{8}$ x1 $\frac{1}{16}$	1 $\frac{3}{4}$	2 $\frac{9}{16}$	1.00

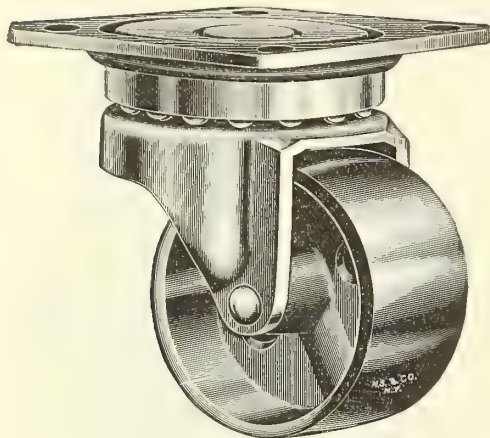
Brass Plated Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
355B	3	Iron, brass plated	1 $\frac{1}{32}$ x $\frac{5}{8}$	1	1 $\frac{5}{8}$	\$.42
356B	3	Lignumvitæ	1 $\frac{1}{32}$ x $\frac{5}{8}$	1	1 $\frac{5}{8}$	.42
378B	3	Feltoid	1 $\frac{1}{32}$ x $\frac{5}{8}$	1	1 $\frac{5}{8}$	.88
455B	4	Iron, brass plated	1 $\frac{3}{16}$ x $\frac{5}{8}$	1	1 $\frac{3}{4}$	.47
456B	4	Lignumvitæ	1 $\frac{3}{16}$ x $\frac{5}{8}$	1	1 $\frac{3}{4}$	.47
458B	4	Leather	1 $\frac{3}{16}$ x $\frac{5}{8}$	1	1 $\frac{3}{4}$	2.00
478B	4	Feltoid	1 $\frac{3}{16}$ x $\frac{5}{8}$	1	1 $\frac{3}{4}$	1.10
655B	6	Iron, brass plated	1 $\frac{3}{8}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2	.53
656B	6	Lignumvitæ	1 $\frac{3}{8}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2	.53
678B	6	Feltoid	1 $\frac{3}{8}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2	1.34
755B	7	Iron, brass plated	1 $\frac{1}{2}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	.60
756B	7	Lignumvitæ	1 $\frac{1}{2}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	.60
758B	7	Leather	1 $\frac{1}{2}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	2.60
778B	7	Feltoid	1 $\frac{1}{2}$ x $\frac{25}{32}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	1.90
855B	8	Iron, brass plated	1 $\frac{1}{2}$ x1	1 $\frac{3}{4}$	2 $\frac{1}{4}$	.90
856B	8	Lignumvitæ	1 $\frac{1}{2}$ x1	1 $\frac{3}{4}$	2 $\frac{1}{4}$	.90
878B	8	Feltoid	1 $\frac{5}{8}$ x1	1 $\frac{3}{4}$	2 $\frac{1}{4}$	2.40
955B	9	Iron, brass plated	1 $\frac{7}{8}$ x1 $\frac{1}{16}$	1 $\frac{3}{4}$	2 $\frac{9}{16}$	1.00
956B	9	Lignumvitæ	1 $\frac{7}{8}$ x1 $\frac{1}{16}$	1 $\frac{3}{4}$	2 $\frac{9}{16}$	1.00
978B	9	Feltoid	2 x1 $\frac{1}{16}$	1 $\frac{3}{4}$	2 $\frac{9}{16}$	3.10

When Nickel-plated Finish is desired suffix "N" instead of "B"

"Steel Gem" Roller-Bearing Casters

Full Size Cut



No. 751P

Square Plate

All "Steel Gem" Casters packed 1 set in a box or in bulk as follows:

Sizes 3 and 4, full case lots, 400 sets.

" 6 " 7 " " " 200 "

" 8 " 9 " " " 100 "

In Ordering "Steel Gem" Casters, order by number only which includes style, size and kind of wheel.

Bright Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Diam. of Plate, Inches	Height, Inches	Per Set of Four
351	3	Iron	1 1/2 x 5/8	1 1/2	1 5/8	\$.42
351P	3	Iron, highly polished	1 1/2 x 5/8	1 1/2	1 5/8	.42
352	3	Lignumvitæ	1 1/2 x 5/8	1 1/2	1 5/8	.42
451	4	Iron	1 3/4 x 5/8	1 1/2	1 3/4	.47
451P	4	Iron, highly polished	1 3/4 x 5/8	1 1/2	1 3/4	.47
452	4	Lignumvitæ	1 3/4 x 5/8	1 1/2	1 3/4	.47
651	6	Iron	1 3/4 x 2 1/8	1 7/8	2	.53
651P	6	Iron, highly polished	1 3/4 x 2 1/8	1 7/8	2	.53
652	6	Lignumvitæ	1 3/4 x 2 1/8	1 7/8	2	.53
751	7	Iron	1 1/2 x 2 1/8	1 7/8	2 1/8	.60
751P	7	Iron, highly polished	1 1/2 x 2 1/8	1 7/8	2 1/8	.60
752	7	Lignumvitæ	1 1/2 x 2 1/8	1 7/8	2 1/8	.60
851	8	Iron	1 1/2 x 2 1/4	2 1/4	2 1/4	.90
851P	8	Iron, highly polished	1 1/2 x 2 1/4	2 1/4	2 1/4	.90
852	8	Lignumvitæ	1 1/2 x 2 1/4	2 1/4	2 1/4	.90
951	9	Iron	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
951P	9	Iron, highly polished	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
952	9	Lignumvitæ	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00

Brass Plated Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Diam. of Plate, Inches	Height, Inches	Per Set of Four
351B	3	Iron, brass plated	1 1/2 x 5/8	1 1/2	1 5/8	\$.42
352B	3	Lignumvitæ	1 1/2 x 5/8	1 1/2	1 5/8	.42
377B	3	Feltoid	1 1/2 x 5/8	1 1/2	1 5/8	.88
451B	4	Iron, brass plated	1 3/4 x 5/8	1 1/2	1 3/4	.47
452B	4	Lignumvitæ	1 3/4 x 5/8	1 1/2	1 3/4	.47
457B	4	Leather	1 3/4 x 5/8	1 1/2	1 3/4	2.00
477B	4	Feltoid	1 3/4 x 5/8	1 1/2	1 3/4	1.10
651B	6	Iron, brass plated	1 3/4 x 2 1/8	1 7/8	2	.53
652B	6	Lignumvitæ	1 3/4 x 2 1/8	1 7/8	2	.53
677B	6	Feltoid	1 3/4 x 2 1/8	1 7/8	2	1.34
751B	7	Iron, brass plated	1 1/2 x 2 1/8	1 7/8	2 1/8	.60
752B	7	Lignumvitæ	1 1/2 x 2 1/8	1 7/8	2 1/8	.60
757B	7	Leather	1 1/2 x 2 1/8	1 7/8	2 1/8	2.60
777B	7	Feltoid	1 1/2 x 2 1/8	1 7/8	2 1/8	1.90
851B	8	Iron, brass plated	1 1/2 x 2 1/4	2 1/4	2 1/4	.90
852B	8	Lignumvitæ	1 1/2 x 2 1/4	2 1/4	2 1/4	.90
877B	8	Feltoid	1 5/8 x 1	2 1/4	2 1/4	2.40
951B	9	Iron, brass plated	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
952B	9	Lignumvitæ	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
977B	9	Feltoid	2 x 1 1/16	2 1/4	2 9/16	3.10

When nickel-plated finish is desired, suffix "N" instead of "B"

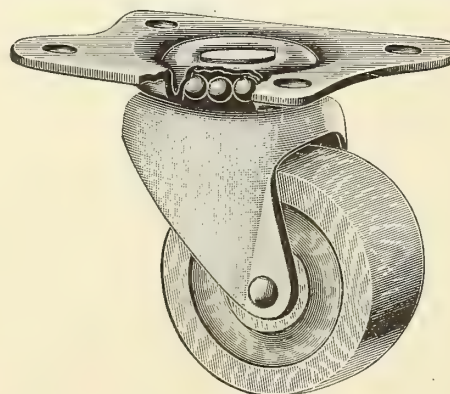
Oblong Steel Plate Ball-Bearing Casters

Full Size Cut

Packed 6 sets in a package. Also supplied in bulk.

Plain Steel Horn and Plate

Per Set of Four				
Size	3	5	7	8
Size of whl. ins. 1	x 5/8	1 1/4 x 3/4	1 1/2 x 7/8	1 5/8 x 1
Size of plate ins.	1 1/2 x 1 1/8	2 x 1 1/2	2 1/4 x 1 3/4	2 5/8 x 2
Height, ins.	1 1/2	1 3/4	2	2
Steel Wheel \$	.24	No. 196 .32	.45	.65
Lignumvitæ Wheel	.24	No. 197 .32	.45	.65



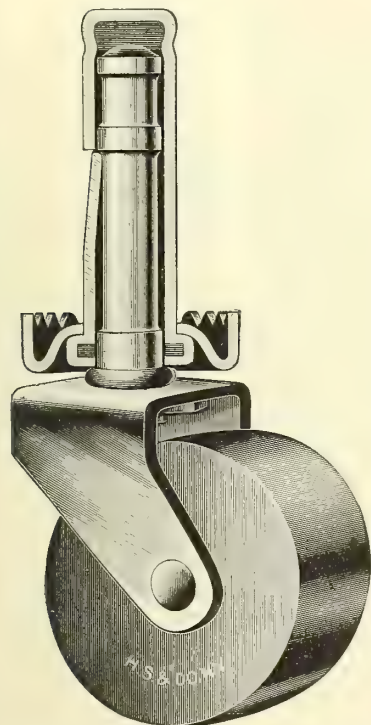
Brass Plated Steel Horn and Plate

Per Set of Four				
Size	3	5	7	8
Size of whl. ins. 1	x 5/8	1 1/4 x 3/4	1 1/2 x 7/8	1 5/8 x 1
Size of plate, ins.	1 1/2 x 1 1/8	2 x 1 1/2	2 1/4 x 1 3/4	2 5/8 x 2
Height, ins.	1 1/2	1 3/4	2	2
Lignumvitæ Wheel.. \$	.36	No. 198 .41	.50	.70
Iron Wheel, brass plated..	.44	No. 199 .47	.60	.80

Diamond Velvet Casters

Grip Neck

Full Size Cuts

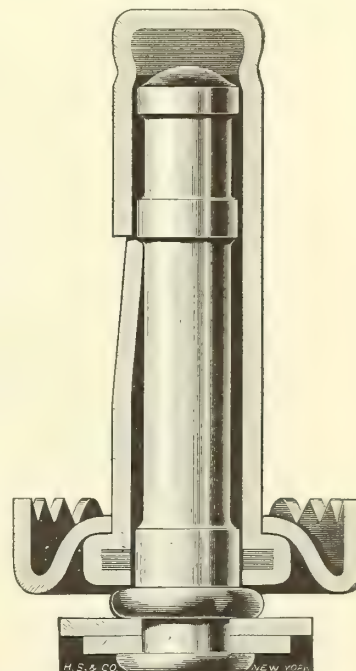


The Diamond Velvet Casters are furnished with a tempered steel socket, with a top and base bearing of vulcanized compressed cotton fibre, permitting the caster to swivel perfectly at all times, eliminating all noise, squeak and friction. The tongue of the socket, being made of tempered steel, springs firmly into place and it is impossible for the caster to drop out. The fibre ring at the bottom of the socket takes all the side strain and reduces friction. This ring also holds the stem rigid, placing the bearing where it belongs—exactly on the top.

The horn and axle are exceptionally strong and heavy. The compressed cotton fibre wheels are noiseless and durable.

Packed one set in a box, with sockets. Also supplied in bulk.

Order by number only.



Brass Plated Steel Horn, with Compressed Cotton Wheels

No.	Wheel		Socket			Per Set of Four
	Diameter, Inches	Face, Inches	Diameter, Inches	Depth of Hole, Inches	Diam. of Track Plate, Inches	
A	$\frac{7}{8}$	$\frac{9}{16}$	$\frac{5}{16}$	$1\frac{1}{4}$	$\frac{7}{8}$	\$.75
B	1	$\frac{9}{16}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{5}{8}$	.80
C	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{5}{8}$	.85
D	$1\frac{1}{4}$	$\frac{11}{16}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{5}{8}$	.90
E	$1\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{5}{8}$	.95
F	$1\frac{1}{2}$	$\frac{13}{16}$	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{5}{8}$	1.00
G	$1\frac{1}{2}$	$\frac{13}{16}$	$\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{5}{8}$	1.10

Nos. A to F are also furnished with $\frac{27}{32}$ in. Track Plate to order.

Plate Casters

Full Size Cut

Packed 6 sets in a box. Also supplied in bulk.

In ordering, state number and size of wheel.

Coppered Iron Horn and Plate

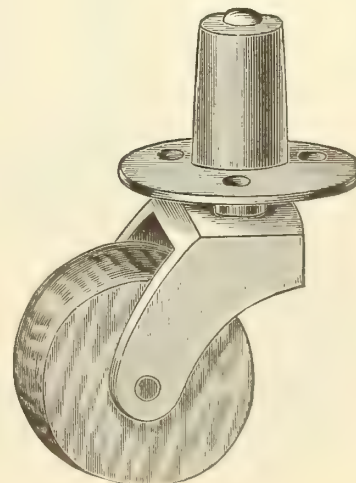
Per Set of Four

Size	1	2	3	4	5	6	7	8
Diameter of wheel, inches	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$
Kind of Wheel								
No. 150 Coppered Iron	\$.14	.16	.18	.20	.24	.29	.38	.42
No. 151 Lignumvitæ	.14	.16	.18	.22	.26	.33	.44	.48
No. 152 Brass	.25	.28	.33	.42	.48	.60	.80	1.35

Cast Brass Horn and Plate

Per Set of Four

Size	1	2	3	4	5	6	7	8
Diameter of wheel, inches	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$
Kind of Wheel								
No. 153 Lignumvitæ	\$.34	.42	.45	.55	.60	.75	1.00	1.25
No. 154 Brass	.45	.55	.60	.75	.90	1.10	1.50	1.75
No. 155 Hard Rubber	.62	.72	.85	1.00	1.12	1.35	1.90	2.25
No. 156 Leather	.80	.84	.90	1.00	1.20	1.40	1.90	2.50



Grip-Neck Casters

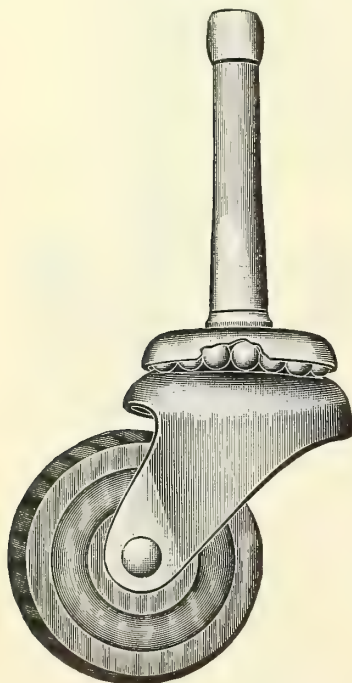
Full Size Cuts

Six sets of casters complete with sockets
packed in a box or in barrel bulk as follows:

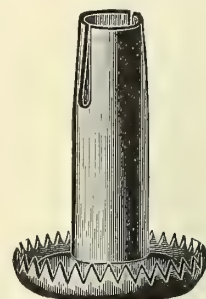
1,300 sets number 30
1,100 sets number 40
1,000 sets number 50
750 sets number 60
550 sets number 70

In ordering, state number and size of wheel.

Ball Bearing



Size 5



3/4-inch spring socket with 1-inch
toothed track plate. Fits all
Grip-Neck Casters.

Ball-Bearing Steel Horn

Per Set of Four

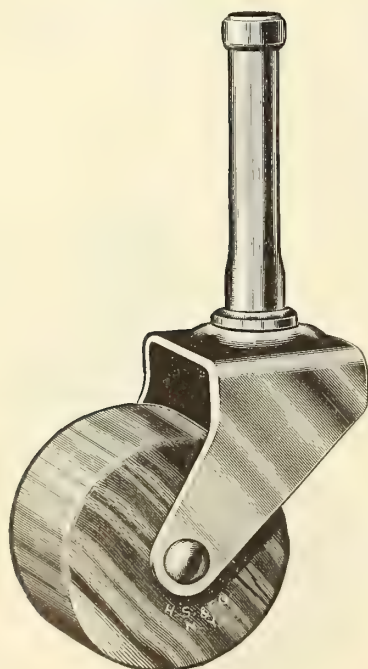
Size.....	2	3	4	5	6	7	8
Diameter of wheel, inches..	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{3}{4}$
Kind of Wheel							
No. 165 Steel.....	\$.21	.22	.24	.26	.29	.33	.40
No. 166 Lignumvitæ.....	.21	.22	.24	.26	.29	.33	.40

Ball-Bearing Brass Plated Steel Horn

Per Set of Four

Size.....	2	3	4	5	6	7	8
Diameter of wheel, inches..	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{3}{4}$
Kind of Wheel							
No. 167 Lignumvitæ.....	\$.34	.35	.37	.40	.43	.47	.52
No. 168 Steel, brass-plated	.39	.42	.43	.46	.52	.56	.62
No. 169 Brass.....	.58	.59	.71	.82	.95	1.24	1.45
No. 170 Leather.....	.62	.68	.78	.94	1.06	1.35	1.65

Plain Horn



Size 60

Plain Steel Horn

Per Set of Four

Size.....	20	30	40	50	60	70	80
Diameter of wheel, inches..	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$
Kind of Wheel							
No. 175 Maple.....	\$.10	.11	.12	.13	.14	.17	.17
No. 176 Iron.....	.12	.13	.15	.18	.21	.25	.25
No. 177 Lignumvitæ.....	.12	.13	.15	.18	.21	.25	.25

Bell Form Steel Horn

Per Set of Four

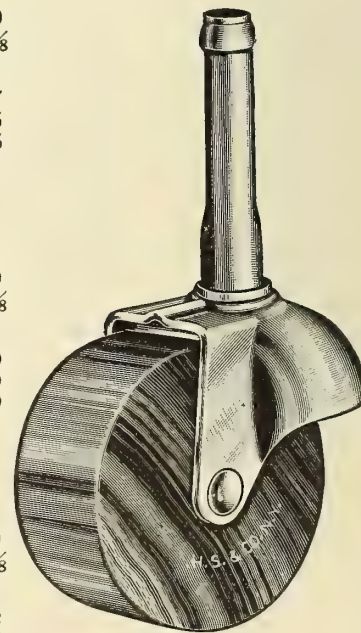
Size.....	20	30	40	50	60	70	80
Diameter of wheel, inches..	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$
Kind of Wheel							
No. 179 Maple.....	\$.12	.13	.14	.15	.17	.20	.20
No. 180 Iron.....	.14	.15	.17	.20	.23	.29	.29
No. 181 Lignumvitæ.....	.14	.15	.17	.20	.23	.29	.29

Bell Form, Brass Plated Steel Horn

Per Set of Four

Size.....	20	30	40	50	60	70	80
Diameter of wheel, inches..	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$
Kind of Wheel							
No. 185 Lignumvitæ.....	\$.33	.34	.36	.39	.43	.48	.52
No. 186 Iron, brass-plated	.38	.41	.42	.45	.48	.57	.57
No. 187 Steel, brass-plated	.38	.41	.42	.45	.48	.57	.57

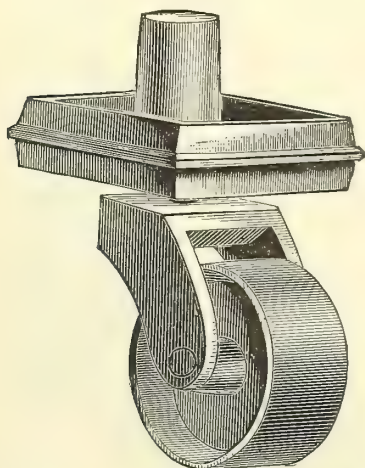
Bell Horn



Size 70

Socket Casters

Full Size Cuts

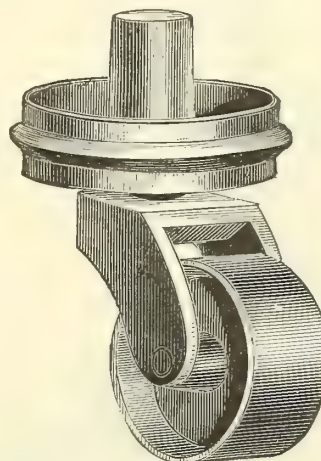


Square Shallow Socket

Cast Brass Horn and Socket

Per Set of Four

Size.....	1	2	3	4	5	6
Inside diameter of socket, inches.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of wheel, inches.....	$\frac{13}{16}$	$\frac{15}{16}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Kind of Wheel						
No. 206 Brass.....	\$.65	.75	.88	1.05	1.25	1.45
No. 207 Hard Rubber...	.80	.90	1.05	1.25	1.45	1.75
No. 208 Leather.....	.95	1.00	1.10	1.20	1.60	2.10

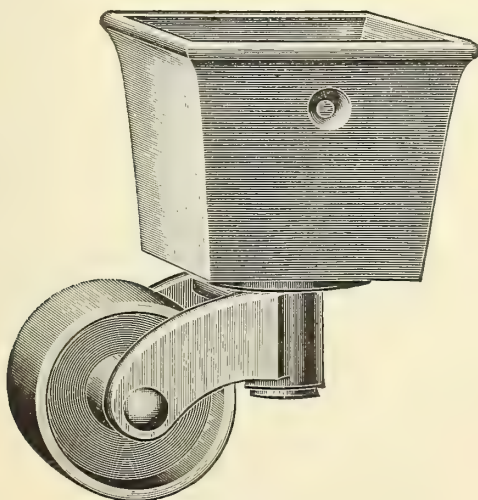


Round Shallow Socket

Cast Brass Horn and Socket

Per Set of Four

Size.....	1	2	3	4	5	6
Inside diameter of socket, inches.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of wheel, inches.....	$\frac{13}{16}$	$\frac{15}{16}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Kind of Wheel						
No. 215 Brass.....	\$.48	.58	.72	.87	1.00	1.20
No. 216 Hard Rubber...	.69	.82	1.00	1.15	1.30	1.45
No. 217 Leather.....	.90	.96	1.06	1.16	1.50	2.00

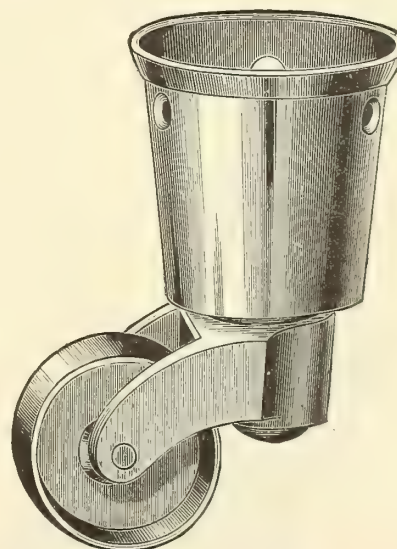


Square Deep Socket

Cast Brass Horn and Socket

Per Set of Four

Size.....	1	2	3	4	5	6	7	8
Inside diameter of socket, inches.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Diameter of wheel, inches.....	$\frac{13}{16}$	1	$1\frac{1}{8}$	$1\frac{1}{16}$	$1\frac{5}{16}$	$1\frac{7}{16}$	$1\frac{11}{16}$	$1\frac{11}{16}$
Kind of Wheel								
No. 220 Brass.....	\$1.20	.55	1.70	2.15	2.75	3.55	4.80	5.60
No. 221 Leather....	1.50	1.70	2.00	2.25	3.00	3.75	5.00	



Round Deep Socket

Cast Brass Horn and Socket

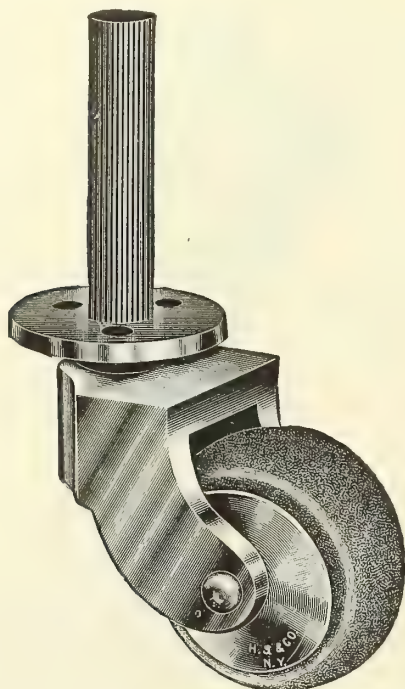
Per Set of Four

Size.....	1	2	3	4	5	6	7	8
Inside diameter of socket, inches.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Diameter of wheels, inches.....	$\frac{13}{16}$	1	$1\frac{1}{8}$	$1\frac{1}{16}$	$1\frac{5}{16}$	$1\frac{7}{16}$	$1\frac{11}{16}$	$1\frac{11}{16}$
Kind of Wheel								
No. 222 Brass.....	\$.72	.80	.95	1.12	1.30	1.65	2.70	3.80
No. 223 Leather....	1.40	1.65	1.95	2.20	2.90	3.65	4.85	5.50

For Casters of this type with Feltoid Wheels, see page 830

Casters with Feltoid Wheels

Full Size Cuts

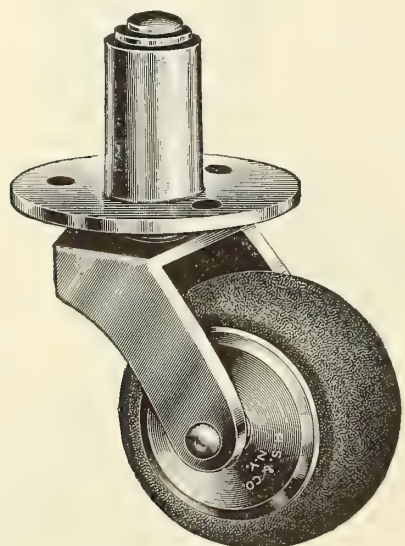


English Plate

No. 230

Cast Brass Horn and Plate

Size.....	0	1	2	3	4
Diameter of wheel, inches.....	1	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{5}{16}$	1 $\frac{1}{2}$
Per set of four	\$1.50	1.60	1.72	1.92	2.60

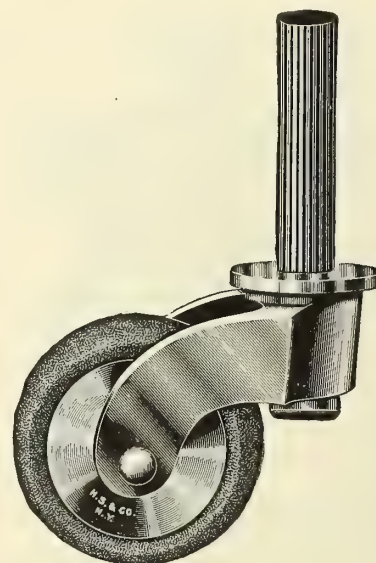


Common Plate

No. 233

Cast Brass Horn and Plate

Size.....	1	2	3	4	5	6	7	8
Diameter of wheel, inches.....	1 $\frac{1}{16}$	1	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{5}{16}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{11}{16}$
Per set of four	\$1.00	1.10	1.22	1.40	1.68	2.00	2.60	4.00



Philadelphia Stem

No. 231

Cast Brass Horn

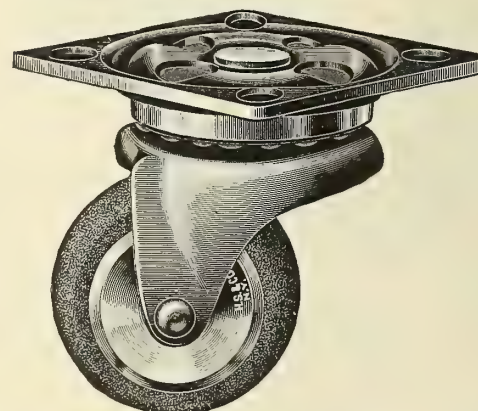
Size.....	1	2	3	4	5	6	7
Diameter of wheel, inches..	1 $\frac{1}{16}$	1	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{5}{16}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$
Per Set of four	\$.92	.98	1.10	1.30	1.50	1.80	2.40

"Steel Gem" Roller-Bearing—Brass-plated Steel Horn

See page 822 for illustration.

Size.....	379B	479B	679B	779B
Diameter of wheel, inches....	1 $\frac{1}{32}$	1 $\frac{3}{16}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$
Per set of four	\$.88	1.10	1.34	1.90

When nickel-plated finish is desired, suffix "N" instead of "B"



"Steel Gem" Square Plate, Roller-Bearing

Brass-plated Steel Horn and Plate

Size.....	377B	477B	677B	777B	877B	977B
Diameter of wheel, inches.	1 $\frac{1}{32}$	1 $\frac{3}{16}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	2
Diameter of plate, inches.	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{7}{8}$	1 $\frac{7}{8}$	2 $\frac{1}{4}$	2 $\frac{1}{4}$
Per set of four	\$.88	1.10	1.34	1.90	2.40	3.10

When nickel-plated finish is desired, suffix "N" instead of "B"

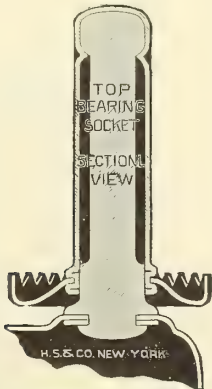
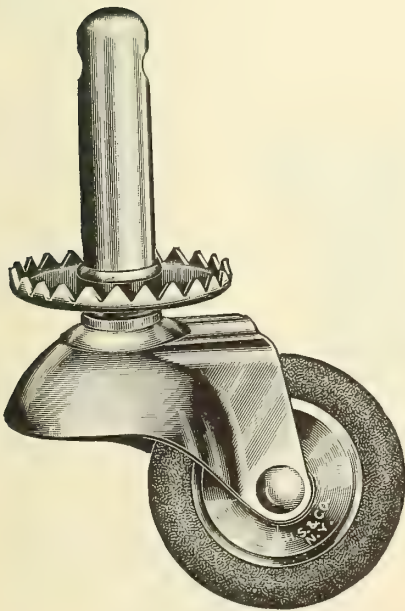
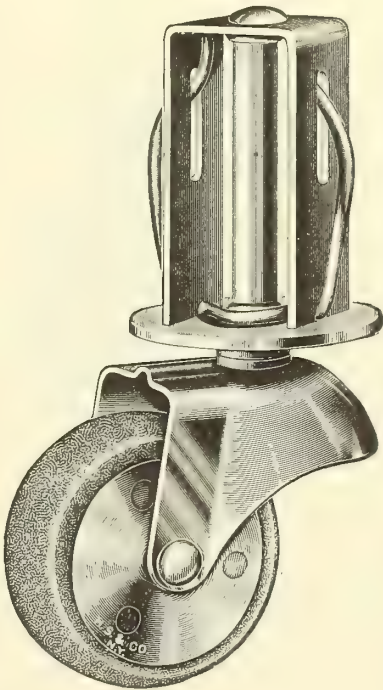
Casters with Feltoid Wheels

Full Size Cuts

Metal Bed
Brass-plated Steel Horn
Per Set of Four

Size	Diameter of Wheel Inches	Outside Diameter of Post Inches	No 245* Square Post	No 246 Round Post
50	1 ⁵ / ₁₆	¾ and 7/8	\$1.50	\$1.66
60	1 ³ / ₈	1 and 1 ¹ / ₁₆	1.76	1.60
70	1½	1, 1¼ and 1 ⁵ / ₁₆	2.20	2.00
80	1 ⁵ / ₈	1½ and 2	2.70	2.50
90	2	1½ and 2	3.30	3.10

*Square Post No. 245 Casters furnished to order only.
Nos. 60 and 70 packed 6 sets in a box.
Nos. 80 and 90 packed 3 sets in a box.



Sectional view showing Top Bearing Socket fitting all Grip Neck Casters

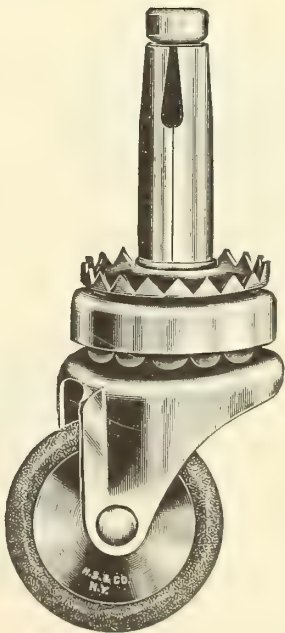
“Bell Form” Grip-Neck

With Top Bearing Socket
No. 250

Brass-plated Steel Horn

Size.....	20	30	40	50	60	70
Diameter of wheel, inches .	1 ³ / ₁₆	1 ¹ / ₁₆	1 ³ / ₁₆	1 ⁵ / ₁₆	1 ³ / ₈	1½
Per set of four.....	\$.70	.80	.96	1.16	1.20	1.62

Can also be furnished with Spring Socket as shown on cut of No. 478B (to the right).



“Steel Gem” Roller-Bearing Grip-Neck

With ¾-inch Spring Socket

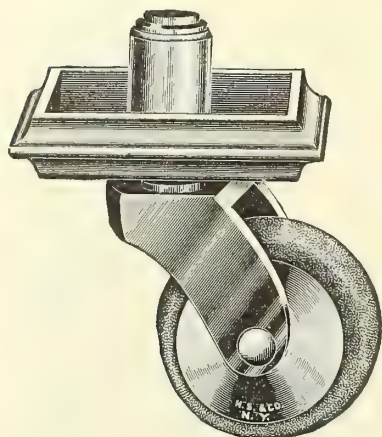
Brass-plated Steel Horn

Number.....	378B	478B	678B	778B	878B	978B
Diameter of wheel, inches .	1 ¹ / ₃₂	1 ³ / ₁₆	1 ³ / ₈	1½	1 ⁵ / ₈	2
Per set of four.....	\$.88	1.10	1.34	1.90	2.40	3.10

When nickel-plated finish is desired suffix “N” instead of “B”

Socket Casters with Feltoid Wheels

Full Size Cuts



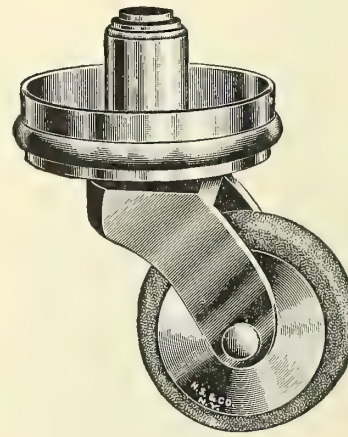
Size 5

Square Shallow Socket

No. 260

Cast Brass Horn and Socket

Size.....	1	2	3	4	5	6	7
Inside diameter at top of socket, inches.....	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of wheel, inches..	$\frac{13}{16}$	$\frac{13}{16}$	1	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{9}{16}$	$1\frac{5}{8}$
Per set of four	\$.95	.95	1.00	1.10	1.20	1.60	2.10



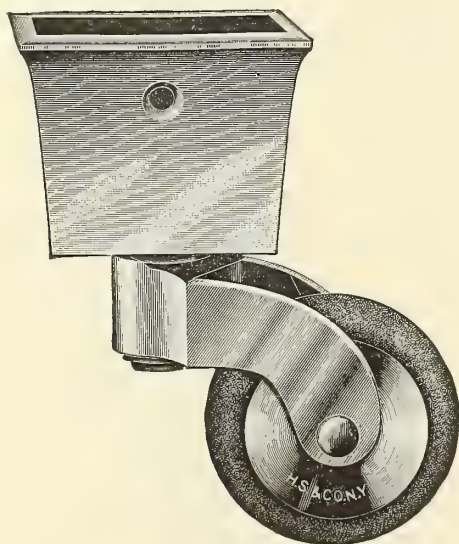
Size 5

Round Shallow Socket

No. 261

Cast Brass Horn and Socket

Size.....	1	2	3	4	5	6	7
Inside diameter at top of socket, inches.....	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of wheel, inches..	$\frac{13}{16}$	$\frac{13}{16}$	1	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{9}{16}$	$1\frac{5}{8}$
Per set of four	\$.90	.90	.96	1.06	1.16	1.50	2.00



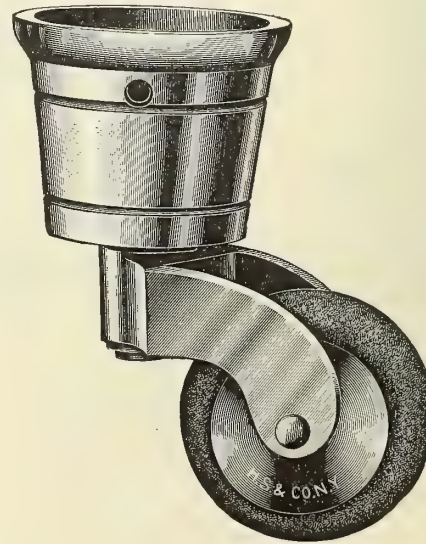
Size 5

Square Deep Socket

No. 262

Cast Brass Horn and Socket

Size.....	1	2	3	4	5	6	7
Inside diameter at top of socket, inches.....	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of wheel, inches..	$\frac{13}{16}$	$\frac{13}{16}$	1	1	1	$1\frac{3}{16}$	$1\frac{5}{16}$
Per set of four	\$1.50	1.50	1.70	2.00	2.25	3.00	3.75



Size 5

Round Deep Socket

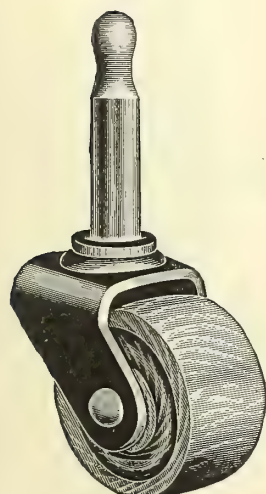
No. 263

Cast Brass Horn and Socket

Size.....	1	2	3	4	5	6	7
Inside diameter at top of socket, inches.....	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of wheel, inches..	$\frac{13}{16}$	$\frac{13}{16}$	1	1	1	$1\frac{3}{16}$	$1\frac{5}{16}$
Per set of four	\$1.40	1.40	1.65	1.95	2.20	2.90	3.65

Faultless Casters

Full Size Cuts



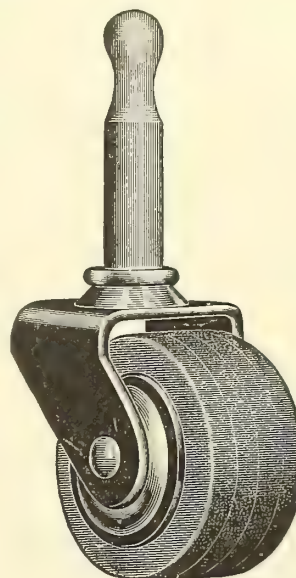
A-2-3



Socket No. 1,
1 1/8 in. Diam.

In Ordering, give style number and number of wheel, which includes style, size and kind of wheel.

Packed 6 sets in a box including Sockets.



B-10-5



Socket No. 5,
3/8 in. Diam.

Daisy

Steel Horn, with Socket No. 1

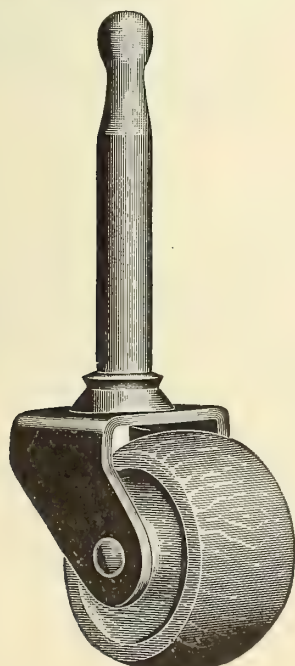
Per Set of Four

Number	2	3
Diameter of wheel, inches	1	1 1/8
Style Kind of Wheel		
No. A 2 Lignumvitæ	\$.22	.23
No. A 5 Steel or iron	.26	.27

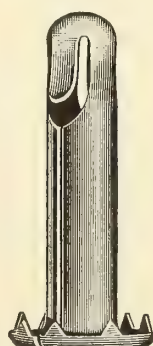
Brass-Plated Steel Horn, with Socket No. 1

Per Set of Four

Number	2	3
Diameter of wheel, inches	1	1 1/8
Style Kind of Wheel		
No. A 4 Lignumvitæ	\$.30	.32
No. A 7 Steel or iron, brass-plated	.38	.40
No. A10 Leather		1.15



C-2-5



Socket No. 10,
3/8 in. Diam.

Short Stem

Steel Horn, with Socket No. 5

Per Set of Four

Number	2	3	4	5	6
Diameter of wheel, inches	1	1 1/8	1 1/8	1 1/4	1 3/8
Style Kind of Wheel					
No. B 2 Lignumvitæ	\$.23	.24	.26	.28	.32
No. B 5 Steel or iron	.30	.31	.34	.36	.42

Brass-Plated Steel Horn, with Socket No. 5

Per Set of Four

Number	2	3	4	5	6
Diameter of wheel, inches	1	1 1/8	1 1/8	1 1/4	1 3/8
Style Kind of Wheel					
No. B 4 Lignumvitæ	\$.31	.33	.36	.38	.42
No. B 7 Steel or iron, brass-plated	.45	.46	.50	.54	.60
No. B10 Leather		1.15		1.45	1.65
No. B12 Glass (insulator)					1.25

Long Stem

Steel Horn, with Socket No. 10

Per Set of Four

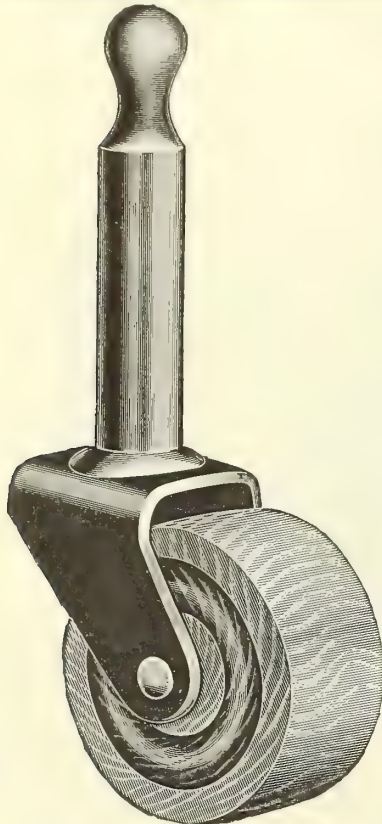
Number	3	4	5	6	7	8	9
Diameter of wheel, inches	1 1/8	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4
Style Kind of Wheel							
No. C 2 Lignumvitæ	\$.24	.26	.28	.32	.36	.38	.43
No. C 5 Steel or iron	.28	.30	.32	.36		.42	.48

Brass-Plated Steel Horn, with Socket No. 10

Per Set of Four

Number	3	4	5	6	7	8	9
Diameter of wheel, inches	1 1/8	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4
Style Kind of Wheel							
No. C 4 Lignumvitæ	\$.33	.36	.38	.42	.45	.48	.55
No. C 7 Steel or iron, brass-plated	.41	.44	.46	.50		.60	
No. C10 Leather		1.15		1.45	1.65		1.85
No. C12 Glass (insulator)					1.25	1.50	1.65

Medium socket for hospital stands, etc., shown on page 833 can be used with Long Stem Casters. Furnished only upon request.



D-2-8

Faultless Casters

Full Size Cuts

Packed 4 sets in a box, including Sockets

In ordering, give style number and number of wheel, which includes style, size and kind of wheel.

Wooden Bed

Plain Steel Horn, with Socket No. 20

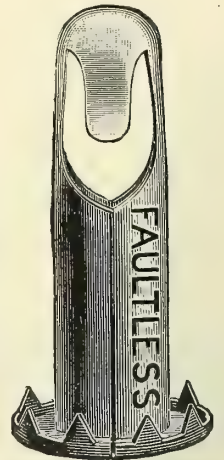
Per Set of Four

Number	5	6	7	8	9	10	11
Diameter of wheel, inches	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	2	2 1/2
Style							
No.	Kind of Wheel						
D 2	Lignumvitæ	.44	.50	.54	.56	.60	1.00
D 5	Steel or iron	.45	.54	...	.60	.65	1.10

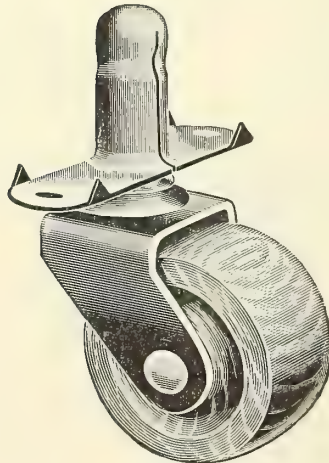
Brass-Plated Steel Horn with Socket No. 20

Per Set of Four

Number	5	6	7	8	9	10	11
Diameter of wheel, inches	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	2	2 1/2
Style							
No.	Kind of Wheel						
D 4	Lignumvitæ	.54	.60	.64	.66	.70	1.15
D 7	Steel or iron, brass-plated	.65	.68	...	.78	.85	1.30
D10	Leather	1.70	1.90	...	2.10	...	3.00
D12	Glass (insulator)	...	...	...	2.10	2.75	4.00
D15	Brass covered	...	...	...	1.25	...	1.60

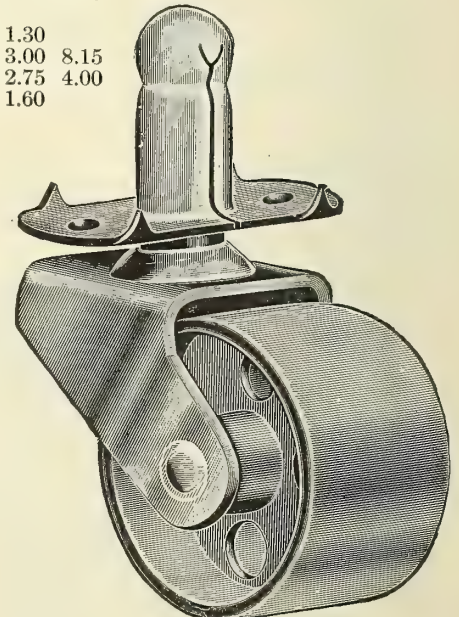


Wooden Bed Socket
No. 20,
2/8 in. Diameter.



S-2-5

Combination Plate Casters



T-7-8

Steel Horn, Oblong Plate 1/2 x 1 1/2 inches

With 3/8-inch Diameter Steel Socket

Per Set of Four

Number	3	4	5
Diameter of wheel, inches	1 1/16	1 1/8	1 1/4
Style			
No.	Kind of Wheel		
S 2	Lignumvitæ	.26	.28
S 5	Steel or iron	.30	.32

Brass-Plated Steel Horn, Oblong Plate 1/2 x 1 1/2 inches

With 3/8-inch Diameter Steel Socket

Per Set of Four

Number	3	4	5
Diameter of wheel, inches	1 1/16	1 1/8	1 1/4
Style			
No.	Kind of Wheel		
S 4	Lignumvitæ	.35	.38
S 7	Steel or iron, brass-plated	.43	.46
S10	Leather	1.15	1.45

Steel Horn, Oblong Plate 3/4 x 1 7/8 inches

With 1/2-inch Diameter Steel Socket

Per Set of Four

Number	6	7	8	9
Diameter of wheel, inches	1 3/8	1 1/2	1 5/8	1 3/4
Style				
No.	Kind of Wheel			
T 2	Lignumvitæ	.50	.54	.56
T 5	Iron	.54	...	.60

Brass-Plated Steel Horn, Oblong Plate 3/4 x 1 7/8 inches

With 1/2-inch Diameter Steel Socket

Per Set of Four

Number	6	7	8	9
Diameter of wheel inches	1 3/8	1 1/2	1 5/8	1 3/4
Style				
No.	Kind of Wheel			
T 4	Lignumvitæ	.60	.64	.66
T 7	Steel or iron, brass-plated	.68	...	.78
T10	Leather	1.90	...	2.10

Faultless Casters

Full Size Cuts

Packed 6 sets in a box, including Sockets

Steel Horn, with Socket No. 1

Per Set of Four

Number.....	3	4	5	6	7	8	
Diameter of wheel, inches.....	1 $\frac{1}{16}$	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	
Style							
No.	Kind of Wheel						
E 2	Lignumvitæ.....	\$.33	.37	.40	.47	.52	.54
E 5	Steel or iron.....	.37	.41	.46	.5158

Brass-Plated Steel Horn, with Socket No. 1

Per Set of Four

Number.....	3	4	5	6	7	8
Diameter of wheel, inches.....	1 $\frac{1}{16}$	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$
Style						
No.	Kind of Wheel					
E 4	Lignumvitæ.....	\$.40	.46	.50	.57	.64
E 7	Steel or iron, brass-plated..	.48	.54	.58	.65	.76
E10	Leather.....	1.30	...	1.60	1.80	2.00
E12	Glass (insulator).....	...	...	...	1.40	1.70

In ordering, give style number and number of wheel, which includes style, size and kind of wheel. Also state whether for ³/₄ or ⁷/₈ inch outside diameter tubing. Furnished regularly with No. 1 Socket. Medium Socket furnished at same prices when specially ordered.

Packed 4 sets in a box, including Sockets.

Steel Horn with Socket No. 2*

Per Set of Four

Number.....	5	6	7	8	9	10	11
Diameter wheel, inches....	1¼	1⅜	1½	1⅝	1¾	2	2½
Style							
No.	Kind of Wheel						
F 2	Lignumvitæ.....	\$.45	.51	.56	.58	.62	1.15 1.30
F 5	Steel or iron.....	.49	.55	...	.62	.67	

Brass-Plated Steel Horn, with Socket No. 2*

Per Set of Four

Number.....	5	6	7	8	9	10	11	
Diameter wheel, inches....	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	2	2 $\frac{1}{2}$	
Style								
No.	Kind of Wheel							
F 4	Lignumvitæ.....	\$.55	.61	.66	.68	.72	1.20	1.50
F 7	Steel or iron, brass- plated.....	.63	.69	...	.80	.87	1.35	...
F10	Leather.....	1.85	2.05	...	2.25	...	3.15	8.25
F12	Glass (insulator).....	...	...	...	...	2.25	2.90	4.10
F15	Brass covered.....	...	...	...	1.30	...	1.65	...

Steel Horn, with Socket No. 3*

Per Set of Four

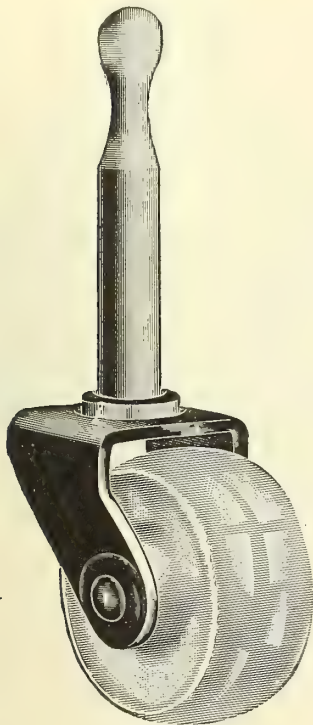
Number.....	7	8	9	10	11	
Diameter wheel, inches.....	1½	1⅝	1¾	2	2½	
Style						
No.	Kind of Wheel					
G 2	Lignumvitæ.....	\$.60	.62	.64	1.10	1.35
G 5	Steel or iron.....		.66	.69	1.20	

Brass-Plated Steel Horn, with Socket No. 3*

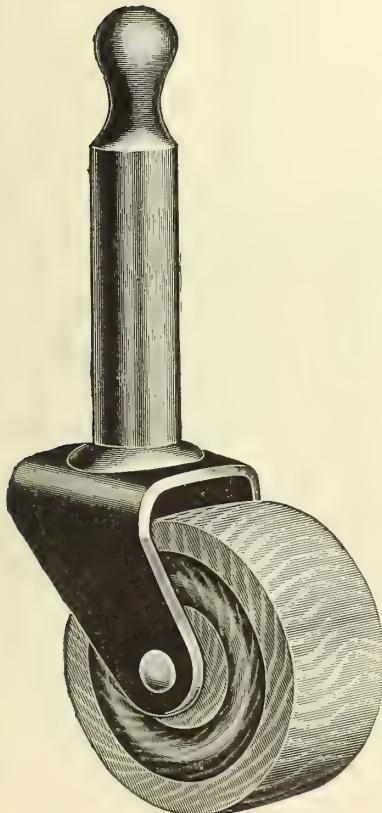
Per Set of Four

Number.....	7	8	9	10	11	
Diameter wheel, inches.....	1½	1⅝	1¾	2	2½	
Style						
No.	Kind of Wheel					
G 4	Lignumvitæ.....	\$.70	.72	.76	1.25	1.55
G 7	Steel or iron, brass-plated..		.84	.91	1.40	
G10	Leather.....		2.40		3.30	8.40
G12	Glass (insulator).....			2.40	3.30	4.25
G15	Brass covered.....		1.35		1.70	

* In ordering Socket No. 2, state whether for 1-inch or 1¹/₁₆-inch outside diameter tubing. In ordering Socket No. 3, state whether for 1¹/₄-inch or 1⁵/₈-inch outside diameter tubing.



E-12-6



F-2-8



Socket No. 1



Medium Socket for Hospital Stands, etc.



Socket No. 2



Socket No. 3

Faultless Casters

Full Size Cuts

Packed 2 sets in a box including Sockets
In ordering, give style number and number of wheel, which includes style, size and kind of wheel.

Steel Horn, with Socket No. 4

Per Set of Four

Number	8	9	10	11
Diameter of wheel, inches	1 $\frac{5}{8}$	1 $\frac{3}{4}$	2	2 $\frac{1}{2}$
Style				
No.	Kind of Wheel			
H 2	Lignumvitæ	\$.74	.78	1.20 1.45

Brass-Plated Steel Horn, with Socket No. 4

Per Set of Four

Number	8	9	10	11
Diameter of wheel, inches	1 $\frac{5}{8}$	1 $\frac{3}{4}$	2	2 $\frac{1}{2}$
Style				
No.	Kind of Wheel			
H 4	Lignumvitæ	\$.84	.88	1.30 1.65
H 7	Steel or iron, brass-plated	1.10	1.15	
H10	Leather	2.55	3.50	8.65
H12	Glass (insulator)		3.50	4.50
H15	Brass covered	1.35	1.75	

Steel Horn, with Socket No. 5

Per Set of Four

Number	9	10	11
Diameter of wheel, inches	1 $\frac{3}{4}$	2	2 $\frac{1}{2}$
Style			
No.	Kind of Wheel		
J2	Lignumvitæ	\$.90	1.30 1.65

Brass-Plated Steel Horn, with Socket No. 5

Per Set of Four

Number	9	10	11
Diameter of wheel, inches	1 $\frac{3}{4}$	2	2 $\frac{1}{2}$
Style			
No.	Kind of Wheel		
J 4	Lignumvitæ	\$1.00	1.40 1.85
J 7	Steel or iron, brass-plated	1.30	
J10	Leather	3.65	8.80
J12	Glass (insulator)	3.95	5.00
J15	Brass covered	1.80	

Hospital Furniture Caster

Full Size Cuts

An ideal caster for use on all kinds of metal and wood furniture. The steel stem fits Steel Sockets Nos. 20, 2, 3, 4, and 5 (shown above and on preceding pages) with equal firmness and can be applied to all furniture with tubing measuring from 1 to 2 inches outside diameter.

The soft rubber tired wheel moves at will in any direction upon a roller bearing axle, and, in conjunction with Steel Sockets, reduces labor in moving heavy furniture such as metal beds, operating tables, cabinets, etc., to a minimum.

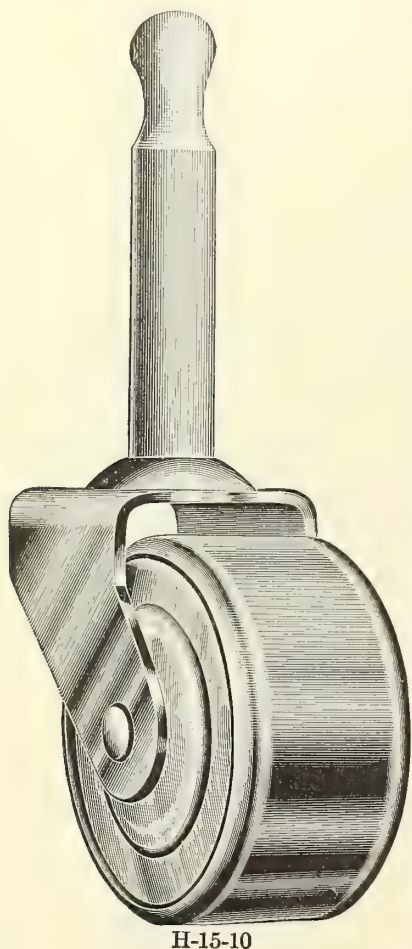
Horn and stem are nickel-plated.

Rubber tires can be replaced by removing axle.

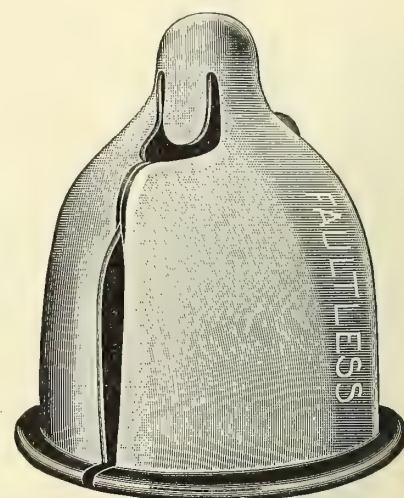
Sockets Nos. 2, 3, 4 and 5 are recommended for all metal furniture; No. 20 for wood furniture.

Per Set of Four

No. 495	Casters only, without sockets	\$3.75
No. 496	For Wood Beds with No. 20 Socket	3.90
For Metal Beds and Furniture		
No. 497	With No. 2 Socket, 1 and 1 $\frac{1}{16}$ -inch O. D. Tubing	4.00
No. 498	With No. 3 Socket, 1 $\frac{1}{4}$ and 1 $\frac{1}{8}$ -inch O. D. Tubing	4.10
No. 499	With No. 4 Socket, 1 $\frac{1}{2}$ -inch O. D. Tubing	4.10
No. 500	With No. 5 Socket, 2-inch O. D. Tubing	4.20



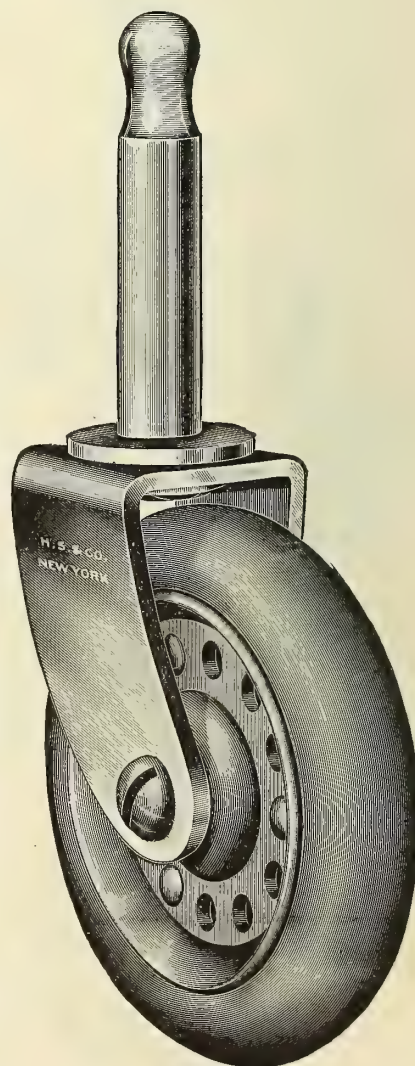
H-15-10



No. 5 Iron and Brass Bed Socket. Fitting 2-inch O. D. Tubing. In ordering state whether for iron or brass bed.



No. 4 Iron and Brass Bed Socket
Fitting 1 $\frac{1}{2}$ -inch O. D. Tubing.

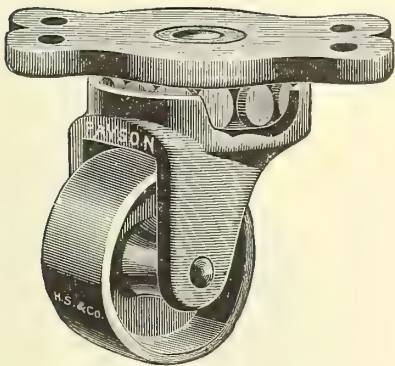


No. 495

Payson's Patent Casters

Full Size Cuts

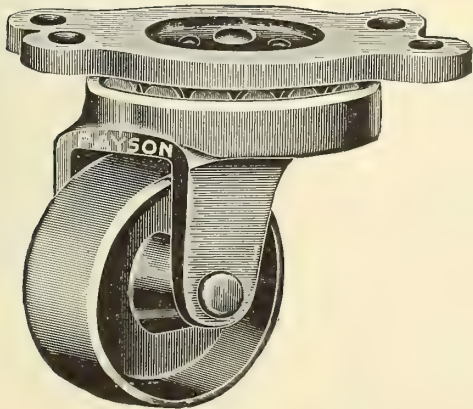
Order by Number Only



Iron Horn, Oblong Plate, 1 3⁄8 x 2 inches

Roller Bearing, Capacity 250 lbs.

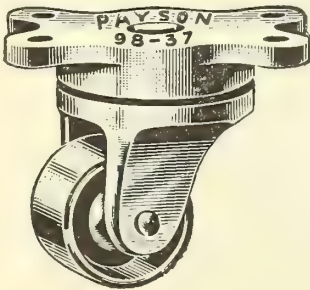
No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
182-37	Iron	1 1⁄8	1 3⁄4	\$.60
182-38	Lignumvitæ	1 1⁄8	1 3⁄4	.65
182-39	Brass	1 1⁄8	1 3⁄4	1.80



Iron Horn, Oblong Plate, 1 5⁄8 x 2 3⁄8 inches

Roller Bearing, Capacity 350 lbs.

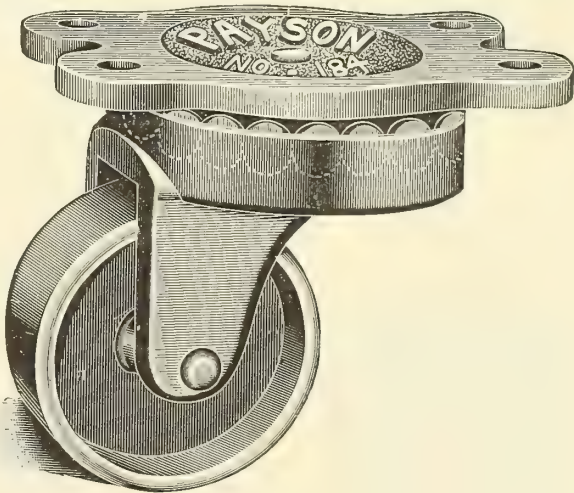
No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
183-37	Iron	1 3⁄8	2	\$.75
183-38	Lignumvitæ	1 3⁄8	2	.80
183-39	Brass	1 3⁄8	2	2.75



Iron Horn, Oblong Plate 1 1⁄8 x 1 5⁄8 inches

Ball Bearing, Capacity 50 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
98-37	Iron	3⁄4	1 3⁄8	\$.80
98-38	Lignumvitæ	3⁄4	1 3⁄8	.85
98-39	Brass	3⁄4	1 3⁄8	2.25



Iron Horn, Oblong Plate, 1 7⁄8 x 2 3⁄4 inches

Roller Bearing, Capacity 450 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
184-37	Iron	1 5⁄8	2 3⁄8	\$.95
184-38	Lignumvitæ	1 5⁄8	2 3⁄8	1.00
184-39	Brass	1 5⁄8	2 3⁄8	3.40

Iron Horn, Oblong Plate, 2 1⁄8 x 3 1⁄8 inches

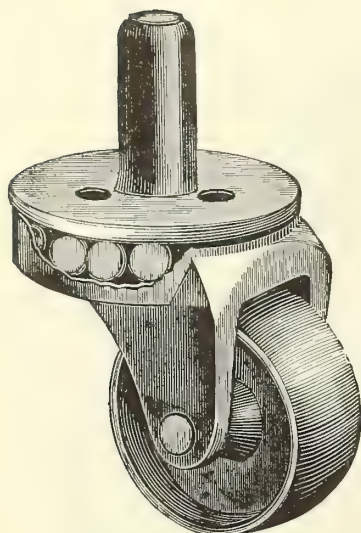
Roller Bearing, Capacity 600 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
186-37	Iron	2 1⁄8	2 3⁄4	\$1.25
186-38	Lignumvitæ	2 1⁄8	2 3⁄4	1.35
186-39	Brass	2 1⁄8	2 3⁄4	5.00

Payson's Patent Casters

Full Size Cuts

Order by Number Only

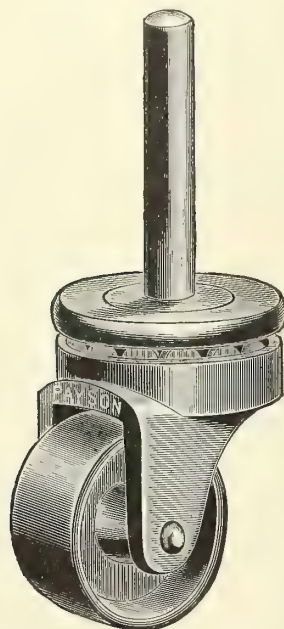


Common Stem

Iron Horn and Plate. Stem $\frac{7}{16} \times 1\frac{1}{8}$ in.

Roller-Bearing, Capacity 350 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
183-33	Iron.....	1 $\frac{3}{8}$	2	\$.75
183-34	Lignumvitæ.	1 $\frac{3}{8}$	2	.80

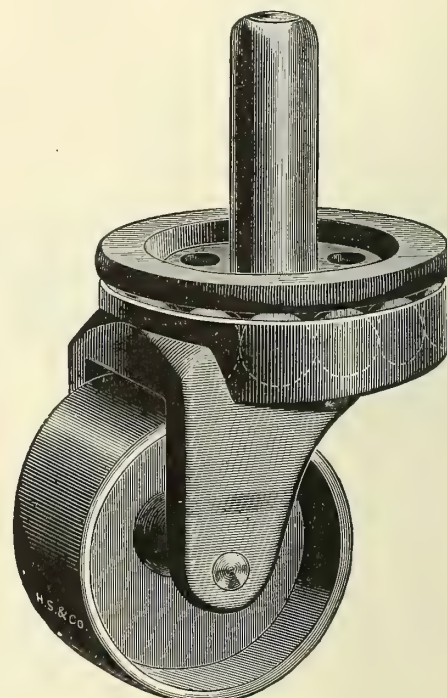


Philadelphia Stem

Iron Horn and Plate. Stem $\frac{9}{32} \times 1\frac{1}{2}$ in.

Roller-Bearing, Capacity 250 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
182-45	Iron.....	1 $\frac{1}{8}$	1 $\frac{3}{4}$	\$.60
182-46	Lignumvitæ.	1 $\frac{1}{8}$	1 $\frac{3}{4}$	.65
182-47	Brass.....	1 $\frac{1}{8}$	1 $\frac{3}{4}$	1.80



Bed Stem

Iron Horn and Plate. Stem $\frac{1}{2} \times 1\frac{1}{8}$ in.

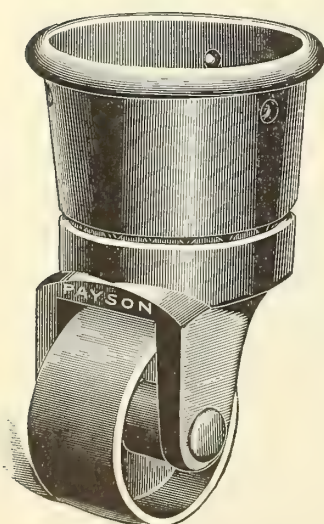
Roller-Bearing, Capacity 450 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
184-29	Iron.....	1 $\frac{3}{8}$	2 $\frac{3}{8}$	\$.95
184-30	Lignumvitæ.	1 $\frac{3}{8}$	2 $\frac{3}{8}$	1.00

Iron Horn and Plate. Stem $\frac{1}{2} \times 1\frac{1}{2}$ in.

Roller-Bearing, Capacity 600 lbs.

186-29	Iron.....	2 $\frac{1}{8}$	2 $\frac{3}{4}$	\$1.25
186-30	Lignumvitæ.	2 $\frac{1}{8}$	2 $\frac{3}{4}$	1.35



Polished Bronze Horn and Plate

Stem $\frac{1}{4} \times 1\frac{1}{8}$ in.

Roller-Bearing, Capacity 150 lbs.

181-045 Brass..... 1 1 $\frac{1}{2}$ \$2.75

Polished Bronze Horn and Plate

Stem $\frac{9}{32} \times 1\frac{1}{2}$ in.

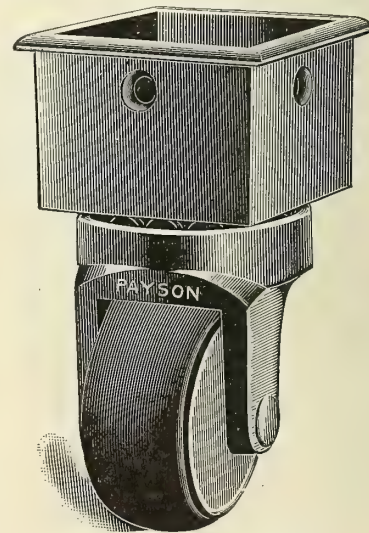
Roller-Bearing, Capacity 250 lbs.

182-045 Brass..... 1 $\frac{1}{8}$ 1 $\frac{3}{4}$ \$3.40

Polished Bronze Horn and Socket, Square

Roller-Bearing, Capacity 250 lbs.

No.	Kind of Wheel	Outside Diameter of Socket	Depth of Socket	Diameter of Wheel	Per Set of 4
182-049	Bronze.....	1 $\frac{5}{16}$ in.	$\frac{27}{32}$ in.	1 $\frac{1}{8}$ in.	\$4.30
182-049I	Leather.....	1 $\frac{5}{16}$ in.	$\frac{27}{32}$ in.	1 $\frac{1}{8}$ in.	7.50



Polished Bronze Horn and Socket, Square

Roller Bearing, Capacity 350 lbs.

No.	Kind of Wheel	Outside Diameter of Socket	Depth of Socket	Diameter of Wheel	Per Set of 4
183-049	Bronze.....	1 $\frac{15}{16}$ in.	1 $\frac{7}{32}$ in.	1 $\frac{3}{8}$ in.	\$ 7.60
183-049I	Leather.....	1 $\frac{15}{16}$ in.	1 $\frac{7}{32}$ in.	1 $\frac{3}{8}$ in.	10.60

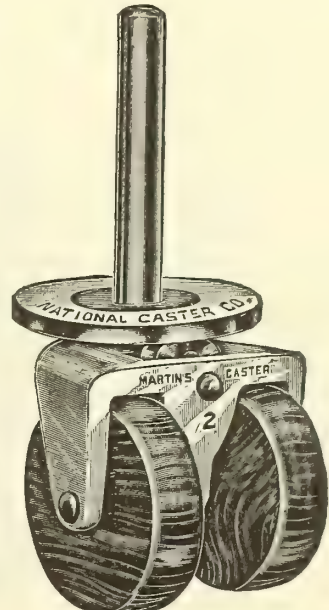
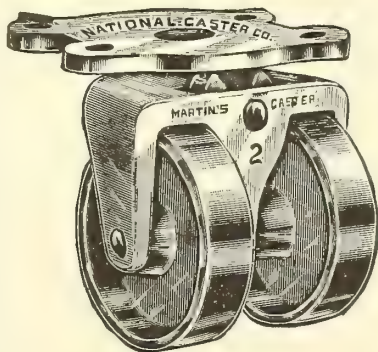
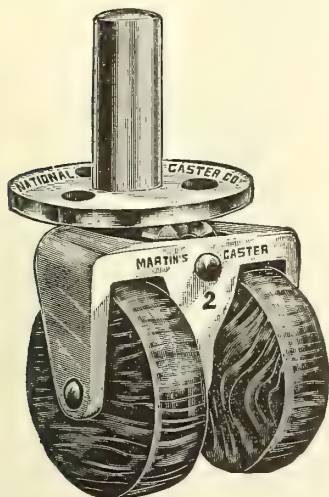
Polished Bronze Horn and Socket, Round

Roller-Bearing, Capacity 250 lbs.

No.	Kind of Wheel	Outside Diameter of Socket	Depth of Socket	Diameter of Wheel	Per Set of 4
182-048	Bronze.....	1 $\frac{7}{16}$ in.	$\frac{7}{8}$ in.	1 $\frac{1}{8}$ in.	\$4.20
182-048I	Leather.....	1 $\frac{7}{16}$ in.	$\frac{7}{8}$ in.	1 $\frac{1}{8}$ in.	7.00

Martin's Patent Casters

Full Size Cuts



Short Stem
Iron Horn, Plate and Stem

Oblong Plate
Iron Horn and Plate

Philadelphia Stem
Iron Horn and Plate. Wrought Stem

No.	Kind of Wheel	Diameter Wh. Pl. Ins.	Size of Stem, Ins.	Height of Ins.	Per Set of Four
23	Iron.....	1 1 1/4	3/4 x 1	1 1/2	\$.80
29	Lignumvitæ...	1 1 1/4	3/4 x 1	1 1/2	.85
33	Iron.....	1 3/4	1 x 1 1/4	1 7/8	.95
39	Lignumvitæ...	1 3/4	1 x 1 1/4	1 7/8	1.00
43	Iron.....	1 7/8	1 1/4 x 1 1/4	2 1/4	1.10
49	Lignumvitæ...	1 7/8	1 1/4 x 1 1/4	2 1/4	1.15

No.	Kind of Wheel	Diam. of Wheel, Ins.	Size of Plate, Ins.	Height Ins.	Capacity	Per Set of Four
22	Iron.....	1	1 3/8 x 1 7/8	1 1/2	250 lb.	\$.80
28	Lignumvita.....	1	1 3/8 x 1 7/8	1 1/2	250 lb.	.85
32	Iron.....	1 3/8	1 5/8 x 2 1/4	1 7/8	500 lb.	.95
38	Lignumvita.....	1 3/8	1 5/8 x 2 1/4	1 7/8	500 lb.	1.00
42	Iron.....	1 5/8	1 7/8 x 2 3/4	2 1/4	750 lb.	1.10
48	Lignumvita.....	1 5/8	1 7/8 x 2 3/4	2 1/4	750 lb.	1.15

No.	Kind of Wheel	Diameter Wh. Pl. Ins.	Size of Stem, Ins.	Height of Ins.	Per Set of Four
203	Iron.....	1 1 1/4	1 1/4 x 1 3/8	1 1/2	\$.80
209	Lignumvitæ...	1 1 1/4	1 1/4 x 1 3/8	1 1/2	.85
303	Iron.....	1 3/4	1 1/2 x 1 3/8	1 7/8	.95
309	Lignumvitæ...	1 3/4	1 1/2 x 1 3/8	1 7/8	1.00
403	Iron.....	1 7/8	1 3/4 x 1 3/8	2 1/4	1.10
409	Lignumvitæ...	1 7/8	1 3/4 x 1 3/8	2 1/4	1.15

Carrying capacity, Nos. 23 and 29, 250 lbs.; Nos. 33 and 39, 500 lbs.; Nos. 43 and 49, 750 lbs.

Carrying capacity, Nos. 203 and 209, 250 lbs.; Nos. 303 and 309, 500 lbs.; Nos. 403 and 409, 750 lbs.

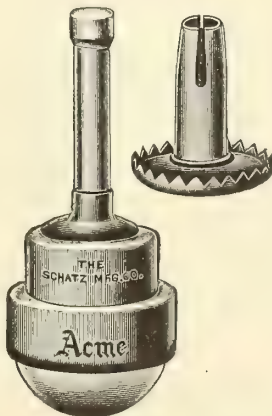
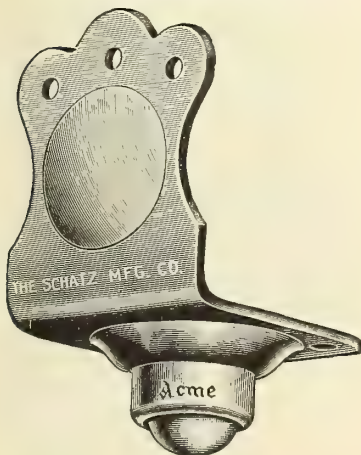
For larger sizes of Martin Casters in above styles see truck casters, pages 850 and 851

Acme Ball-Bearing Casters

The Acme Ball-Bearing Caster is made in one piece from sheet steel, copper bronzed. The weight imposed upon it falls directly over the center of gravity. There being no lateral strain upon it, there is no possibility of its breaking or getting out of order. As shown by the illustrations, the surface ball revolves upon a number of small balls that are automatically interchanged upon a steel disc, and moves in any direction with the slightest pressure.

Three-Quarter Size Cut

Full Size Cuts



Steel ball-bearing trunk caster and knee brace combined. Especially designed for metal bottom and wardrobe trunks where the caster can be securely fastened without a slat. Five rivets are all that is necessary to secure caster to trunk.

Steel ball-bearing brass-plated Grip Neck furniture caster with spring socket and toothed track plate.

No. 656 Round Plate

Steel ball-bearing furniture caster.

Diameter of Ball	Per Set of Four
3/4 in.	\$.70
1 in.	.75
1 1/8 in.	.80
1 1/4 in.	.85

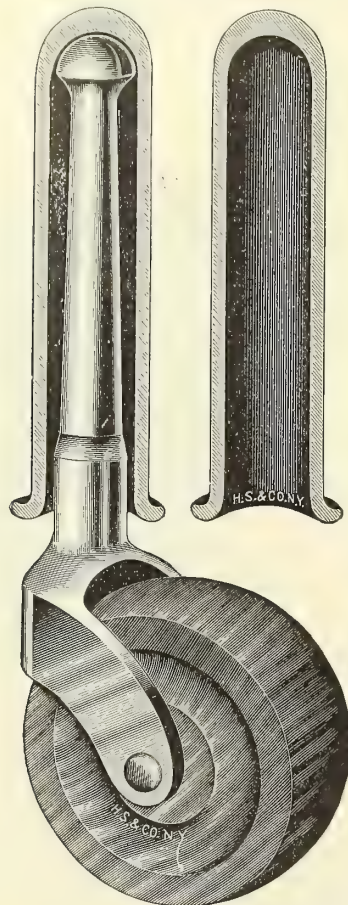
Diam. ball ins.	Per Set of Four
3/4	\$.65
1	.70
1 1/8	.75
1 1/4	.80

No. 730 3/4 inch diameter ball, brassed.

Per Set of Four.....\$.75

Common Bed Casters

Full Size Cut

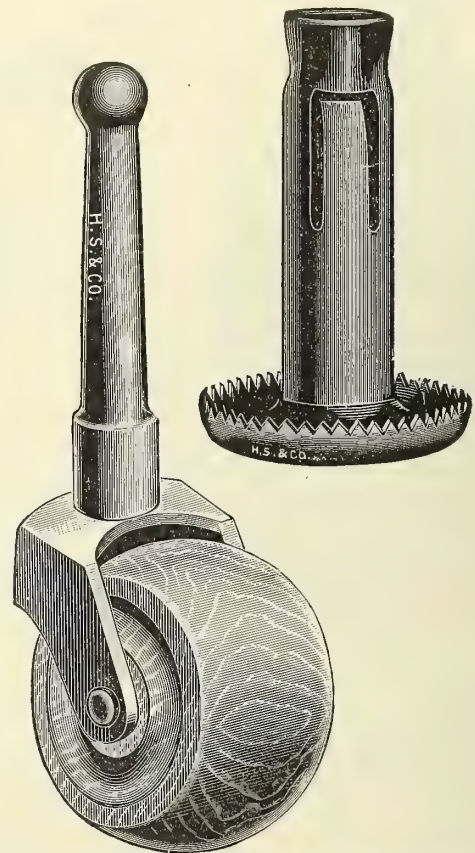


No. 270 Coppered Iron Horn, with Cast Iron Socket
2 In. Diameter Lignumvitæ Wheel

Per Set of Four \$.32

Fox Patent Bed Casters

Full Size Cuts



Coppered Iron Horn, with Wrought Steel Socket
Lignumvitæ Wheel.

No. 271 1 7/8-inch diameter wheel Per Set of Four \$.44
No. 272 1 7/8-inch diameter wheel " " " " .48

Bracket Bed Casters

In Ordering, state whether straight or corner brackets are desired.

Coppered Iron Horn and Brackets

Per Set of Four

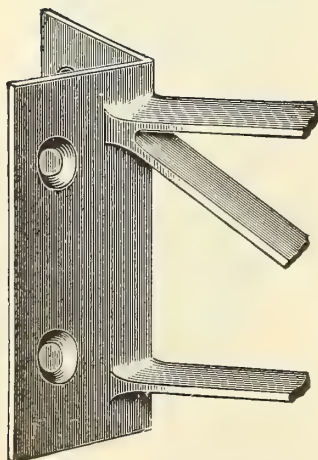
Diameter of wheel, inches.	2	2 1/2	3	4
Kind of Wheel				
No. 280 Iron	\$.65	.80	1.00	1.60
No. 281 Lignumvitæ . . . . .	.70	.90	1.15	1.75

Brass Plated Horn and Coppered Iron Brackets

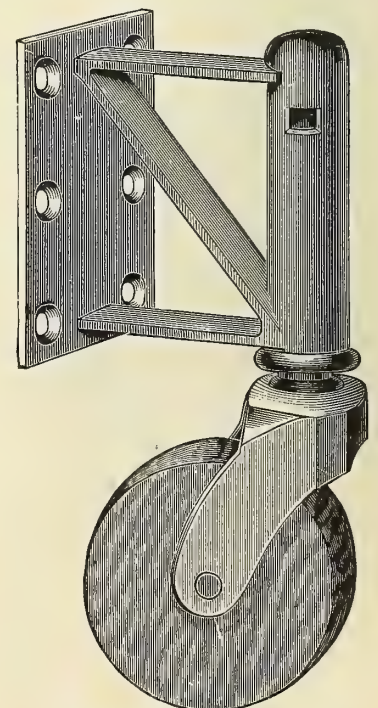
Number 282

Per Set of Four

Diameter of wheel, inches.	2	2 1/2	3	4
Leather wheel	\$5.65	6.25	7.50	8.15



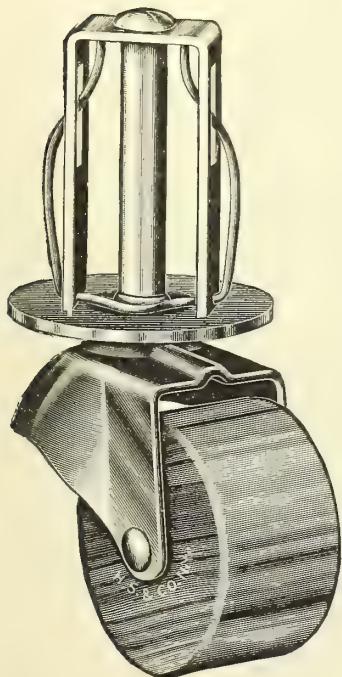
View of Outside Corner
Bracket



Half Size Cut 3 Inch with
Straight Bracket

Metal Bed Caster with Spring Retainer
Full Size Cuts

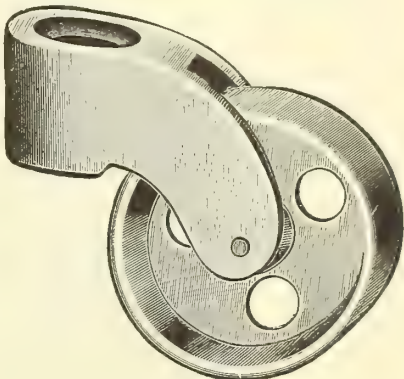
Metal Furniture Caster



In ordering state number and size.

Bright Steel Horn								
Per Set of Four								
Size.....	30	40	50	60	70	80	90	
Diameter of wheel, inches.....	1 1/32	1 3/16	1 5/16	1 3/8	1 1/2	1 1/2	1 7/8	
For outside diameter of tubing, inches...	3/4 and 7/8	3/4 and 7/8	1 and 1 1/16	1 and 1 1/16	1 1/4 and 1 5/16	1 1/2 and 1 5/16	1 1/2 and 2	
Kind of Wheel								
No. 285 Maple....	\$.21	.22	.25	.28	.30			
No. 286 Lignumvitæ .23	.26	.30	.34	.39	.56	.67		
No. 287 Iron.....	.25	.28	.33	.37	.42	.61	.72	

Brass-plated Steel Horn								
Per Set of Four								
Size.....	30	40	50	60	70	80	90	
Diameter of wheel, inches.....	1 1/32	1 3/16	1 5/16	1 3/8	1 1/2	1 1/2	1 7/8	
For outside diameter of tubing, inches..	3/4 and 7/8	3/4 and 7/8	3/4 and 7/8	1 and 1 1/16	1 1/4 and 1 5/16	1 1/2 and 2	1 1/2 and 2	
Kind of Wheel								
No. 288 Lignumvitæ \$.35	.37	.43	.49	.60	.82	1.04		
No. 289 Iron.....	.42	.44	.53	.65	.77	.94	1.23	



Grey Iron Horn and Wheel

No. 290

Diameter of wheel, inches.....	1 1/4	1 3/8	1 1/2
Per Set of four:.....	\$.12	.13	.17

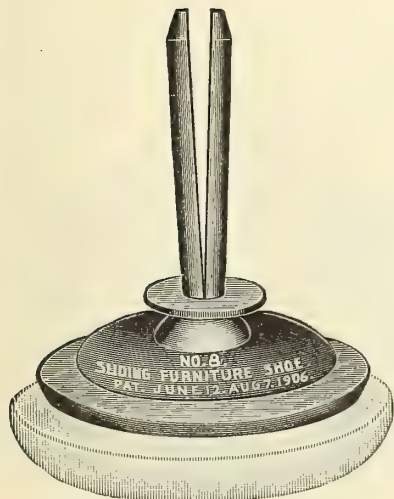
Coppered Iron Horn and Lignumvitæ Wheel

No. 291

Diameter of wheel, inches	1 3/8	1 1/2
Per Set of four:.....	\$.25	.30

The Onward Sliding Furniture Shoe

Full Size Cuts



For Wood Furniture

Glass Base, Short Steel Stem						
Per Set of Four						
Size.....	5	6	8	10	12	
Diameter of base, inches.....	1 1/4	1 1/2	2	2 1/2	3	
Style of Housing						
No. 300 Palm Oil Tin.....	\$...	...	.60	.90	1.40	
No. 301 Nickel-plated.....	.50	.55	.70	1.00	1.50	
No. 302 Solid Brass.....	.60	.65	.80	1.15	1.65	

The glass base is designed especially to withstand rough usage and, in conjunction with ball and socket joint at base of steel stem, allows shoe to adjust itself properly to uneven surfaces; hence the shoe slides where casters will not roll. Will not injure the surface upon which it rests. Varnished floors or new linoleum must be coated with oil or floor wax where these shoes are used.

No. 8 recommended for morris chairs, couches, etc; Nos. 10 and 12 for heavier furniture.



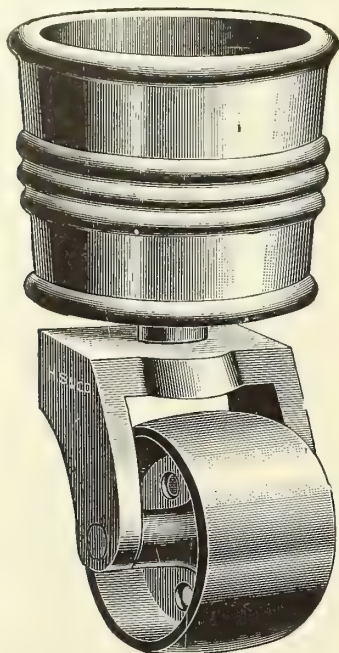
For Metal Furniture

Glass Base, Wishbone Bushing. Long Steel Stem			
Per Set of Four			
Size.....	80	100	120
Diameter of base, inches.....	2	2 1/2	3
Style of Housing			
No. 304 Palm Oil Tin.....	\$.70	1.05	1.60
No. 305 Nickel-plated.....	.80	1.15	1.70
No. 306 Solid Brass.....	.90	1.25	1.85

Grand Piano Casters

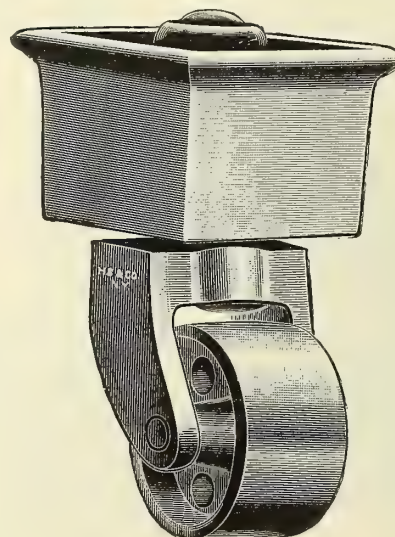
(Two-Thirds Size Cuts)

These casters are primarily designed for pianos; they can also be used to advantage on many kinds of heavy furniture.



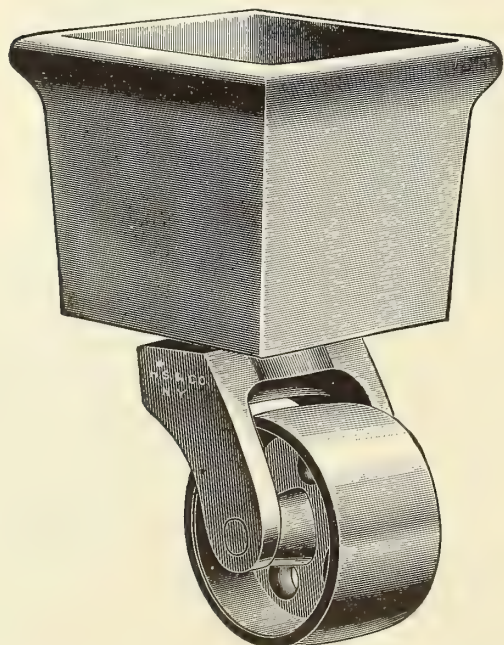
Cast brass socket, horn and wheel, all highly polished. Has loose socket $2\frac{1}{4}$ inches inside diameter at top, tapering to $2\frac{1}{16}$ inches inside diameter at bottom. Round plate or flange of caster is beveled to fit socket.

No. 1, Casters complete with sockets, Per Set of Three	\$4.90
Casters only	2.90
Sockets only	2.30



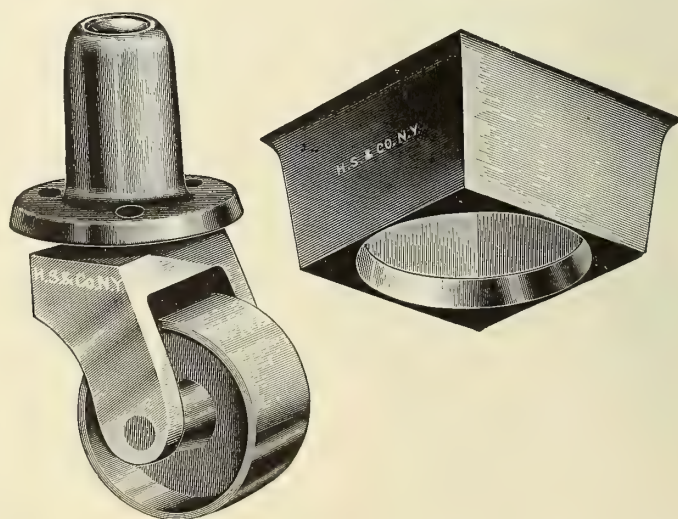
Cast brass socket, horn and wheel, all highly polished. Has loose socket $1\frac{3}{4}$ inches inside diameter at top, tapering to $1\frac{5}{8}$ inches inside diameter at bottom. Square plate or flange of caster is beveled to fit square socket.

No. 15, Caster complete with sockets, Per Set of Three	\$4.50
Casters only	2.90
Sockets only	1.70



Cast brass socket, horn and wheel, all highly polished. Has loose socket $2\frac{1}{8}$ inches inside diameter at top, tapering to $1\frac{7}{8}$ inches at bottom. Square plate or flange of caster is beveled to fit socket.

No. 9, Casters complete with sockets, Per Set of Three	\$5.50
Casters only	2.90
Sockets only	2.90

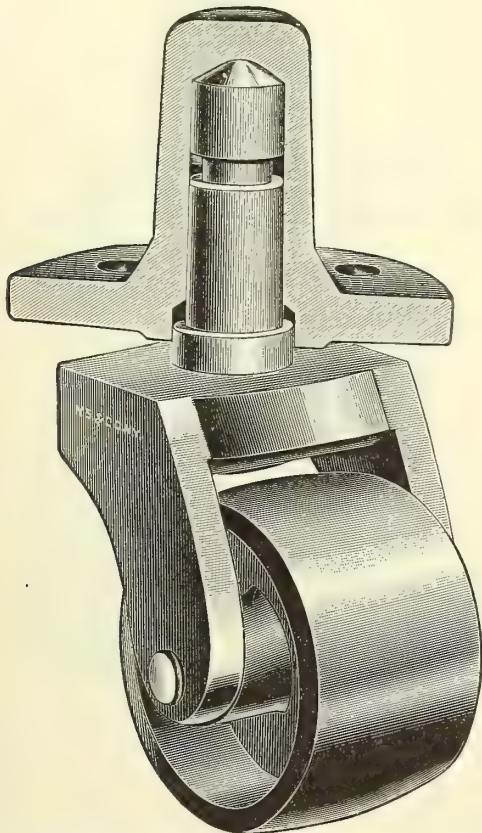


Cast brass socket, horn and wheel, all highly polished. Has loose socket 2 inches inside top diameter, tapering to $1\frac{1}{8}$ inches at bottom. Round plate or flange of caster is beveled to fit socket, as shown in illustration.

No. 10, Casters complete with sockets, Per Set of Three	\$4.60
Casters only	2.90
Sockets only	1.90

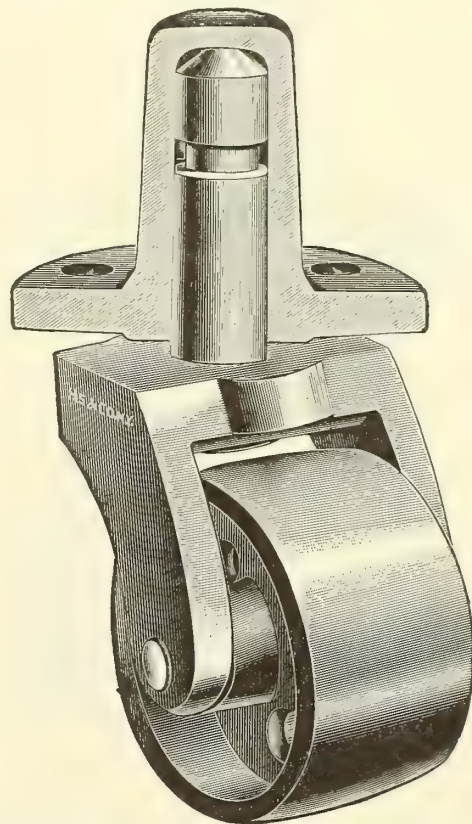
Piano Casters

Full Size Cuts



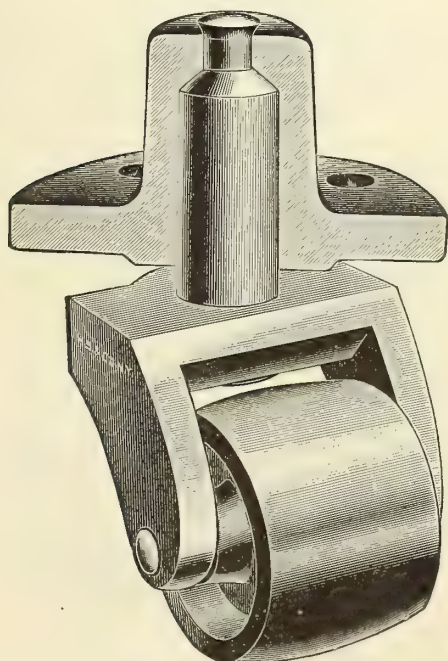
No. 20—Wrought Steel Horn, Cast Iron Plate and Wheel,
Wheel Polished on Face

Per Set of Four.....\$. 70



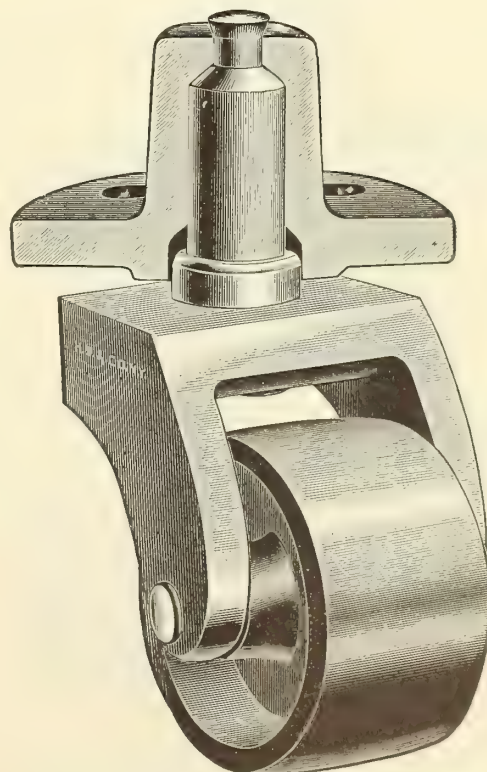
No. 1X—All Cast Iron, Wheel Polished on Face

Per Set of Four.....\$. 58



No. 3½—All Cast Iron, Wheel Polished on Face

Per Set of Four.....\$. 54

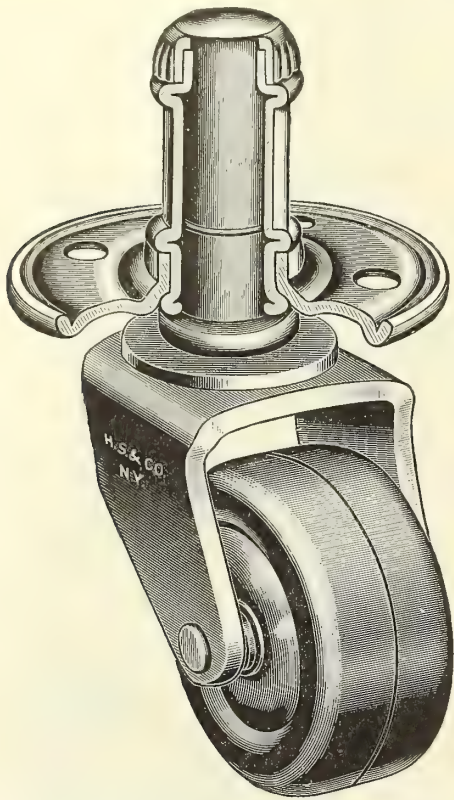


No. 4X—All Cast Iron, Wheel Polished on Face

Per Set of Four.....\$. 62

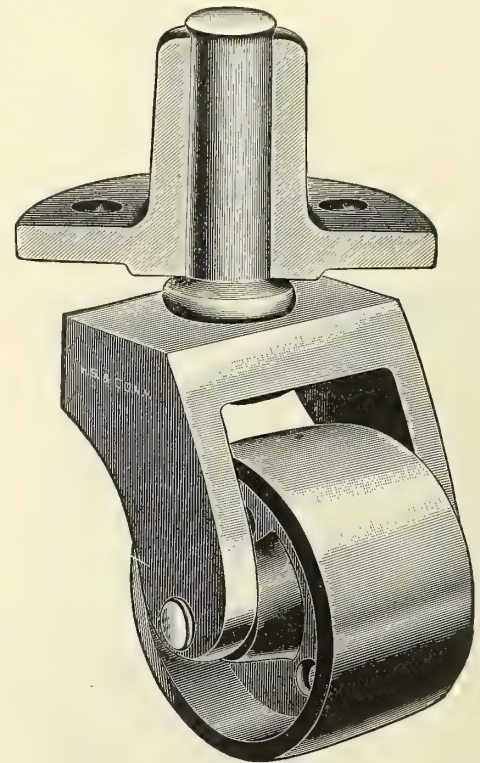
Piano Casters

Full Size Cuts



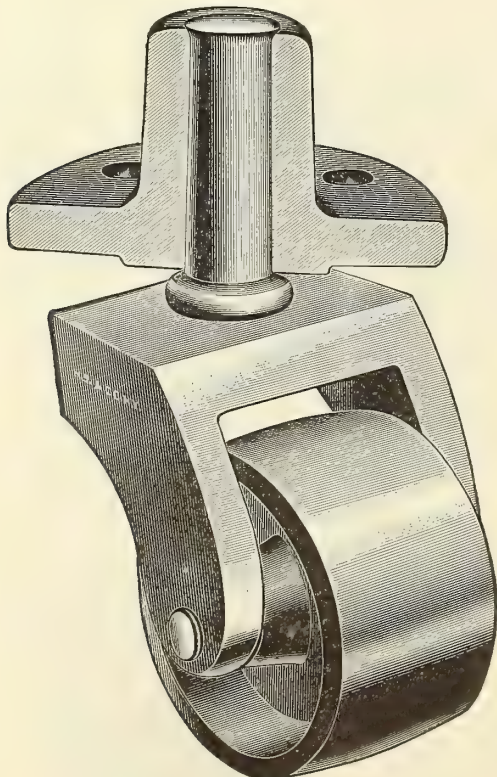
No. 61½—All Wrought Steel, Reinforced Hollow Steel Wheel

No. 61½	Plain Steel.....	Per Set of Four.	\$.50
No. 61½	Brass Plated.....	" " " "	.60
No. 61½	Brass Plated and Buffed.....	" " " "	.80



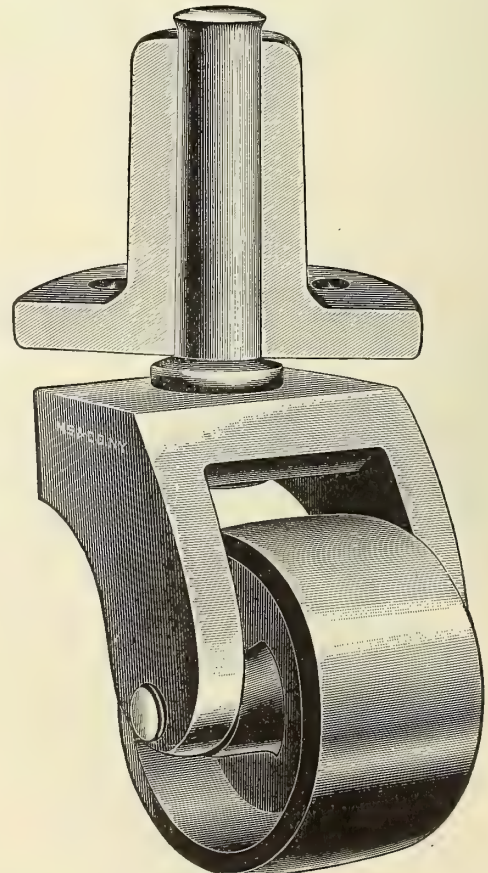
No. 64—Steel Horn, Cast Iron Plate and Wheel
Wheel Ground on Face

Per Set of Four..... \$.48



No. 104—Steel Horn, Cast Iron Plate and Wheel,
Wheel Ground on Face

Per Set of Four..... \$.52

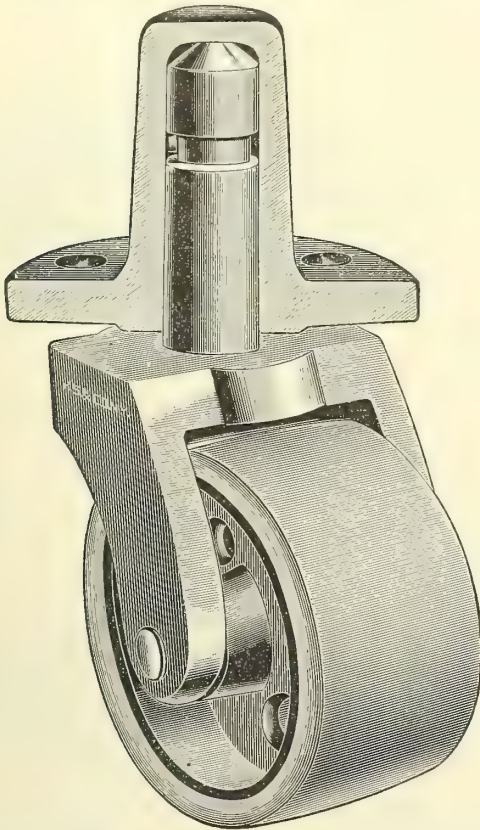


No. 101—Wrought Steel Horn, Cast Iron Plate and
Wheel, Wheel Ground on Face

Per Set of Four..... \$.56

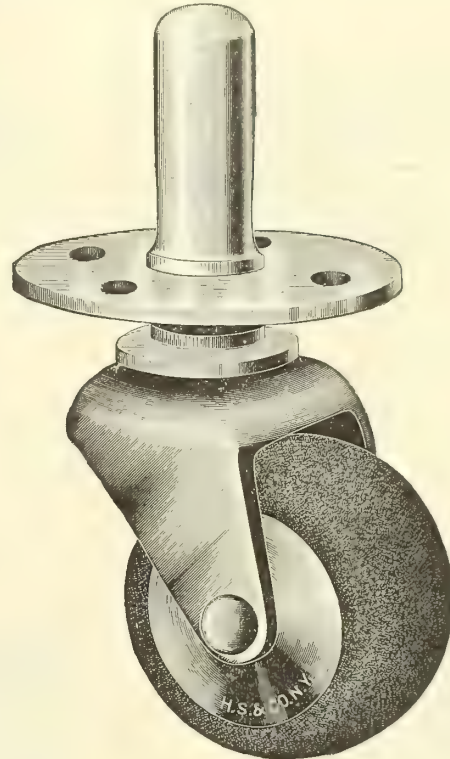
Piano Casters

Full Size Cuts



No. 1 XR—All Cast Iron, Vulcanized Rubber Covered Wheel

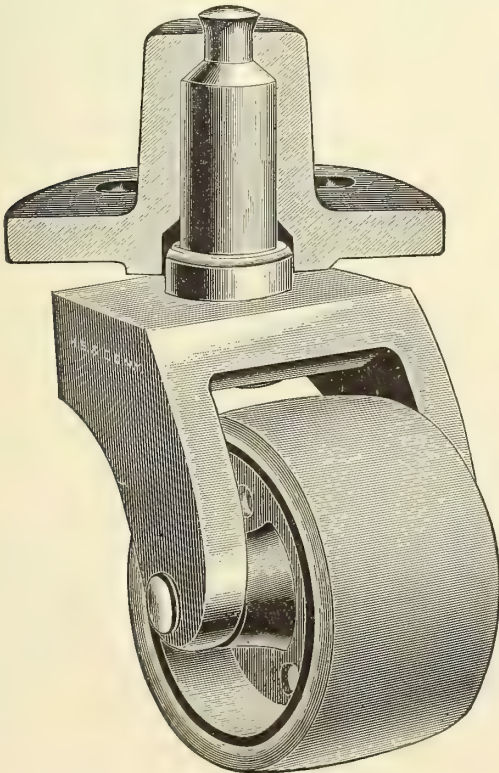
Per Set of Four..... \$4.00



No. 5—Brass Plated Steel Horn and Plate, Feltoid Wheel

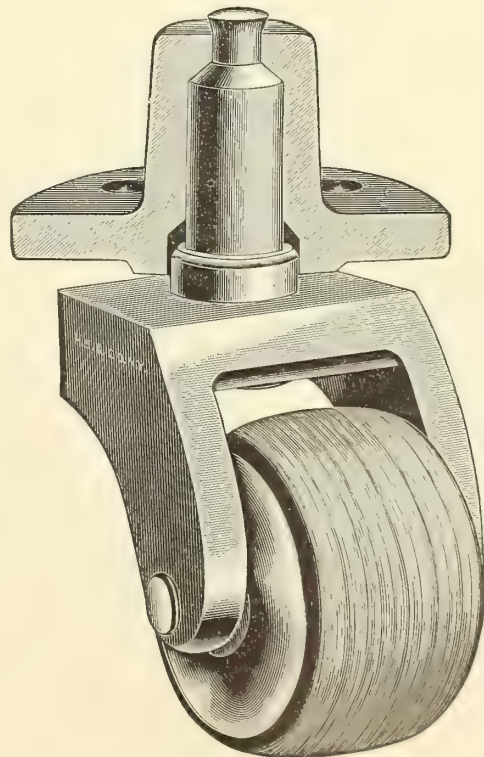
Wood bushings furnished where old holes are too large for this stem.

Per Set of Four..... \$3.50



No. 4 XR—All Cast Iron, Vulcanized Rubber Covered Wheel

Per Set of Four..... \$4.00

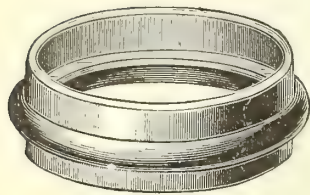


No. 4 XL—Wrought Steel Horn, Brass Plated, Cast Iron Plate, Solid Leather Wheel

Per Set of Four..... \$6.00

Cast Brass Caster Rings

Full Size Cuts

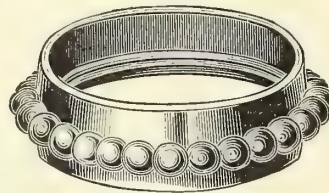


No. 6E.

No. 6E. Round Plain, English Pattern
No. 11. Round Plain, Philadelphia Pattern

Per Set of Four, Either Style

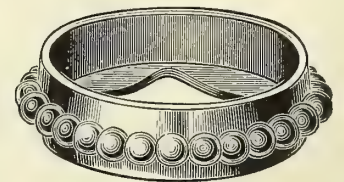
Inside diam. ins.	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
	\$.16	.18	.22	.26	.30	.34



No. 3. Round Beaded, English Pattern

Per Set of Four

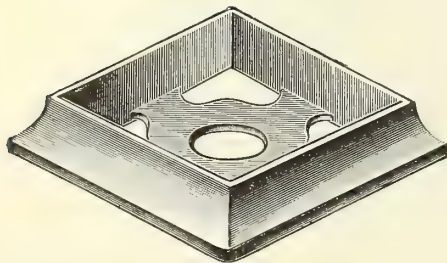
Inside diam. ins.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
	\$.15	.17	.20	.24	.31	.40



No. 4. Round Beaded, Philadelphia Pattern

Per Set of Four

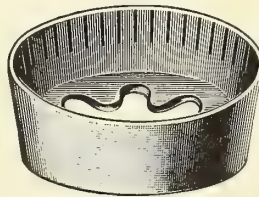
Inside diam. ins.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$
	\$.15	.17	.20	.24	.31	.40	.56



No. 14. Square Plain, Philadelphia Pattern

Per Set of Four

Inside diam. ins.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$
	\$.26	.31	.38	.44	.48	.55	.75



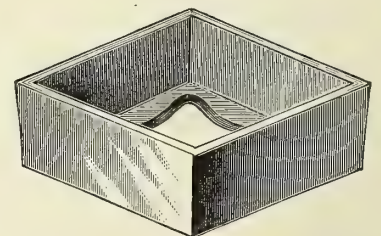
No. 10P

No. 10P. Round Plain, Philadelphia Pattern

No. 9E. Round Plain, English Pattern

Per Set of Four, Either Style

Inside diam. ins.	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$
	\$.20	.24	.28	.32	.36



No. 7. Square Plain, Philadelphia Pattern

Per Set of Four

Inside diam. ins.	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$
	\$.20	.24	.26	.28	.32	.36	.56

In Ordering, specify number and inside diameter of ring desired.

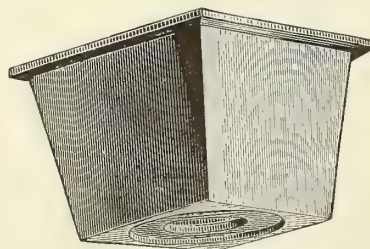
Cast Brass Sockets

Old Brass Finish

Full Size Cuts

These Sockets are for use with Philadelphia Casters, in the same manner as the Round and Square Rings, the object being to supply a cheap deep Socket Caster. These Sockets, both Round and Square, are perfectly uniform in size.

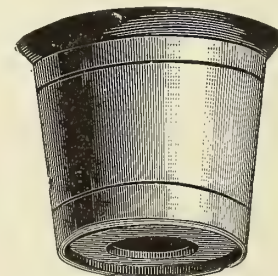
Square Sockets should be used with a larger Caster than round, making a better proportioned and much more durable Caster.



No. 31—Square Deep

Inside diameter of Socket,

inches.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Per Set of Four.....	\$.44	.48	.52	.60	.76	.96



No. 30—Round Deep

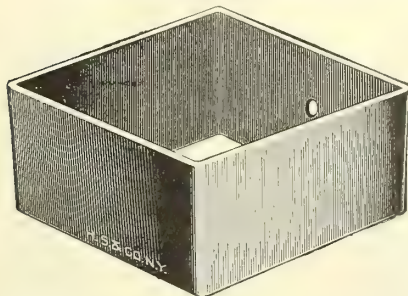
Inside diameter of socket,

inches.....	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Per Set of Four.....	\$.28	.32	.36	.40	.50	.64

Brass Leg Sockets

Full Size Cut

All sockets are measured inside at top



No. 50 Wrought Brass, Old Brass Finish

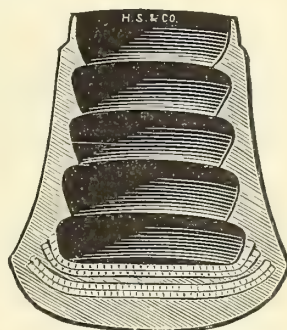
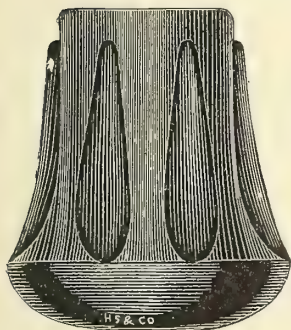
Inside top diameter, inches.....	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	1 1/2	1 3/4
Height, inches.....	3/4	3/4	3/4	3/4	3/4	1 1/8	1 3/8
Per Dozen Sets of Four.....	\$2.60	3.50	3.50	3.50	3.85	6.40	6.70

No. 32 Cast Brass, Old Brass Finish

Inside top diameter, inches.....	1 3/8	1 1/2	1 3/4	2
Height, inches.....	1	1 3/8	1 3/4	2
Per Set of Four.....	\$.65	.90	1.20	1.50

Rubber Sockets

Full Size Cuts



Sectional view showing internal construction

Inside corrugated end with canvas bottoms; outside ribbed.

Numbers.....	15	16	17	18	19	20	21	22	23
Inside diam. inches.....	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2
Per Doz.....	\$.75	.80	.95	1.10	1.20	1.40	1.60	2.50	3.00

Nos. 15 and 16 used for cane or crutch tips; Nos. 22 and 23 for table socket tips.

Furniture Fenders

Full Size Cuts



No. 1



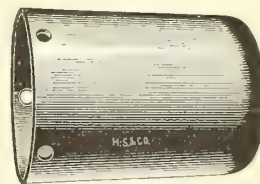
No. 2

For backs of couches, chairs, buffets, etc. With plush cover.

No. 1 Green or Crimson, Per gross.....	\$12.00
No. 2 Crimson, Per gross.....	13.65

Chair Ferrules

Full Size Cut



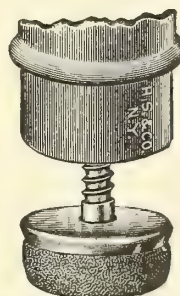
With or without pin-holes.

In Ordering, state which is wanted.

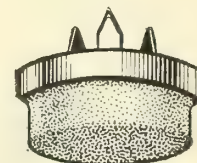
No.		Diameter, Inches	Per Gross with Pin Holes	Per Gross without Pin Holes
501	Wrought brass.....	3/4	\$2.50	\$2.60
502	Wrought brass.....	7/8	2.60	2.70
503	Wrought brass.....	1	3.10	3.30

Chair Tips

Full Size Cuts



No. 1. With Screw

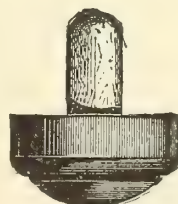


No. 6. With Prongs

Feltoid

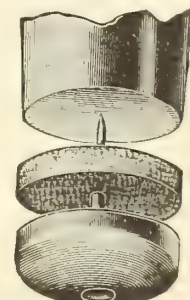
For chair and furniture legs where casters are not practical the Feltoid Tip gives perfect satisfaction. Suitable for the smallest chair leg, having a neat finished appearance; extremely durable. Will not wear loose, nor injure the surface of polished floors.

No. 1 with screw, Per Set of Four.....	\$.20
No. 6 with prongs, Per Set of Four.....	.20



No. 100

Wood Peg



No. 140

Leather

Solid rubber tip fitted firmly. Hard wood peg.

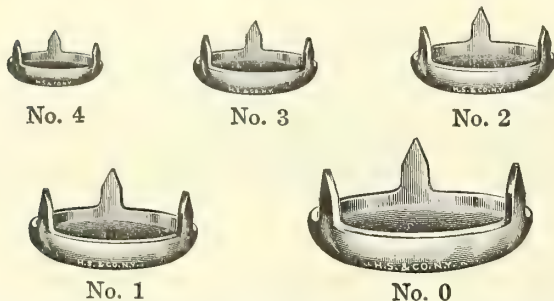
No. 100, Per gross.....\$2.70

Made of selected sole leather. The piece of felt used on this tip gives elasticity and smoothness without injuring the surface of any floor. A screw can be used instead of nail in attaching tip if desired.

No. 140, per gross.....\$4.50

Chair Slides

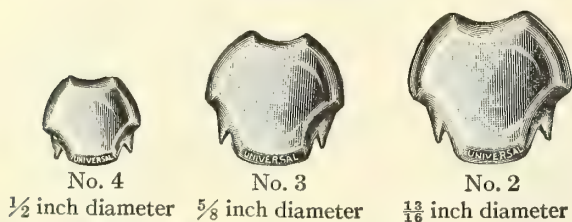
H. O.



Made of hardened, highly-polished nickel-plated steel. Glide easily, silently and smoothly over carpets and floors. Can be attached in a few seconds; requires neither screws nor nails. Can be fitted to all light furniture such as chairs, tables, etc., by a slight tap of hammer and to heavy furniture by simply placing one under each corner—they adjust themselves to all kinds of furniture.

Number	0	1	2	3	4
Diameter, inches	$1\frac{1}{8}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{2}$
Per gross sets of 4	\$15.00	7.20	7.20	7.20	7.20
Per 1000 sets of 4	35.00	35.00	35.00	35.00	35.00

Universal



No. 4 $\frac{1}{2}$ inch diameter No. 3 $\frac{5}{8}$ inch diameter No. 2 $\frac{11}{8}$ inch diameter



No. 1
1 inch diameter

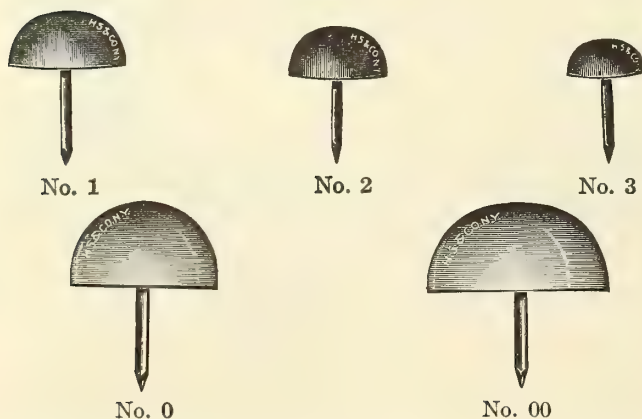
Bottom view

These slides can be attached to the most fragile piece of furniture—the unique position of the prongs reducing to a minimum the possibility of splitting the piece or causing an ugly projection.

Per 1000 sets of any size..... \$30.00

Rubber Head Nails

Full Size Cuts

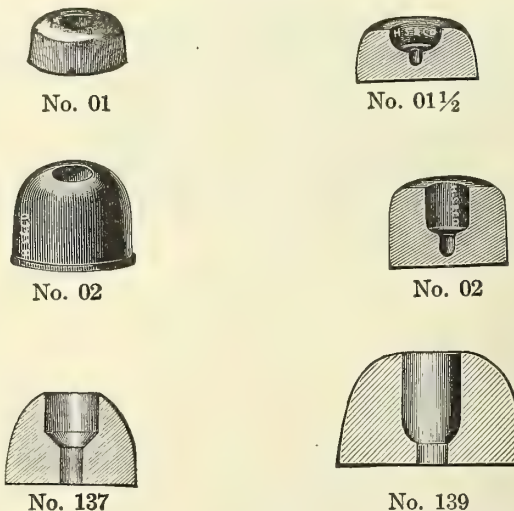


Large brass-headed nails only are used in the manufacture of these rubber-head nails.

Number	1	2	3	0	00
Per Gross	\$.80	.64	.46	1.20	1.40

Rubber Tips

Full Size Cuts

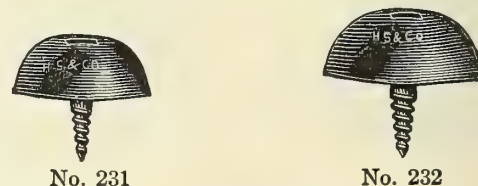


Number	01	01 1/2	02	137	139
Per Gross	\$1.00	1.20	1.50	2.40	3.50

Rubber Tips

With Slotted Screw and Brass Washer

Full Size Cuts



Cut shows how the screw seats itself into the washer when the tip is applied.

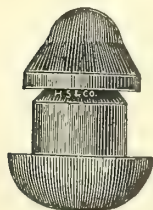


The perforations in the washer (see illustration) allow the rubber to flow through, thereby preventing the head from coming off and in addition making a strong durable tip.

Number	231	232	233	234
Per Gross	\$3.20	3.60	4.30	5.00

Rubber Tips for Chairs

Full Size Cuts



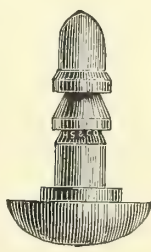
No. 303



No. 307



No. 310



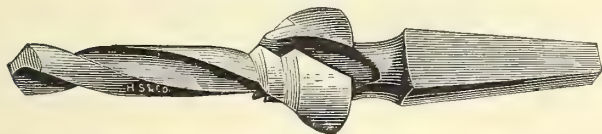
No. 304



No. 301

Numbers	301	303	304	307	310
Per Dozen	\$.70	.60	.50	.40	.60

Bit for Rubber Tips



For Tips Nos. 301, 303, 304, 307 and 310.....Each \$1.50

Metal Cap for Rubber Tips



Used with Tips Nos. 301, 303, 304, 307 and 310 on Hard-wood or Marble Floors

Nickel plated.....Per gross, \$5.60

New Century Tip with Brass Socket

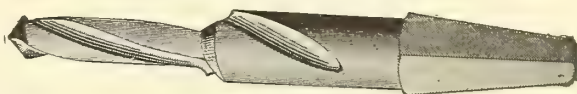
Full Size Cuts



Practical, durable and economical. Consists of a solid piece of rubber moulded over the convex head of a brass screw, threaded on end to fit corresponding threads on inside of brass socket. Socket has corrugated sides to clinch firmly into chair leg and has a spreading shoulder to bear the strain usually placed on tip itself. All three sizes of tips fit same socket with equal security and can be replaced as often as required by simply unscrewing old tip and inserting the new; very desirable features that save time, trouble and expense, to boring new holes for new tips with the consequent weakening of chair leg.

Number	1	2	3
Diameter, inches	3/4	1	1 1/8
Per gross, with socket	\$7.50	9.00	9.75
Per gross, without socket	5.65	7.50	8.50

New Century Bits



Used in putting on New Century Tips, making it impossible to split the most slender chair leg. It countersinks the head of socket when in position.

Each.....\$.70

Rubber Buttons

Full Size Cuts



Nos. 7 and 7 1/2



Nos. 10 and 10 1/2



Nos. 12 and 12 1/2



Nos. 8 and 8 1/2



Sectional View



Nos. 9 and 9 1/2

Used to prevent scratching on highly polished furniture.

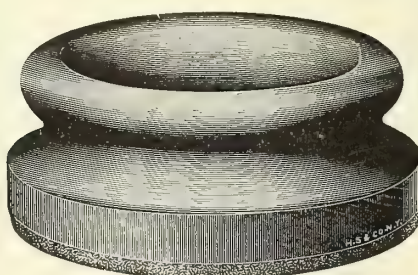
No. 7 Plain	Per 1000 \$3.00	No. 12 1/2 Japanned	Per 1000 \$5.00
" 7 1/2 Japanned	4.00	" 8 Plain	3.00
" 10 Plain	3.40	" 8 1/2 Japanned	4.00
" 10 1/2 Japanned	4.40	" 9 Plain	4.00
" 12 Plain	4.00	" 9 1/2 Japanned	5.00

Caster Cups

2¼ in. Diameter. Felt Bottom

No. 5. Antique oak, polished
Per dozen..... \$2.10

No. 6. Cherry, polished
Per dozen..... \$2.10



3 in. Diameter. Felt Bottom

No. 10. Antique oak, polished
Per dozen..... \$2.10

No. 11. Cherry, polished
Per dozen..... \$2.10



2⅜ in. Diameter. Felt Bottom

No. 20. Oak, unfinished

Per gross..... \$8.00



2⅜ in. Diameter. Felt Bottom

No. 4. Oak, shellacked

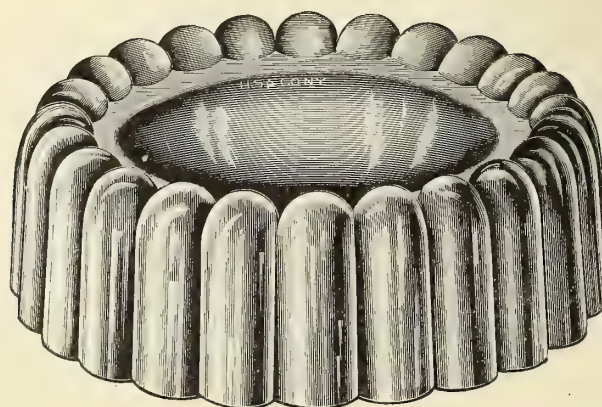
Per gross..... \$12.00

Glass Insulator Cups



Clear Glass, Polished, 2⅞ Inches Diameter

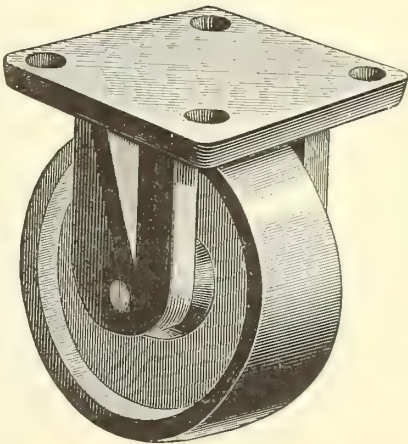
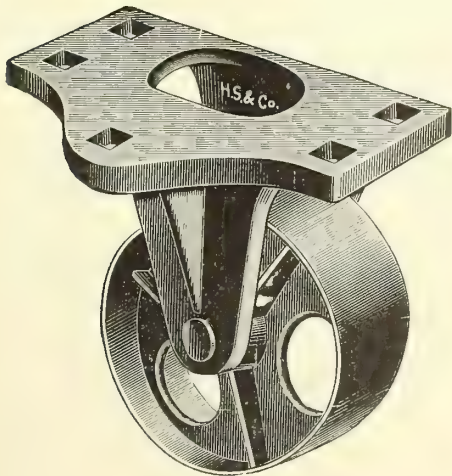
No. 350..... Per dozen sets of four \$5.00



Crystal, Amber or Blue, 3½ Inches Diameter

No. 450..... Per dozen sets of four \$6.50

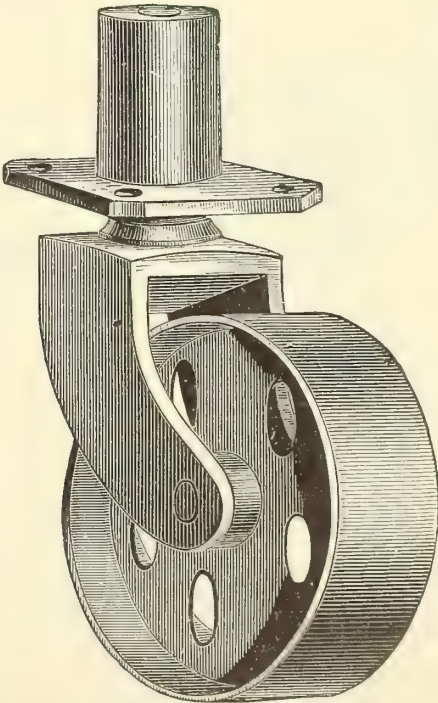
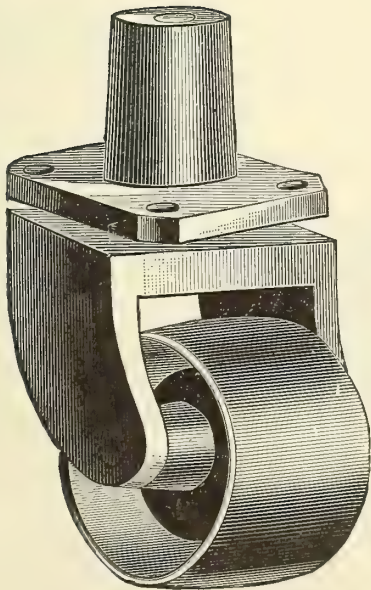
Stationary Truck Casters



No.	Size of Wheel	Height Over All	Size of Plate	Per Set of Four
823.....	2 ⁷ / ₈ x1 in.	4 in.	4 ³ / ₄ x2 ⁷ / ₈ in.	\$1.20
824.....	3 ⁷ / ₈ x1 ¹ / ₈ in.	5 ¹ / ₈ in.	5 x3 in.	1.72
1825.....	4 ¹ / ₂ x2 ¹ / ₈ in.	5 ¹ / ₄ in.	6 x4 ¹ / ₄ in.	3.60

No.	Size of Wheel	Size of Plate	Height Over All	Per Set of Four
3	3 ¹ / ₂ x1 in.	3 ³ / ₈ x3 ³ / ₈ in.	4 in.	\$1.60

Swivel Truck Casters



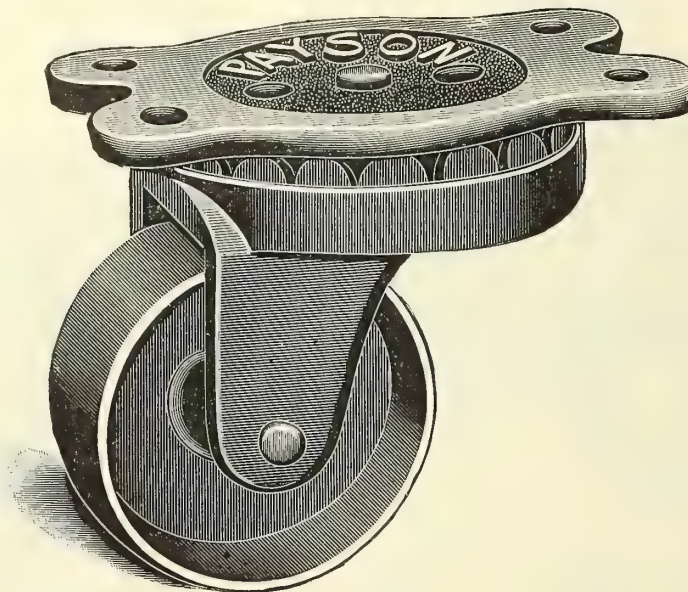
Extra Heavy Solid Wheels, with Wrought Iron
Pins Riveted in the Horns

No.	Size of Wheel	Size of Plate	Height Over All	Per Set of Four
2111.....	2 ³ / ₄ x1 in.	2 ¹ / ₂ x2 ¹ / ₂ in.	4 in.	\$1.00
2112.....	4 x1 ¹ / ₈ in.	2 ³ / ₄ x2 ³ / ₄ in.	5 ¹ / ₄ in.	1.66
2113*....	4 x1 ¹ / ₄ in.	2 ³ / ₄ x2 ³ / ₄ in.	5 ¹ / ₄ in.	1.90
1835.....	4 ¹ / ₂ x2 ¹ / ₈ in.	2 ⁷ / ₈ x2 ⁷ / ₈ in.	5 ⁷ / ₈ in.	4.60

* Extra Heavy.

No.	Size of Wheel	Size of Plate	Height to Top of Plate	Per Set of Four
110	2 ¹ / ₂ x1 ⁵ / ₈ in.	2 ⁵ / ₈ x2 ⁵ / ₈ in.	4 in.	\$2.40

Payson Truck Casters



These Casters revolve upon a series of steel rollers or discs, placed in an annular chamber and carry the weight outside the center of the main wheel.

This gives an even bearing upon the circle of discs, and

relieves all friction upon the pivot or strain upon the fastening screws. The parts are riveted together firmly, and free access is given to the screws through an opening in the plate.

Size of Plate Inches	Diameter of Wheel Inches	Face of Wheel Inches	Height Inches	Capacity Pounds	Iron Wheels		Rubber Wheels	
					Number	Per Set of Four	Number	Per Set of Four
3 x 4 1/4	2 1/2	1 1/4	3 1/2	1000	188	\$2.75	188 1/2	\$9.00
3 x 4 1/4	3 1/4	1 5/8	4 3/4	1000	188S	3.50	188S 1/2	11.00
3 3/8 x 4 7/8	3 1/8	1 3/8	4 1/2	1500	190	4.00	190 1/2	12.00
3 3/8 x 4 7/8	3 1/8	1 3/8	4 1/2	2500	*190H	5.50		
3 3/8 x 4 7/8	4 1/8	1 3/8	5 1/4	1500	190L	5.00	190L 1/2	15.00
3 1/4 x 4 7/8	4 1/2	1 3/4	6	1500	190S	6.50	190S 1/2	17.50
3 1/4 x 4 7/8	3 1/8	2 1/2	4 1/2	1500	190W	7.00		
3 1/4 x 4 7/8	3 1/2	1 3/4	5	1500	191	6.50	191 1/2	15.60
4 1/4 x 5 3/4	5	1 1/2	6 3/4	1500	191L	12.00	191L 1/2	32.00
4 1/4 x 6 1/4	4	2 1/4	6	2000	192	12.00	192 1/2	25.00
4 1/4 x 6 1/4	5	2 1/4	7	4000	193	17.50	193 1/2	40.00
5 3/4 x 7	6	2 1/4	8 1/4	4000	193L	25.00	193L 1/2	65.00
6 3/8 x 9 1/4	6	3 1/4	9	6000	195	45.00	195 1/2	80.00

*No. 190H is extra heavy construction

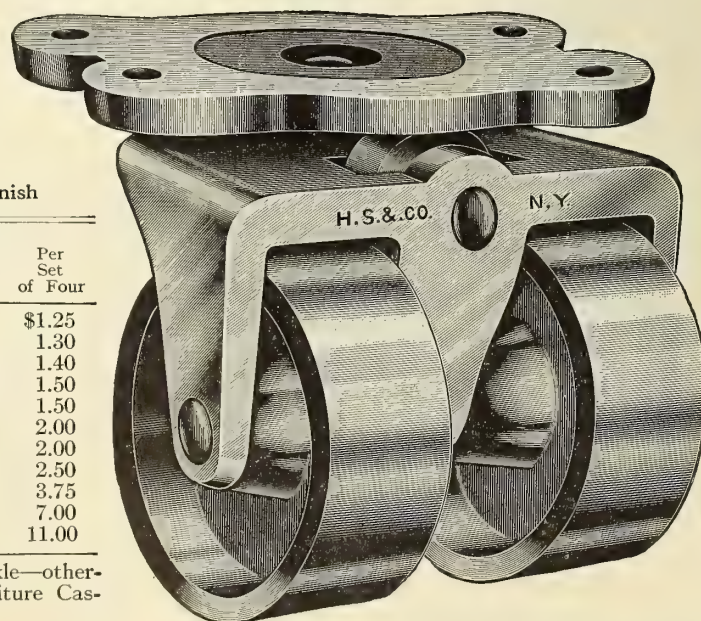
Martin Anti-Friction Truck Casters

Oblong Plate

Nos. 52 to 72, Bronze Lacquer Finish. No. 82 to 142, Oil Finish

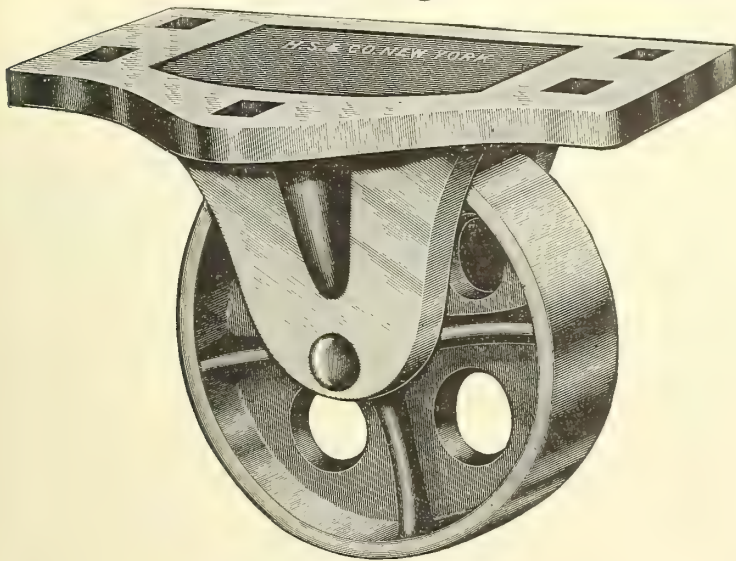
Number	Style of Wheel	Size of Plate Inches	Diameter of Wheels Inches	Face of Wheels Inches	Height Over All Inches	Carrying Capacity Pounds	Weight per Set Pounds	Per Set of Four
52	Iron	2 1/8 x 3 1/8	1 7/8	9/16	2 5/8	1000	4	\$1.25
58	Lignumvitæ	2 1/8 x 3 1/8	1 7/8	9/16	2 5/8	1000	4	1.30
62	Iron	2 1/2 x 3 1/2	1 3/4	3/4	2 3/4	1500	6 1/2	1.40
68	Lignumvitæ	2 1/2 x 3 1/2	1 3/4	3/4	2 3/4	1500	6 1/2	1.50
72	Iron	2 1/2 x 3 1/2	2 1/4	3/4	3 1/4	1500	8	1.50
82	Iron	3 1/4 x 4 3/8	2 1/2	3/4	3 1/2	2000	11	2.00
182	Iron	3 1/4 x 4 3/8	2 1/2	3/4	3 1/2	2000	11	2.00
102	Iron	3 3/8 x 4 1/2	3 1/8	7/8	4 1/8	2500	13	2.50
112	Iron	3 1/2 x 5 1/8	3 5/8	7/8	4 5/8	3000	19	3.75
122	Iron	4 1/4 x 6 3/8	4 3/8	1 1/8	5 7/8	4000	40	7.00
142	Iron	5 7/8 x 7 1/8	4 1/2	1 1/4	6	5000	64	11.00

No. 182 has turned wheels, also holes for purpose of oiling the axle—otherwise as No. 82. For smaller casters of this style see Martin's Furniture Casters on page 837.



Martin Rigid

Truck Casters

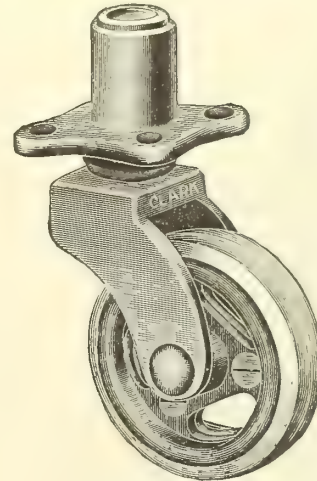


Oblong Plate, Iron Wheels
Carrying Capacity, 1000 to 5000 Pounds

Number	Size of Plate Inches	Diam. of Wheel Inches	Face of Wheel Inches	Height Over All Inches	Weight Each Pounds	Each
6	3 x 4 1/4	2 1/2	1 1/8	2 3/4	1 1/3	\$.30
7	3 x 4 3/4	2 7/8	1	3 1/4	1 2/3	.35
8	3 x 4 3/4	3 1/8	1	3 1/2	2	.40
*18	3 x 4 3/4	3 1/8	1	3 1/2	2	.40
10	3 1/8 x 4 3/4	3 5/8	1	4 1/8	2 1/2	.50
11	3 3/8 x 5 1/8	4 1/8	1 1/8	4 5/8	3 3/4	.75
12	3 7/8 x 7	5 1/4	1 1/2	5 7/8	6 1/2	1.10
14	4 3/8 x 7	5 3/8	1 3/4	6	8 1/2	1.40
16	4 3/8 x 8 1/4	7	1 7/8	7 1/2	12	2.00

*No. 18 has turned wheels, also holes for purpose of oiling axle—otherwise as No. 8.

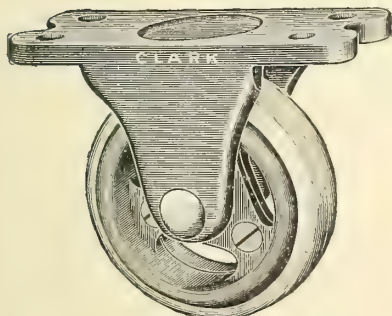
Clark Swivel Stem



With Rubber Wheels
No. 6. Medium

Diameter of Wheel Inches	Size of Stem Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces
2 1/8	1 3/8 x 1 1/16	2 x 2	3 1/8	\$7.70
2 1/2	1 3/8 x 1 1/16	2 x 2	3 1/2	9.50
3	1 1/8 x 1 1/4	2 1/2 x 2 1/2	4 3/8	11.50
3 1/2	1 5/8 x 1 1/2	3 x 3	5 3/8	15.75
4	1 5/8 x 1 1/2	3 x 3	5 5/8	17.00
5	1 5/8 x 1 1/2	3 x 3	6 5/8	25.35
6	1 1/2 x 1 3/4	3 1/2 x 3 1/2	8 3/8	35.00
7	1 3/4 x 2	4 x 4	9 1/8	46.00
8	1 3/4 x 2	4 x 4	10 7/8	57.00

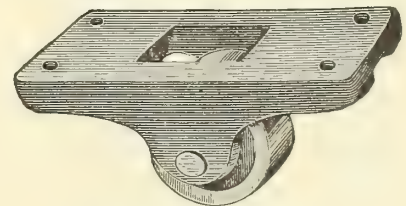
Clark Stationary Plate with Rubber Wheels



No. 10

Size of Wheel Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces Either Style
2 1/8 x 3/4	1 5/8 x 2 11/16	2 7/16	\$6.85
2 1/2 x 7/8	2 x 3 5/8	2 15/16	8.85
3 x 1	2 3/8 x 4 1/8	3 9/16	9.95
3 1/2 x 1	2 5/8 x 4 7/8	4 1/4	13.25
4 x 1	2 5/8 x 4 7/8	4 9/16	14.50
5 x 1	3 1/8 x 5 5/8	5 3/4	22.15
6 x 1 3/8	3 5/8 x 6 1/4	7 1/8	31.45
7 x 1 3/8	3 3/4 x 7 1/8	7 15/16	42.30
8 x 1 1/2	4 1/4 x 8	9	54.40
9 x 1 3/4	4 1/2 x 8 1/4	9 15/16	68.30
10 x 1 3/4	5 x 8 3/4	11 1/16	81.40

Truck Rollers



Iron Wheels. No. 43

Diameter of wheel, inches.....	1 5/8
Width of wheel, inches.....	1 1/4
Size of plate, inches.....	2 3/8 x 4 5/8
Height, inches.....	1 7/8
Per dozen pieces.....	\$4.45

Noiseless Rubber Wheels and Tires



Clark. No. 12

Adapted for use in mills, warehouses, stores, offices, banks, hotels, hospitals, etc.

In ordering, care should be taken not to select a wheel too light for the work required.

The size of wheel is the outside diameter of rubber tire.

When ordering tires only, always give outside diameter.

When ordering complete wheels, always give distance through hub and bore required.

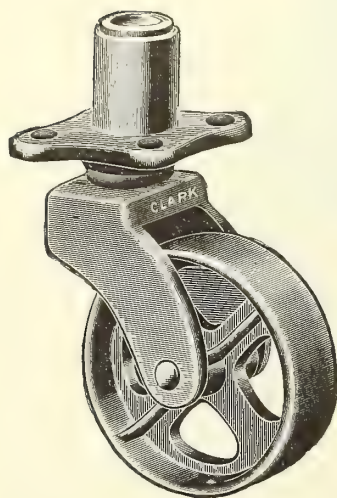
Unless otherwise stated, our standard distance through hub and bore will be furnished.

Diameter Wheel Inches	Width Rubber Face Inches	Through Hub Inches	Bore Inches	Wheels Complete per Dozen Pieces	Rubber Tires Only per Dozen Pieces
2 1/2	7/8	1 1/4	5/16	\$6.75	\$2.50
3	7/8	1 1/2	5/16	7.25	4.00
3 1/2	7/8	1 5/8	3/8	8.25	5.25
4	1	1 5/8	3/8	10.00	6.50
5	1	1 7/8	1/2	15.50	10.00
6	1 3/8	2 1/4	1/2	22.25	14.50
7	1 3/8	2 7/16	5/8	30.00	19.00
8	1 1/2	2 5/8	5/8	38.75	24.00
9	1 3/4	2 7/8	5/8	49.00	29.00
10	1 3/4	3 1/4	5/8	58.00	34.50
11	1 3/4	3 1/4	5/8	67.50	39.00
12	1 3/4	3 1/4	3/4	77.50	44.00
14	1 3/4	3 3/8	7/8	97.00	55.00
15	1 3/4	3 7/8	7/8	106.00	60.00
16	2	3 1/2	7/8	116.50	65.00
20	2	4 3/8	7/8	155.00	85.50
25	2	4	7/8	220.00	120.00

Truck Casters

Clark

Swivel Stem With Iron Wheels
No. 54 Medium



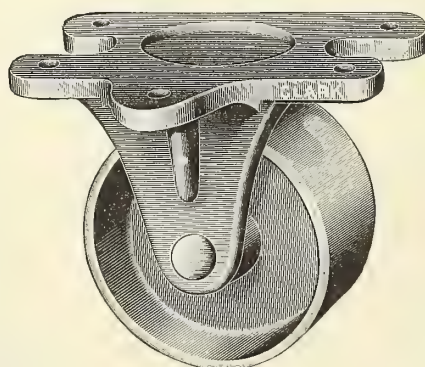
Diameter of Wheel Inches	Size of Stem Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces
2	$\frac{1}{16} \times 1 \frac{1}{16}$	2 x 2	$3 \frac{1}{16}$	\$5.25
2½	$\frac{1}{16} \times 1 \frac{1}{16}$	2 x 2	$3 \frac{1}{2}$	6.50
3	$1 \frac{1}{16} \times 1 \frac{1}{4}$	$2 \frac{1}{2} \times 2 \frac{1}{2}$	$4 \frac{3}{8}$	8.25
3½	$1 \frac{1}{16} \times 1 \frac{1}{2}$	3 x 3	$5 \frac{3}{8}$	11.85
4	$1 \frac{5}{16} \times 1 \frac{1}{2}$	3 x 3	$5 \frac{5}{8}$	12.50
5	$1 \frac{5}{16} \times 1 \frac{1}{2}$	3 x 3	$6 \frac{1}{2}$	17.75
6	$1 \frac{1}{2} \times 1 \frac{3}{4}$	$3 \frac{1}{2} \times 3 \frac{1}{2}$	8	24.00
7	$1 \frac{3}{4} \times 2$	4 x 4	9	31.25
8	$1 \frac{3}{4} \times 2$	4 x 4	10	39.00

Stationary Plate, with Iron Wheels

No. 56

No. 64 Extra Heavy

Size of Wheel Inches	Size of Plate Inches	Height to Top of Plate, Inches	Per Dozen Pieces
$4 \times 2 \frac{1}{8}$	$4 \frac{3}{8} \times 5 \frac{3}{4}$	$4 \frac{3}{4}$	\$13.35
$5 \times 2 \frac{1}{2}$	$5 \frac{1}{16} \times 6 \frac{1}{4}$	$5 \frac{3}{4}$	20.45
$6 \times 2 \frac{3}{4}$	$5 \frac{1}{2} \times 6 \frac{5}{8}$	$6 \frac{1}{16}$	27.50
$7 \times 2 \frac{3}{4}$	$5 \frac{7}{8} \times 7 \frac{1}{4}$	$7 \frac{3}{4}$	35.00
8x3	$6 \frac{1}{16} \times 7 \frac{5}{8}$	$8 \frac{1}{16}$	42.00
$9 \times 3 \frac{1}{4}$	$6 \frac{7}{16} \times 8$	$9 \frac{7}{8}$	49.25
$10 \times 3 \frac{1}{2}$	$6 \frac{13}{16} \times 8 \frac{3}{8}$	$10 \frac{13}{16}$	58.00



No. 64

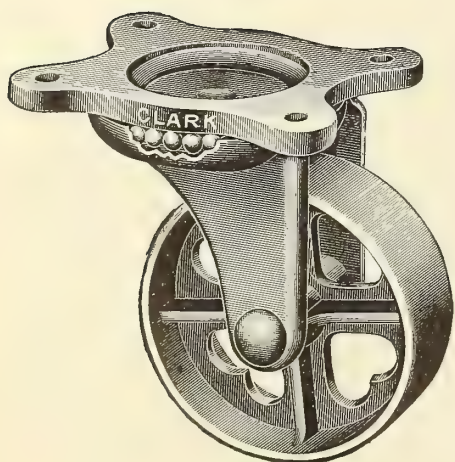
Size of Wheel Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces Either Style
2 x $\frac{3}{4}$	$1 \frac{5}{8} \times 2 \frac{11}{16}$	$2 \frac{3}{8}$	\$4.00
$2 \frac{1}{2} \times 1 \frac{1}{8}$	2 x $3 \frac{5}{8}$	$2 \frac{1}{16}$	4.25
3 x $1 \frac{1}{8}$	$2 \frac{3}{8} \times 4 \frac{1}{8}$	$3 \frac{1}{2}$	5.50
$3 \frac{1}{2} \times 1 \frac{1}{2}$	$2 \frac{5}{8} \times 4 \frac{7}{8}$	$4 \frac{1}{4}$	8.35
4 x $1 \frac{1}{2}$	$2 \frac{5}{8} \times 4 \frac{7}{8}$	$4 \frac{1}{2}$	9.00
5 x $1 \frac{5}{8}$	$3 \frac{1}{8} \times 5 \frac{5}{8}$	$5 \frac{1}{16}$	13.50
6 x $1 \frac{7}{8}$	$3 \frac{3}{8} \times 6 \frac{1}{4}$	$6 \frac{7}{8}$	19.75
7 x $2 \frac{1}{4}$	$3 \frac{3}{4} \times 7 \frac{1}{8}$	$7 \frac{1}{16}$	27.00
8 x $2 \frac{3}{8}$	$4 \frac{1}{4} \times 8$	$8 \frac{1}{16}$	36.00
9 x $2 \frac{1}{2}$	$4 \frac{1}{2} \times 8 \frac{1}{4}$	$9 \frac{1}{16}$	45.50
10 x $2 \frac{3}{4}$	5 x $8 \frac{3}{4}$	$10 \frac{7}{8}$	56.00

Anti-Friction Plate

Practical and durable. Provided with hardened steel balls in order to swivel easily under heavy loads

No. 60 Iron Wheels

No. 59 Rubber Wheels



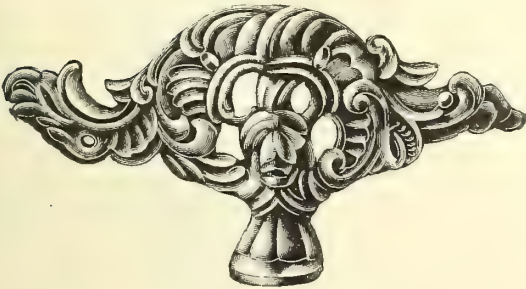
Diameter of Wheel Inches	Size of Plate Inches	Height to Top of Plate, Inches	Per Dozen Pieces
$1 \frac{5}{8}$	$2 \frac{1}{16} \times 2 \frac{11}{16}$	$2 \frac{7}{16}$	\$3.75
2	$2 \frac{1}{4} \times 3$	3	4.25
$2 \frac{1}{2}$	$2 \frac{7}{8} \times 3 \frac{5}{8}$	$3 \frac{1}{2}$	7.50
3	$3 \frac{5}{16} \times 4 \frac{3}{16}$	$4 \frac{1}{8}$	9.00
$3 \frac{1}{2}$	$3 \frac{5}{8} \times 4 \frac{5}{8}$	$4 \frac{7}{8}$	11.60
4	$3 \frac{5}{8} \times 4 \frac{5}{8}$	$5 \frac{3}{8}$	12.25
5	$4 \frac{1}{4} \times 5 \frac{3}{4}$	$6 \frac{1}{2}$	20.00
6	$5 \frac{1}{4} \times 7 \frac{1}{4}$	$7 \frac{5}{8}$	30.00
7	$5 \frac{11}{16} \times 7 \frac{11}{16}$	$8 \frac{1}{2}$	41.00
8	$6 \frac{1}{2} \times 8 \frac{1}{2}$	$9 \frac{5}{8}$	56.00

Diameter of Wheel Inches	Size of Plate Inches	Height to Top of Plate, Inches	Per Dozen Pieces
$2 \frac{1}{8}$	$2 \frac{1}{4} \times 3$	3	\$8.50
$2 \frac{1}{2}$	$2 \frac{7}{8} \times 3 \frac{5}{8}$	$3 \frac{1}{2}$	10.25
3	$3 \frac{5}{16} \times 4 \frac{3}{16}$	$4 \frac{1}{16}$	12.30
$3 \frac{1}{2}$	$3 \frac{5}{8} \times 4 \frac{5}{8}$	$4 \frac{7}{8}$	16.75
4	$3 \frac{5}{8} \times 4 \frac{5}{8}$	$5 \frac{1}{4}$	18.00
5	$4 \frac{1}{4} \times 5 \frac{3}{4}$	$6 \frac{1}{2}$	27.00
6	$5 \frac{1}{4} \times 7 \frac{1}{4}$	$7 \frac{3}{4}$	37.75
7	$5 \frac{11}{16} \times 7 \frac{11}{16}$	$8 \frac{5}{8}$	51.00
8	$6 \frac{1}{2} \times 8 \frac{1}{2}$	$9 \frac{3}{4}$	67.50

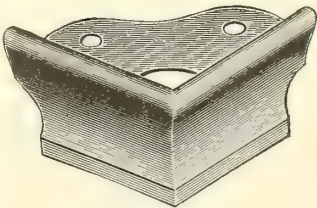
No. 61 Extra Heavy Iron Wheels

Diameter of Wheel Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces
$2 \frac{1}{2}$	$3 \frac{1}{2} \times 4 \frac{1}{4}$	4	\$17.00
4	$4 \frac{11}{16} \times 5 \frac{3}{4}$	$5 \frac{1}{2}$	22.50
5	5 x $6 \frac{1}{2}$	$6 \frac{1}{8}$	34.50
6	$5 \frac{3}{4} \times 7 \frac{1}{4}$	$8 \frac{1}{4}$	46.50
7	$5 \frac{3}{4} \times 7 \frac{1}{4}$	$8 \frac{3}{4}$	59.00
8	$6 \frac{1}{2} \times 8 \frac{1}{2}$	$10 \frac{1}{8}$	71.50

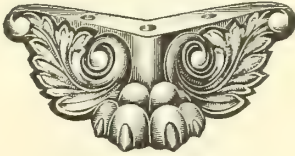
Furniture Feet



No. 45



No. 25

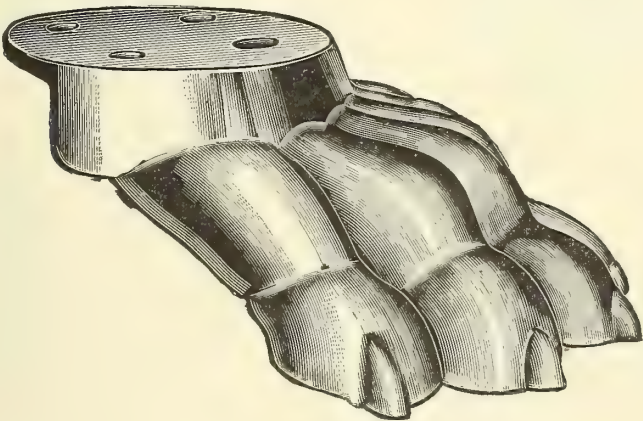


No. 6857K

Solid brass, polished, gross
\$18.00

Solid brass, polished, gross
\$19.50

Solid brass, polished, gross
\$9.00



No. 4395

Solid brass, polished, dozen \$2.40

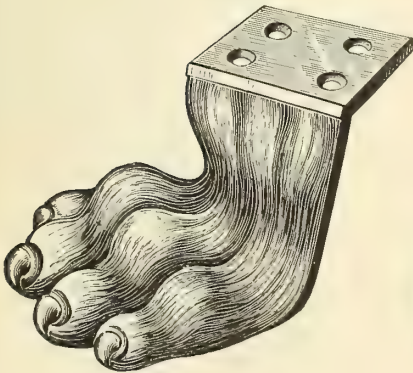
No. 4395½

Iron, brass-plated, polished, dozen \$1.35



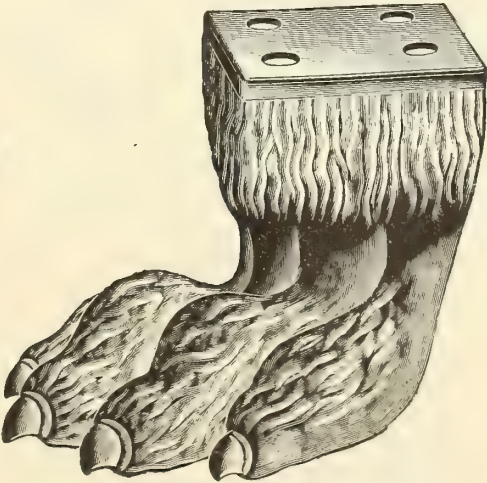
No. 34

Solid brass, polished, dozen \$4.80



No. 6190

Solid brass, polished,
dozen \$1.60



No. 4586 Solid brass, polished, dozen \$4.50

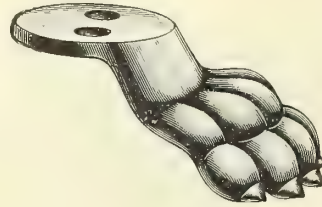
No. 4586½ Iron, brass-plated, pol-
ished, dozen 1.60

Furniture Feet



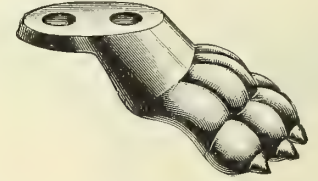
No. 6858

Solid brass, polished, gross..... \$3.60



No. 7152

Solid brass, polished, gross..... \$12.60



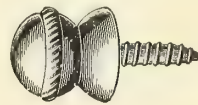
No. 7156

Solid brass, polished, gross..... \$14.40



No. 527

Solid brass knob, polished; steel
screw, gross..... \$4.80
Solid brass, nickel-plated..... 5.40



No. 502

Solid brass knob, polished, steel
screw, gross..... \$7.50
Solid brass, nickel-plated..... 8.25



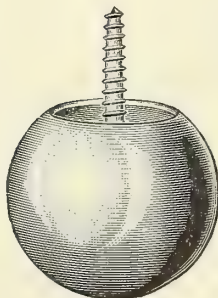
No. 3394

Wrought brass, polished, gross..... \$5.30
Wrought brass, nickel-plated..... 5.85

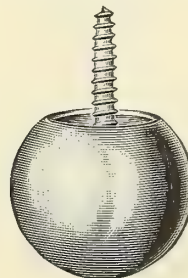
Caddie Balls

Full Size Cuts

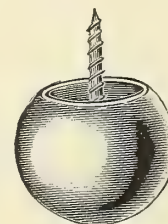
Balls are Polished Brass, with Steel Screws



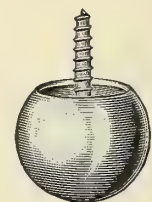
Number..... 8
Diameter, inch..... 1
Gross..... \$10.20



7
 $\frac{7}{8}$
8.60



6
 $\frac{3}{4}$
7.30



5
 $\frac{11}{16}$
6.20



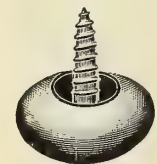
Number..... 4
Diameter, inch..... $\frac{9}{16}$
Gross..... \$4.80



2
 $\frac{7}{16}$
3.80



1
 $\frac{3}{8}$
4.50



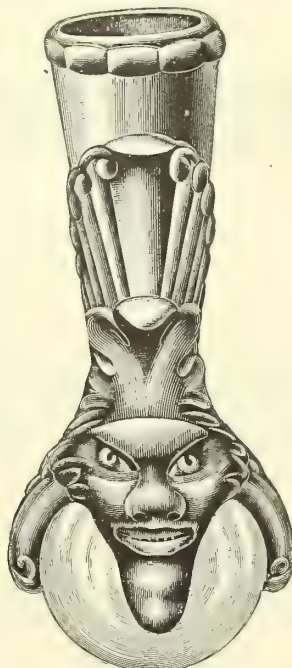
5563
 $\frac{11}{16}$
6.20

Furniture Feet



No. 060

Dozen \$3.75



No. 77

Cast iron, brass-plated, dozen \$2.50

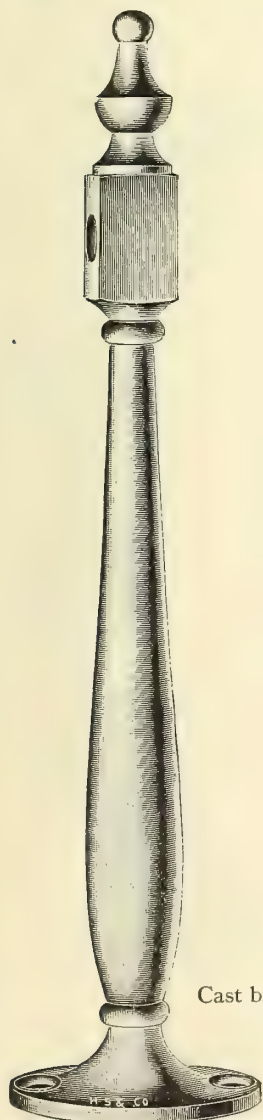


No. 050

Cast iron, glass ball, dozen \$1.44

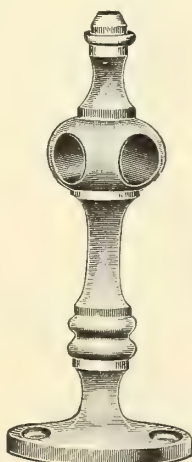
Furniture and Desk Posts

These Posts can be furnished for the corner, center or end. In ordering, state which is required.



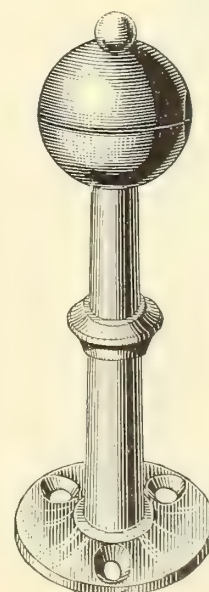
No. 9

Cast brass, dozen.. \$4.50



No. 3

Cast brass, polished. For $\frac{1}{4}$ -inch rod,
1 $\frac{1}{2}$ inches to center of hole, dozen. \$1.50



No. 2

Cast brass, polished. For $\frac{3}{8}$ -inch rod,
2 $\frac{1}{4}$ inches to center of hole, dozen. \$2.20



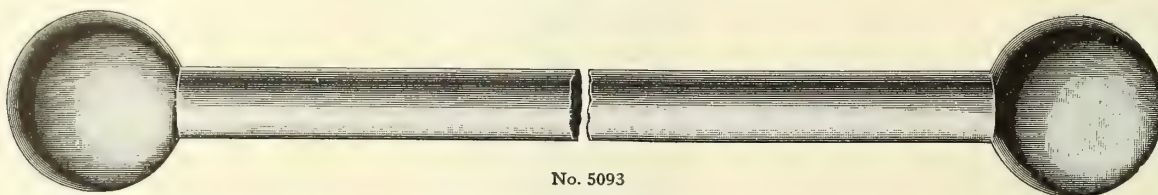
No. 4270

Desk Rail Sockets

Full Size Cut

Cast brass, polished. For $\frac{1}{4}$ -inch rod, dozen \$1.20

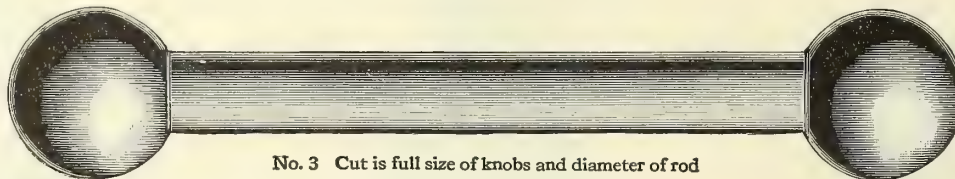
Morris Chair Rods



No. 5093

Brass knobs, polished. Brass-plated rod.
24 inches between knobs, per 100
26 inches between knobs, per 100

\$33.00
33.00



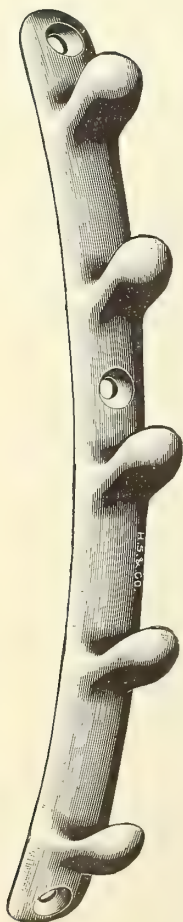
No. 3 Cut is full size of knobs and diameter of rod

Brass knobs polished. Brass-plated rods, $\frac{3}{8}$ -inch diameter,
26 inches between knobs, per 100

\$14.00

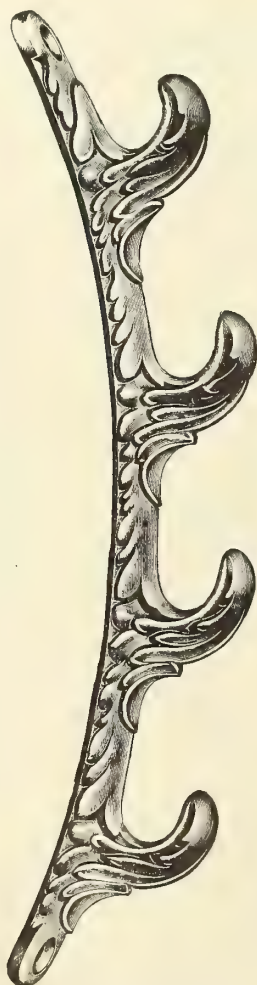
Morris Chair Racks

Half Size Cuts



No. 1

Cast brass, polished,
dozen..... \$6.00



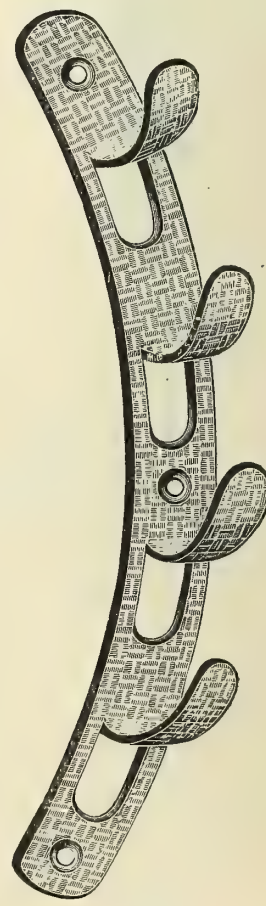
No. 2

Cast brass, dozen.. \$3.00



No. 3

Cast brass, dozen..... \$4.35



No. 5

Wrought steel,
brass-plated,
dozen..... \$1.20

We want *you* to know

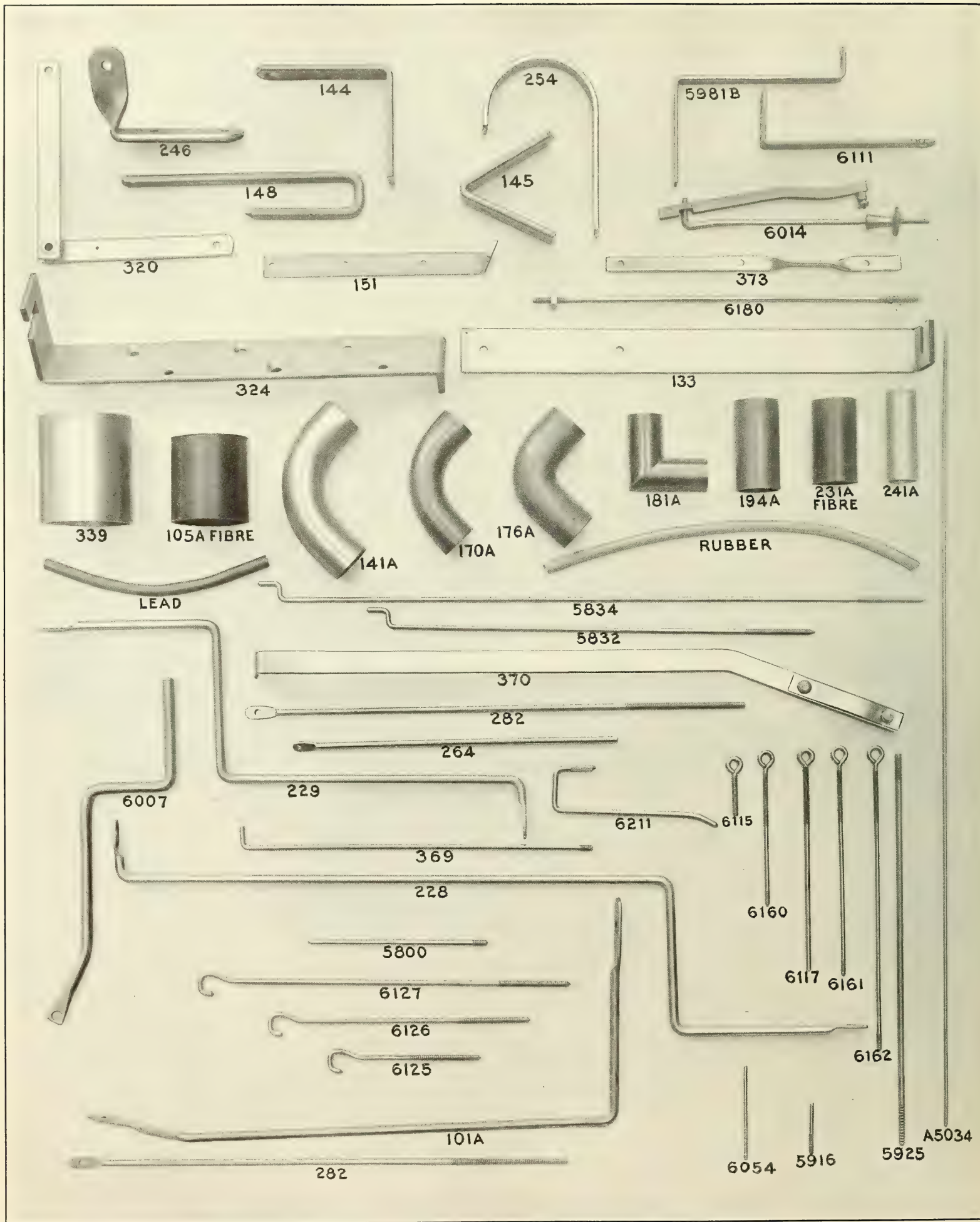
that one of the largest departments of our business is devoted to the making of all manner of special parts for manufacturers.

Screw machine and lathe work; die and sand castings; drawn or stamped parts; forgings, spun brass flanges, ferrules, etc.

Illustrations herewith (numbered merely for general convenience) are taken at random from work we have produced.

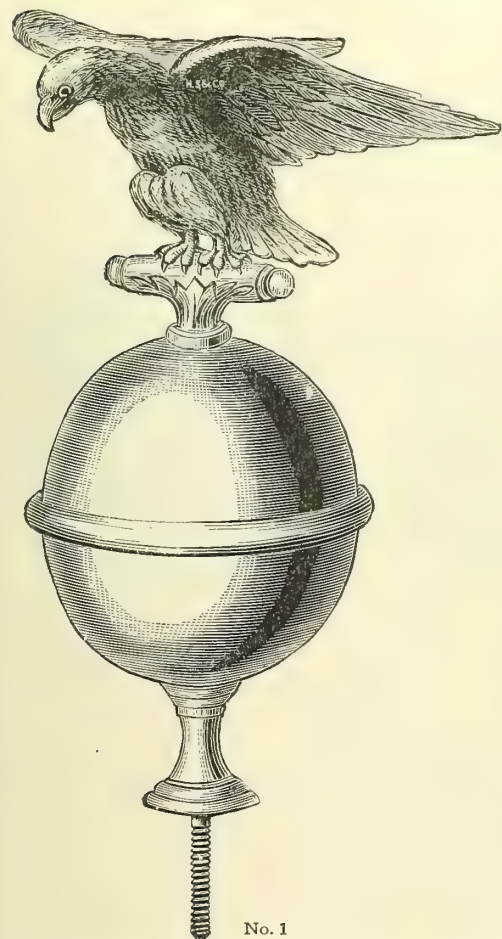
It is necessary to send us samples of your wants, properly marked for correct identification, along with specifications as to quantities and deliveries, and with such detail in hand we are in excellent position to quote the lowest possible prices, consistent with strictly high grade material and workmanship.

Hammacher, Schlemmer & Company

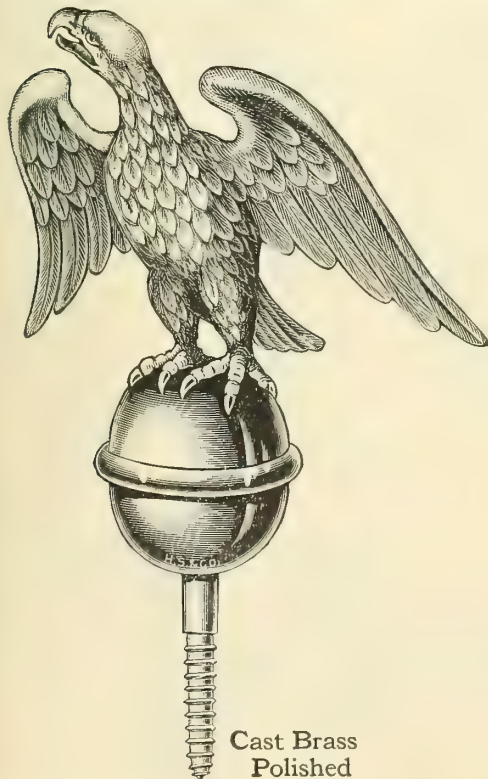


See reverse side.

Also pages facing 313, 344 and 888

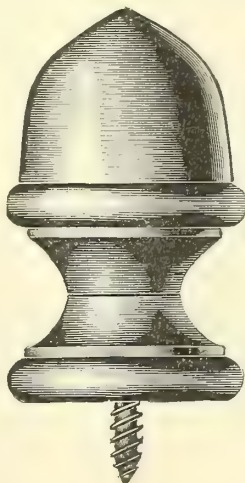


Spun brass ball, 2⅜ inches diameter; cast brass eagle; polished all over; 5¼ inches high over all; dozen..... \$21.00



Cast Brass Polished			
Number.....	4	5	8
Diameter of ball, inch.....	5⁄8	7⁄8	1
Height over all, inches.....	2	2⅛	3¼
Dozen.....	\$6.00	9.00	12.00

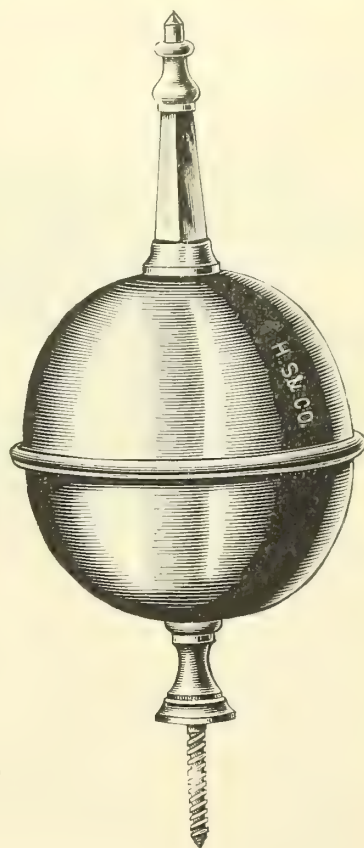
Clock Spires



Full Size Cut of No. 137

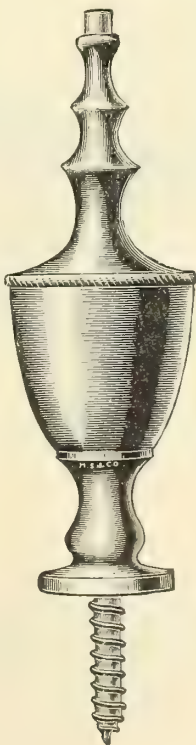
Polished Brass

Number.....	135	136	137
For pole, inch.....	½	¾	1
Gross.....	\$7.50	9.00	11.00



Spun brass ball, cast brass spire, polished all over.

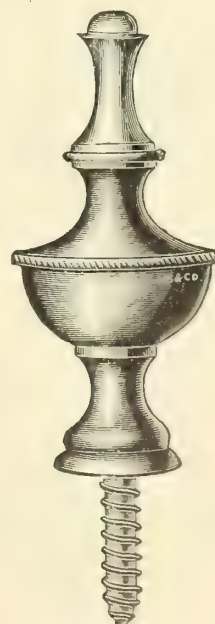
Number.....	2	2½	3
Diameter, inches.....	1¾	2⅛	2¾
Height over all, inches.....	4¼	5	5
Dozen.....	\$6.00	8.00	9.00



No. 7

Full Size Cut

Cast brass, polished, dozen..... \$4.50



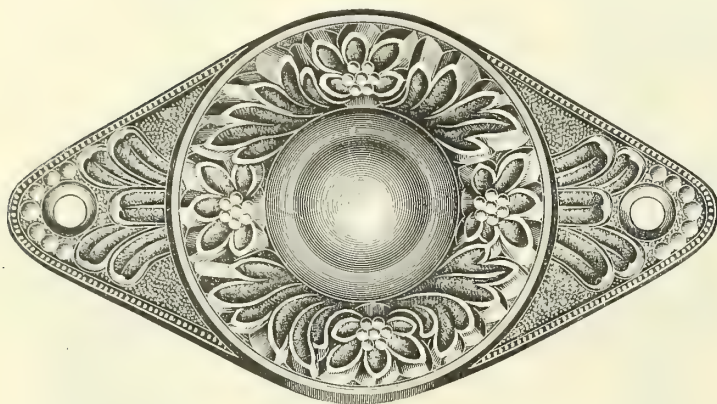
No. 6

Full Size Cut

Cast brass, polished, dozen..... \$3.77

Bedstead Rosettes

Full Size Cuts



No. 114

Cast brass, polished

Dozen \$2.40



No. 219A

Cast brass, polished

Dozen \$2.64



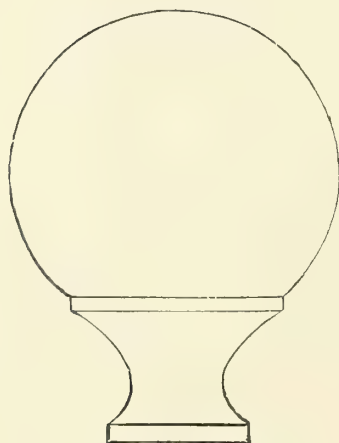
No. 218A

Cast brass, polished

Dozen \$2.64

Bedstead Balls

Full Size Cuts

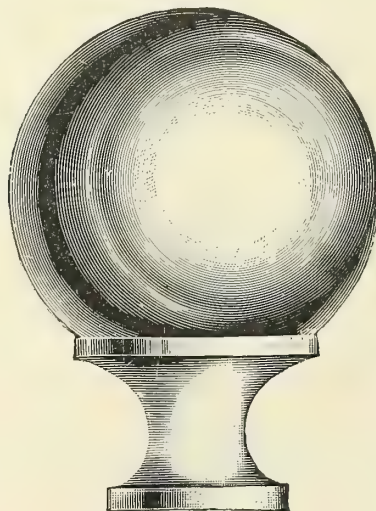


No. 7061

Heavy spun brass, polished.

1 3/4 inches diameter, 3/8-16 thread.

Gross \$16.50

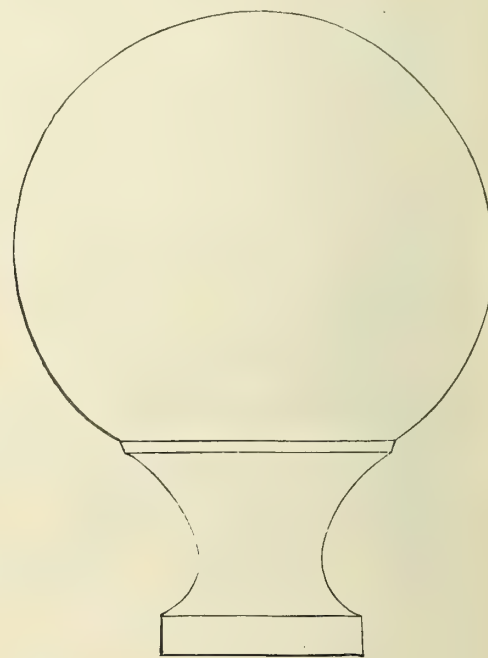


No. 6900

Heavy spun brass, polished.

2 inches diameter, 3/8-16 thread.

Gross \$21.80



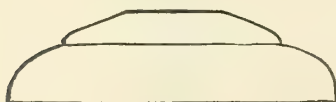
No. 7063

Heavy spun brass, polished.

2 1/2 inches diameter, 3/8-16 thread.

Gross \$57.00

Bedstead Caps



No. 6057

Wrought brass, polished.

1 3/4 inches diameter.

Gross \$3.70



Full size cut of 3/8-inch size

Turned brass, polished

Number	Diameter Inch	Threads	Gross
6180	3/8	12-24	\$2.50
6181	1/2	12-24	3.70
7864	19/32	12-24	5.60

Threaded Rods

Made of steel.

12-24 threads to inch. 4 inches long.

Threaded 1 inch on each end.

Gross \$.90

2 1/2 inches long.

Threaded full length.

Gross65

1 1/2 inches long.

Threaded full length.

Gross40

Stamped Beading

Made of Sheet Brass, Dipped. Packed with Pins



No. 685

Per 100 yards \$6.00



No. 5136

Per 100 yards \$7.50



No. 30

Per 100 yards \$6.50



No. 2

Per 100 yards \$9.00



No. 31

Per 100 yards \$7.50

Solid Ball Beading

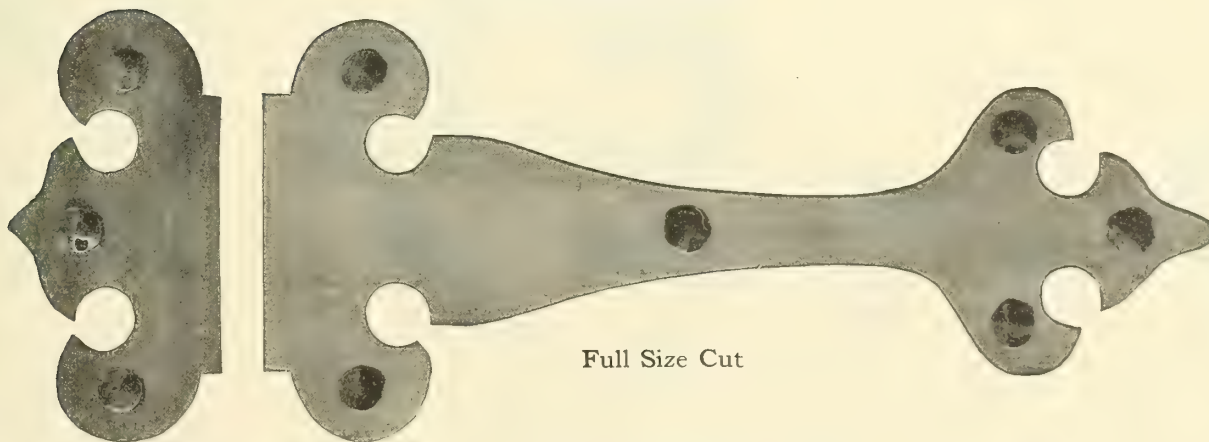
Solid Brass, Polished. Packed with Pins



$\frac{3}{16}$ -inch diameter, per 100 yards \$50.00

Hinge Plates

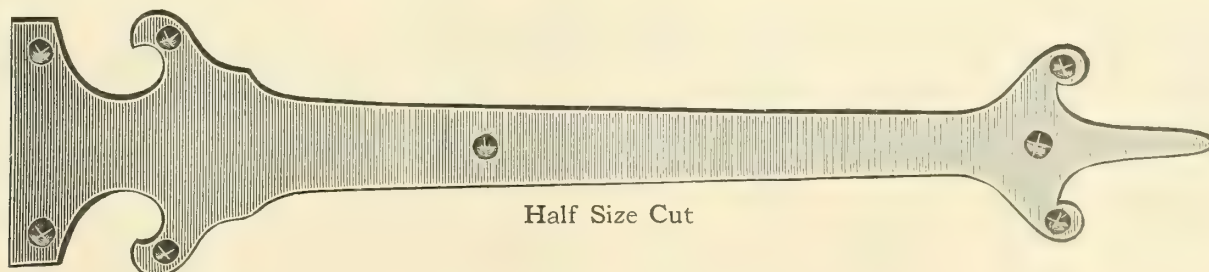
Made of Sheet Brass



Full Size Cut

No. 1966A Mission Finish, End Plate
Dozen \$2.88

No. 1966B Mission Finish, Hinge Plate
Will fit butts from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches. Dozen \$4.80

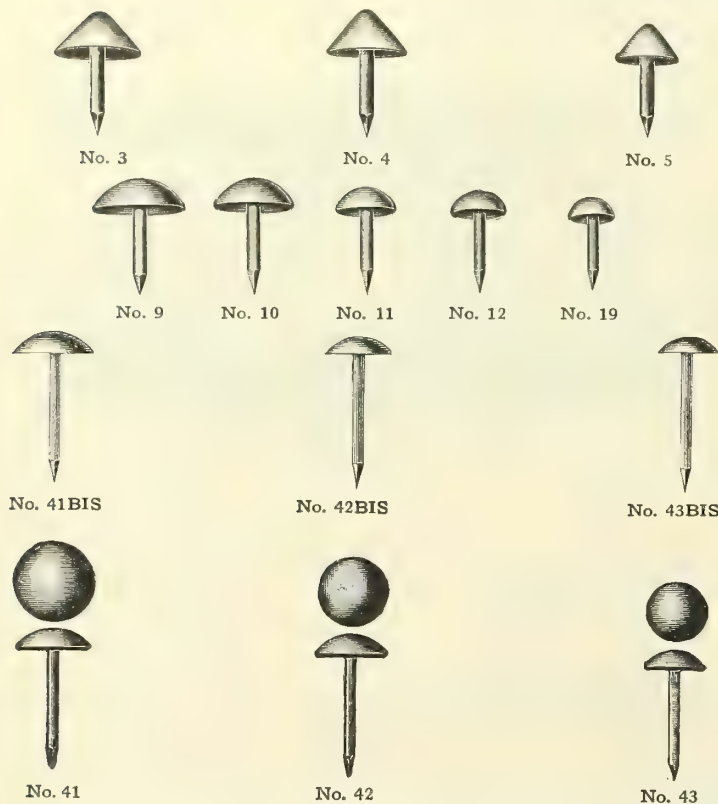


Half Size Cut

No. 1969 Mission Finish, Hinge Plate
Will fit butts from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches. Dozen \$9.60

Brass Furniture Nails

Full Size Cuts

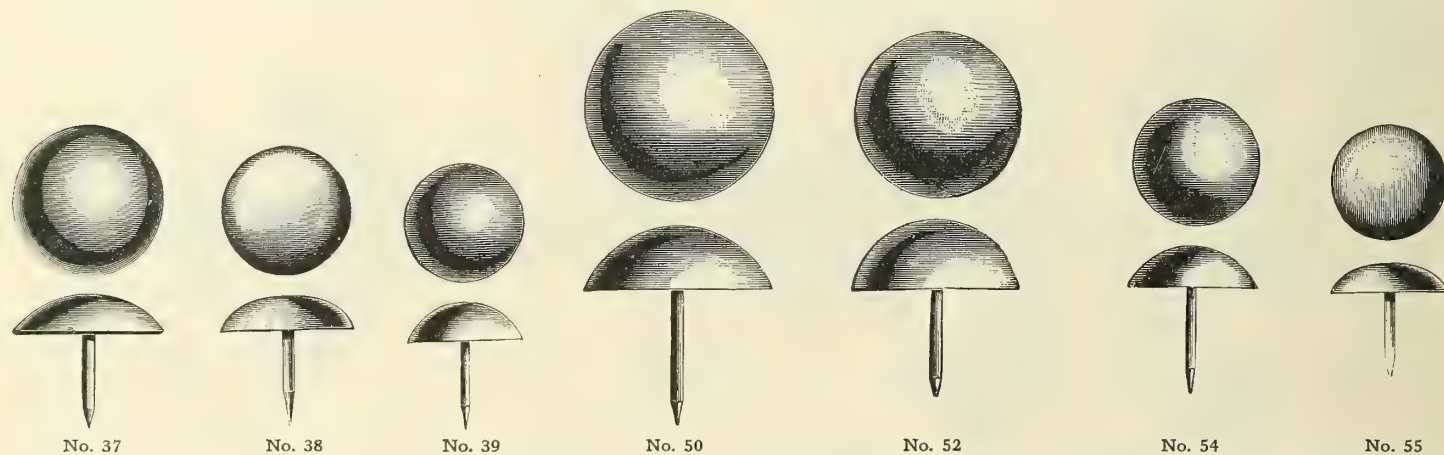


Number	Length of Shank Inch	Price per Thousand			
		Gilt	Nickel-plated	Antique Copper	Natural
3	..	\$1.50	\$1.70	\$2.20	\$2.00
4	..	1.30	1.45	1.95	1.80
5	..	1.00	1.15	1.65	1.50
9	..	1.35	1.60	2.10	1.90
10	..	1.15	1.40	1.90	1.75
11	..	.90	1.05	1.55	1.40
12	..	.65	.85	1.35	1.25
19	..	.65	.85	1.35	1.25
41BIS	3/4	1.00	1.20	1.70	1.55
41	5/8	1.00	1.20	1.70	1.55
141	7/16	1.00	1.30	1.70	1.55
141 1/2	3/8	1.10	1.30	1.80	1.65
0141 1/2	5/16	1.10	1.30	1.80	1.65
42BIS	3/4	.70	.85	1.35	1.20
42	5/8	.70	.85	1.35	1.20
142	7/16	.70	.85	1.35	1.20
142 1/2	3/8	.80	.95	1.45	1.30
0142	5/16	.80	.95	1.45	1.30
43BIS	3/4	.60	.75	1.25	1.15
43	5/8	.60	.75	1.25	1.15
143	7/16	.60	.75	1.25	1.15
143 1/2	3/8	.70	.85	1.35	1.25
0143 1/2	5/16	.70	.85	1.35	1.25

Above are all packed 1000 in a box.

The gilt Nails are packed in paper cartons of 100 each at following prices:

Number	9	10	11	12	19	41	42	43
Price per thousand	\$1.50	1.30	1.05	.80	.80	1.15	.85	.75



Number	Quantity in a Box	Length of Shank Inch	Silver Oxidized	Price per Thousand		
				Antique Copper	Natural	Gilt
37	500	..	\$12.40	\$7.25	\$7.05	\$6.85
38	500	..	9.75	5.65	5.45	5.25
39	1000	..	8.60	4.95	4.85	4.60
50	250	..	17.40	10.70	10.45	10.15
52	500	..	12.40	7.25	7.05	6.85
54	500	..	9.75	5.65	5.45	5.25
55	1000	..	8.60	4.95	4.80	4.60



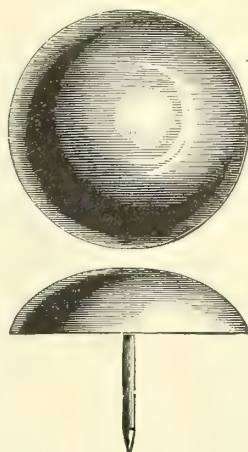
Number	Finish	Quantity in a Box	Price per 1000
19 1/2	Gilt	1000	\$1.70
19 1/2	Nickel-plated	1000	1.80
1603	Nickel-plated	1000	2.00
1604	Nickel-plated	1000	1.90

Brass Furniture Nails

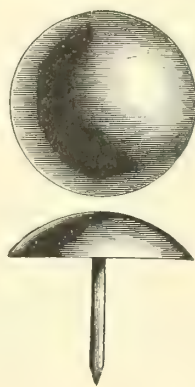
Cuts Full Size



No. 254



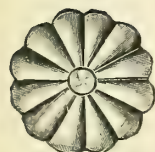
No. 256



No. 258

List per 1000

Number.....	254	256	258
Oxidized Silver.....	\$37.50	30.00	17.40
Antique Copper.....	25.00	20.00	10.70
Natural.....	24.50	19.50	10.45
Gilt.....	24.00	19.10	10.15



No. 1530



No. 1531



No. 1532



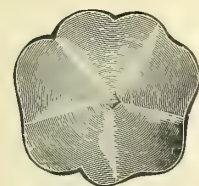
No. 1533



No. 1534

List per 1000

Number.....	1530	1531	1532	1533	1534
Silver Oxidized.....	\$9.70	8.45	7.20	4.50	3.75
Gilt.....	7.75	6.75	5.75	3.60	3.00
Antique Copper.....	5.50	4.80	4.00	2.40	2.00
Natural.....	5.25	4.55	3.80	2.20	1.90



No. 1617
250 in a Box



No. 1618
500 in a Box



No. 1561
1000 in a Box



No. 1543
1000 in a Box



No. 1548
250 in a Box

List per 1000

Number.....	1617	1618	1543	1548	1561
Old Brass.....	\$13.50	11.50			
Baur Barff.....	12.75	10.80			
Natural.....	12.00	10.00			
Iron.....	9.50	8.25			
Silver Oxidized.....			4.50	16.25	4.50
Gilt.....			3.60	13.00	3.60
Antique Copper.....			2.40	10.50	2.40
Natural.....			2.20	10.25	2.20

Double Shank Nails

Used for fastening pulls, handles, catches, etc., to paper boxes and light cabinet work

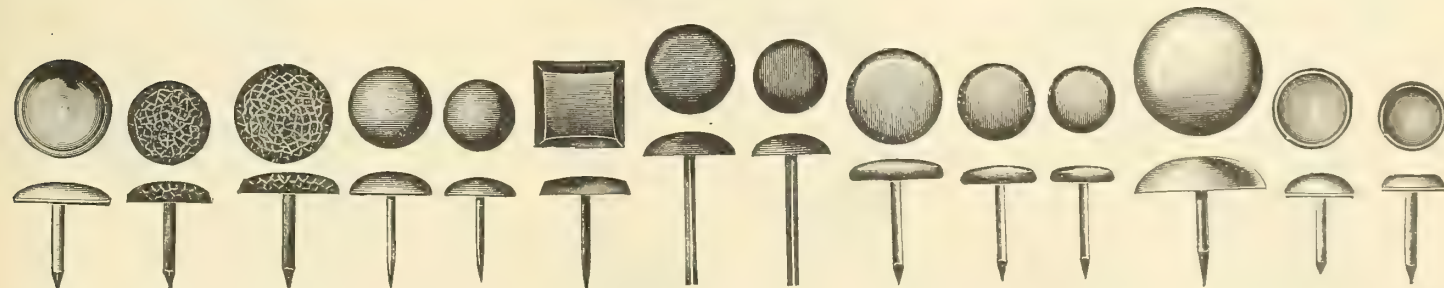


No. 19½	Nickel-plated, per 1000.....	\$3.20
No. 19½	Gilt, per 1000.....	3.00
No. 83	Gilt, per 1000.....	1.00

Leather Finish Nails

These nails are enameled to imitate leather. The color numbers used are the same as used to indicate the colors of Pantasote

Color No. 88 Medium Green	Color No. 86 Dark Olive Green	Color No. 75 Dark Maroon
Color No. 85 Dark Green	Color No. 82 Tan	Color No. 74 Very Dark Maroon
Color No. 77 Very Dark Green	Color No. 78 Light Maroon	Color No. 96 Black
Mottled Brown and Green	Mottled Brown and Black	Mottled Red and Black



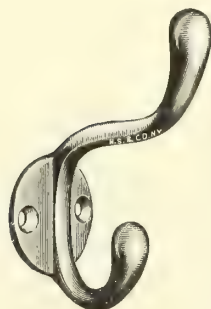
No. 3901	No. 4903	No. 4901	No. 1902	No. 1903	No. 1904	No. 1905	No. 1906	No. 2901	No. 2902	No. 2903	No. 38	No. 3902	No. 3903
\$3.00	\$2.30	\$2.60	\$1.65	\$1.65	\$3.90	\$2.85	\$2.55	\$1.95	\$1.65	\$1.65	\$7.00	\$1.65	\$1.65

Prices per 1000. Packed 1000 in a box.

For packing in cartons containing 200 or 100, add 10 cents net per 1000; 50, add 15 cents net per 1000; 25, add 25 cents net per 1000.

Coat and Hat Hooks

One Half Size Cuts

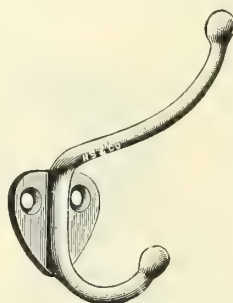


Height 3 inches, projects 2 inches.

Packed with screws.

No. 01030 Bronze, polished, dozen... \$2.00

No. OB01030 Brass, old brass finish,
dozen... 2.00

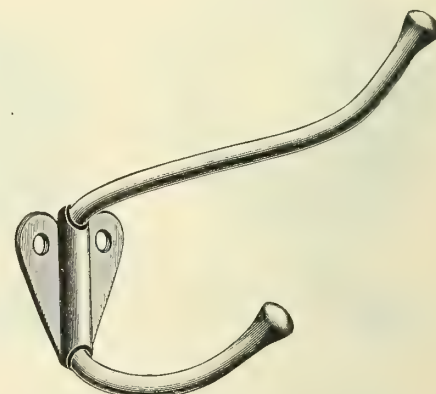


Height 2 3/4 inches, projects 2 3/8 inches.

Packed with screws.

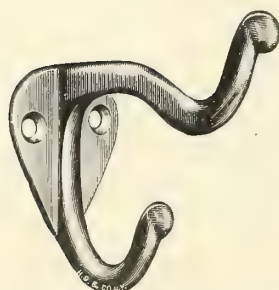
No. 91 1/2 Cast bronze, polished, dozen \$2.10

No. 91 1/2 Cast bronze, nickel-plated,
dozen... 2.25



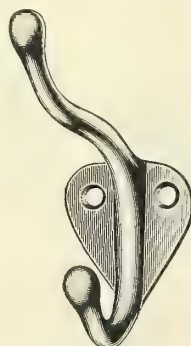
Height 3 3/4 inches, projects 4 inches.
Packed with screws.

No. 2872 Wrought steel, bronze-plated, unpolished, gross... \$13.50



No. 6 Height 2 5/8 inches, projects 3 1/8 inches. Packed with screws.
Polished bronze metal, dozen... \$2.50

No. 194 Height 2 1/2 inches, projects 3 1/4 inches. Cast iron, coppered, gross... 4.00



Packed with screws.

No. 91 Height 3 1/4 inches, projects 3 3/8 inches.

Brass, polished, dozen... \$2.10

Brass, old brass finish, dozen... 2.10

Bronze, polished, dozen... 2.25

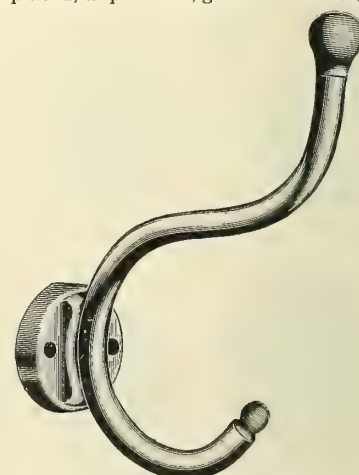
Bronze, nickel-plated, dozen... 2.35

No. 402 Height 3 1/2 inches, projects 3 inches... 6.00

No. YT402 Cast iron, bronze-plated, gross... 10.80

No. DA402 Cast iron, antique copper finish, gross... 12.30

No. NT402 Cast iron, nickel-plated, gross... 12.00

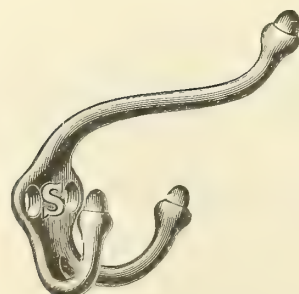


Packed with screws

Height 4 1/8 inches, projection 3 3/4 inches.

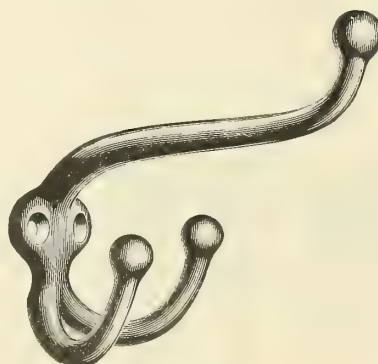
No. 5783 Wrought steel, brass-plated, dozen... \$2.90

No. 5783C Sizes as above, covered with white celluloid, dozen... 6.00



Height 3 1/2 inches, projects 2 1/2 inches.

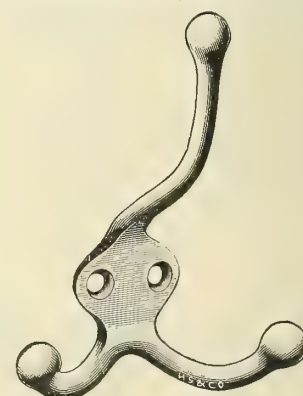
No. 20 Cast iron, japanned, gross... \$3.60



Packed with screws.

Height 3 1/2 inches, projects 3 3/8 inches.

No. YT422 Cast iron, bronze-plated, polished, gross... \$12.20



Packed with screws.

No. 1890 Height 5 3/4 inches, projects 2 1/2 inches.

Bronze, polished, dozen... \$4.50

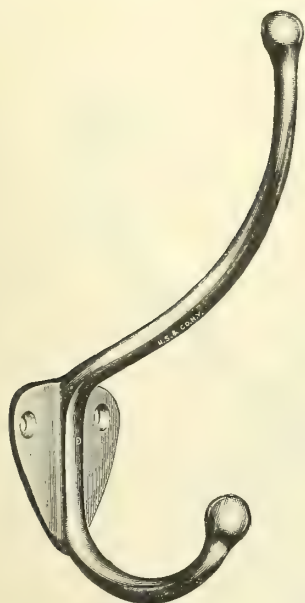
No. OB1890 Sizes as above.

Cast brass, old brass finish, dozen... 4.50

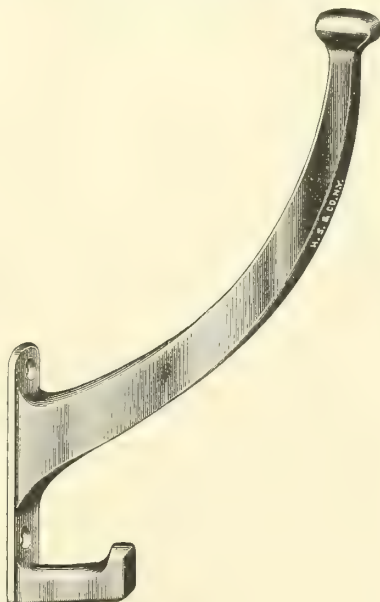
No. 1891 1/2 Bronze, height 4 inches, projects 1 1/2 inches, dozen... 3.00

Coat and Hat Hooks

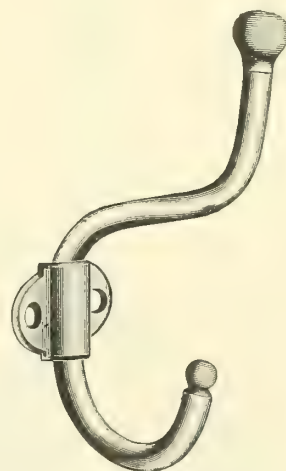
One Half Size Cuts



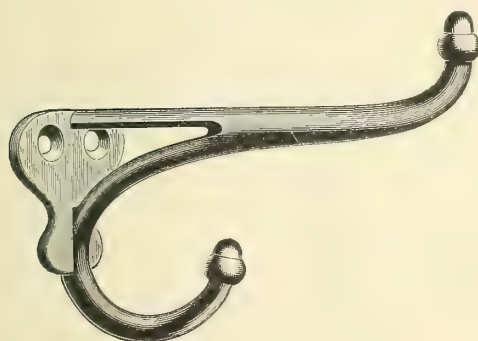
No. 1889 Packed with screws. Height 6¼ inches, projects 3¼ inches. Bronze, dozen \$3.75



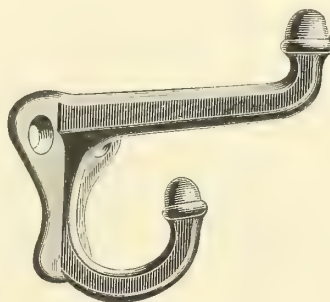
No. 922 Height 6 inches, projects 3½ inches. Cast iron, brass-plated, dozen \$2.00



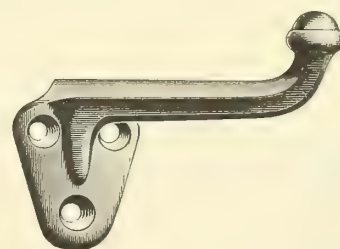
No. 6375 Height 5 inches, projects 3½ inches. Packed with screws. Iron, brass-plated, dozen \$4.00
No. OB6375 Packed with screws. Iron, old brass finish, dozen 4.75



No. 8 Height 3 inches, projects 3½ inches. Cast iron, japanned, gross \$3.00



No. 92 Extra heavy, for hotel use. Height 3¼ inches, projects 3 inches. Cast iron, japanned, gross \$7.20

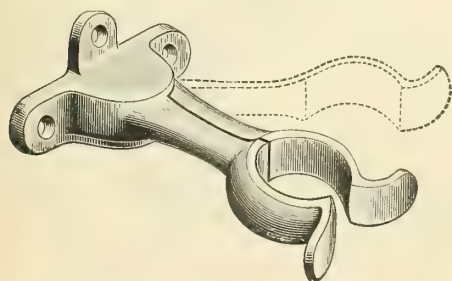


No. 091 For hotel use. Projects 3 inches. Cast iron, japanned, gross \$4.40

No. 108 Cast iron, coppered, gross 3.00

Umbrella Hooks

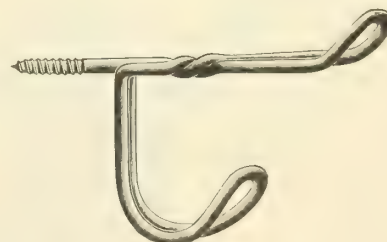
Can also be used for billiard cues



No. 58P Projects 3¼ inches. Packed with screws. Cast bronze, polished, dozen \$7.60



No. 5593 Height 4 inches, projects 2¾ inches. Cast brass, polished, dozen \$3.00



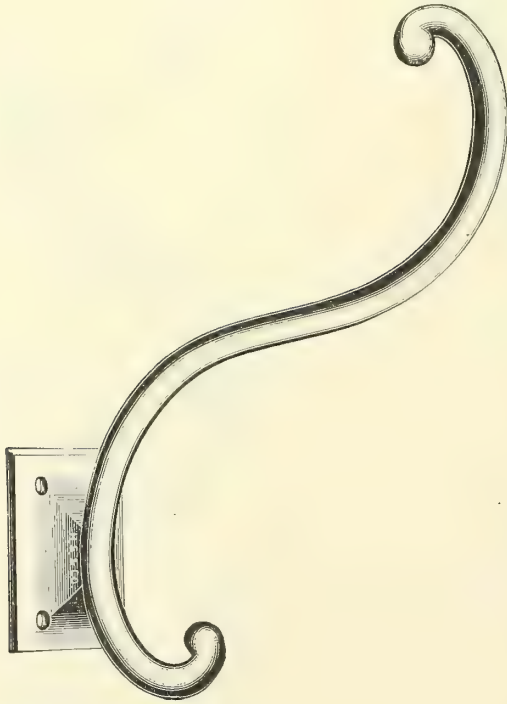
No. 123 Amber. Height 2 inches, projects 3 inches. Gross \$2.80

No. 170 Coppered. Height 2½ inches, projects 3½ inches. Gross 3.00

No. 5123 Brass-plated. Height 1½ inches, projects 3¼ inches. Gross 4.00

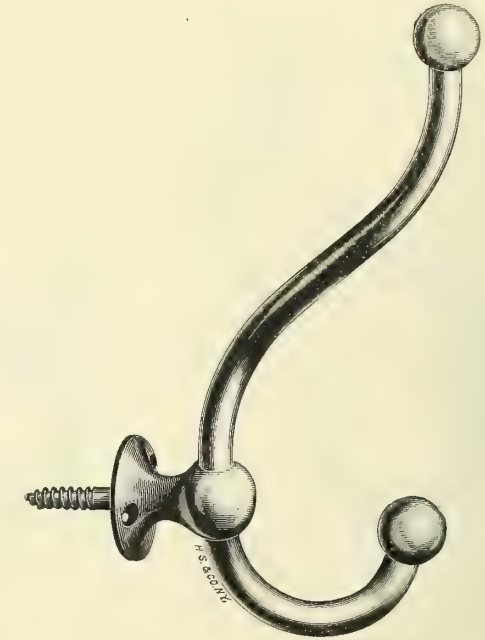
Coat and Hat Hooks

Cuts One Half Size



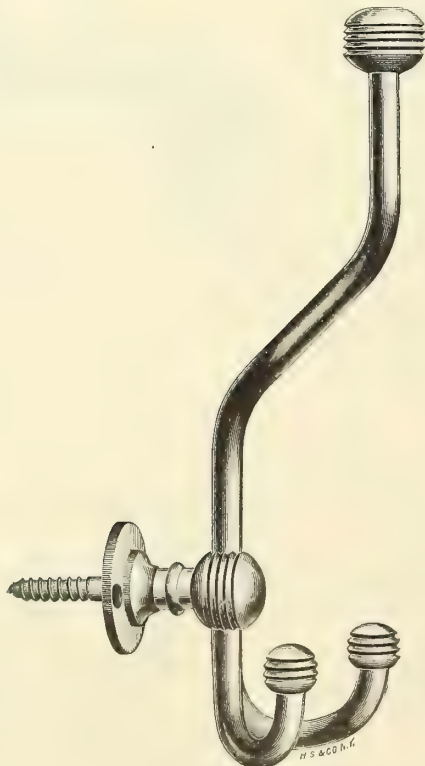
Height 7 inches, projects $5\frac{3}{4}$ inches.

No. 35 $\frac{1}{2}$ Cast brass, polished, dozen \$7.00
No. OB35 $\frac{1}{2}$ Cast brass, old brass finish, dozen 7.00



Height 6 $\frac{1}{2}$ inches, projects $3\frac{3}{4}$ inches.

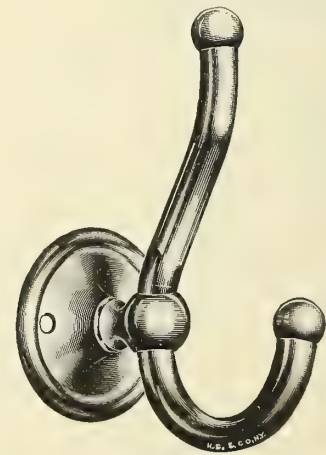
No. 5133 Cast brass, polished, dozen \$4.50
No. OB5133 Cast brass, old brass finish, dozen 4.50



No. 33 $\frac{1}{2}$

Height 7 $\frac{3}{4}$ inches, projects 3 $\frac{1}{2}$ inches.

Cast brass, polished, dozen \$16.50

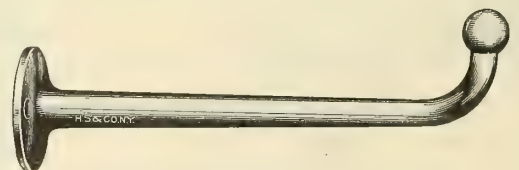


No. 1117

Packed with screws.

Height 3 $\frac{1}{2}$ inches, projects 4 $\frac{1}{4}$ inches.

Brass tubing, nickel-plated, dozen \$6.00



No. 169

Height 1 $\frac{1}{2}$ inches, projects 5 inches.

Cast brass, polished, dozen \$3.50

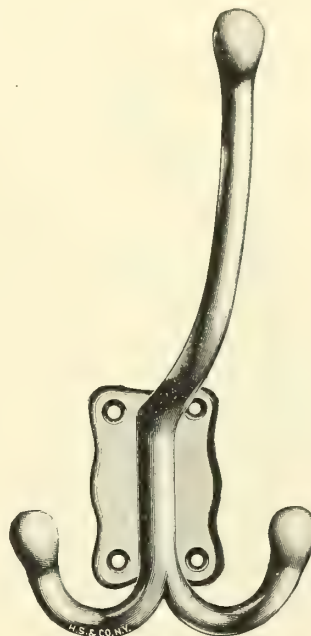
Coat and Hat Hooks

One Half Size Cuts



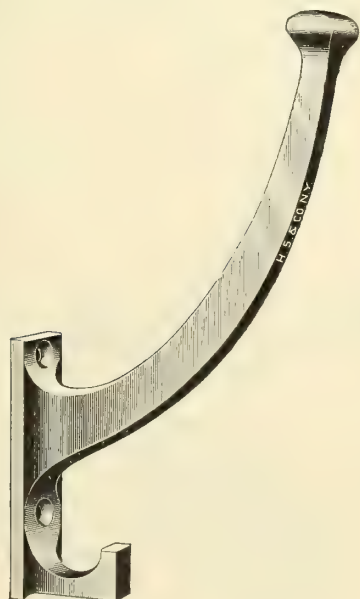
No. 5810

Height $6\frac{1}{2}$ inches, projects 4 inches.
Solid brass, polished, dozen \$8.25



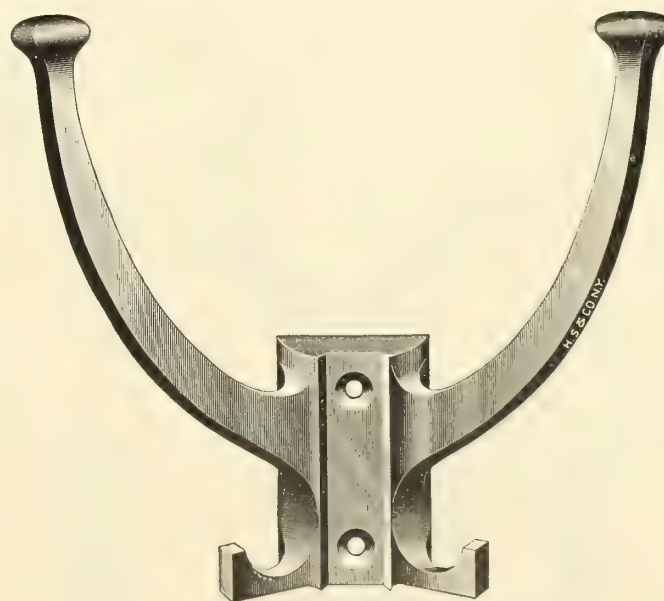
No. 5809

Height $6\frac{1}{2}$ inches, projects $3\frac{1}{2}$ inches.
Solid brass, polished, dozen \$10.80



No. 54

Packed with screws.
Height $6\frac{1}{4}$ inches, projects $3\frac{3}{4}$ inches.
Cast brass, old brass finish, dozen \$5.85



No. 55

Packed with screws.
Height $6\frac{1}{4}$ inches, projects $3\frac{1}{4}$ inches.
Cast brass, old brass finish, dozen \$15.00

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Coat and Hat Hooks



No. 155

One-half Size Cut

Height 7 inches, projects $3\frac{1}{2}$ inches.

Steel, brass-plated, gross..... \$10.00

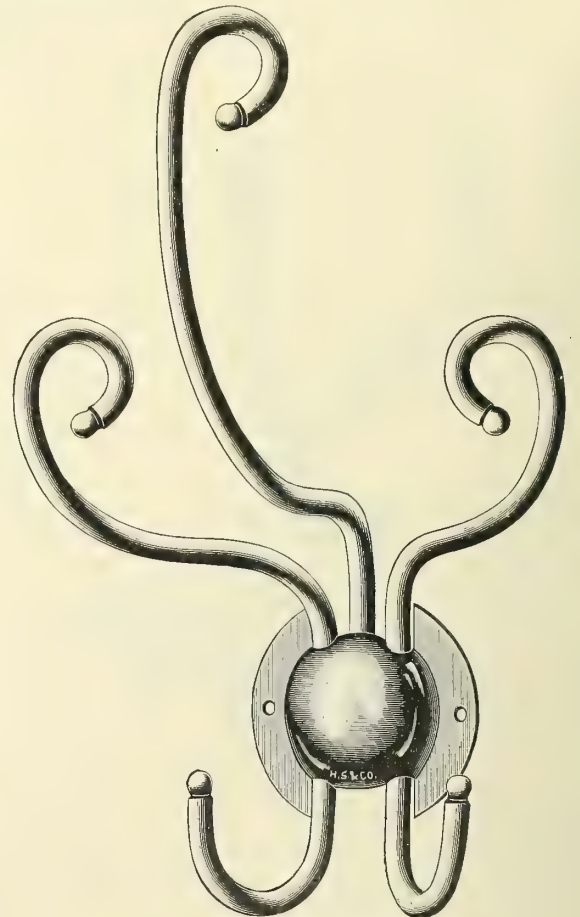


No. 4562

Two-thirds Size Cut

Height $1\frac{1}{2}$ inches, projects $3\frac{1}{2}$ inches.

Steel, brass-plated with solid brass base and ball, gross..... \$12.00

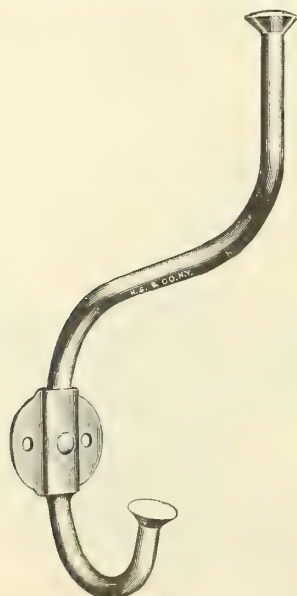


No. 167 $\frac{1}{2}$

One-third Size Cut

Height 12 inches, projects $9\frac{1}{2}$ inches.

Steel, brass-plated, with spun brass shield, packed with screws,
dozen..... \$8.40



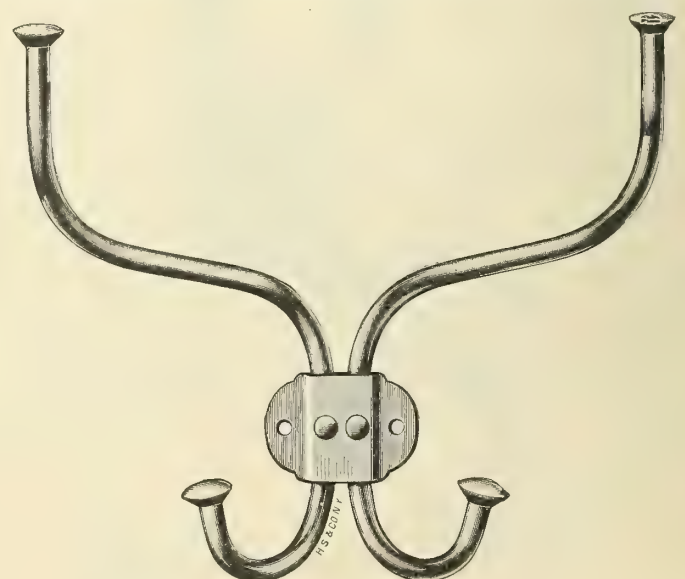
No. 58

One-half Size Cut

Packed with screws.

Height 6 inches, projects $2\frac{3}{4}$ inches.

Steel, brass-plated, dull brass finish, gross..... \$10.00



No. 59

One-half Size Cut

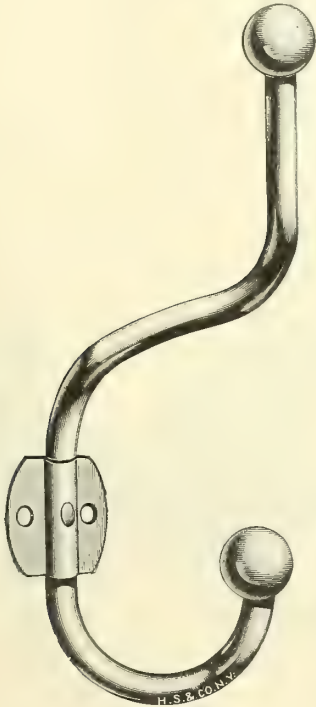
Height 6 inches, projects $2\frac{3}{4}$ inches.

Spread between hooks $6\frac{1}{2}$ inches.

Steel, brass-plated, gross..... \$20.00

Coat and Hat Hooks

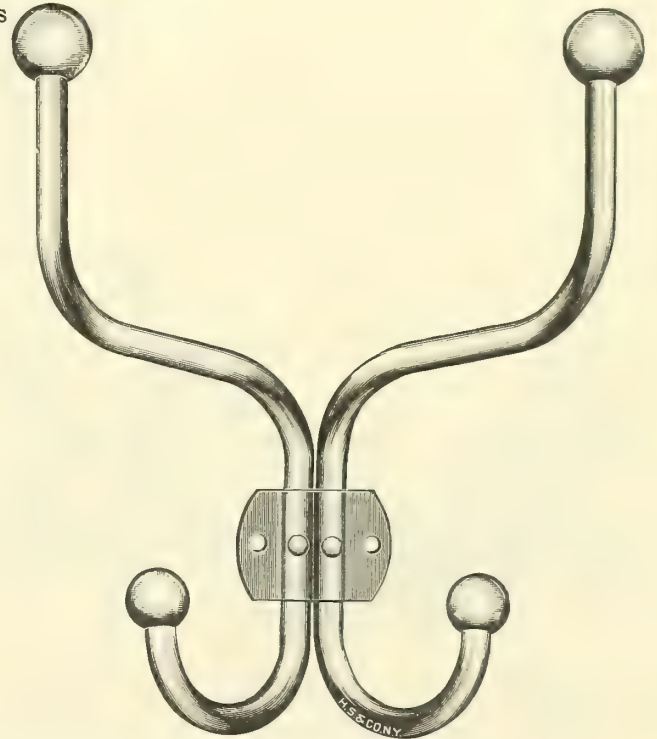
One Half Size Cuts



Height 7 inches, projects $2\frac{3}{4}$ inches.

No. 6340 Steel, brass-plated and polished, dozen \$4.25

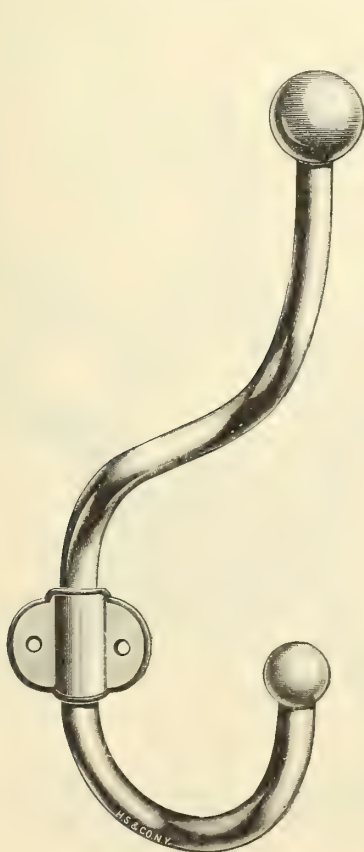
No. OB6340 Same as above, in old brass finish, dozen 5.00



Height 7 inches, projects $2\frac{1}{2}$ inches.

No. 6306 Steel, brass-plated and polished, brass balls polished, dozen \$9.50

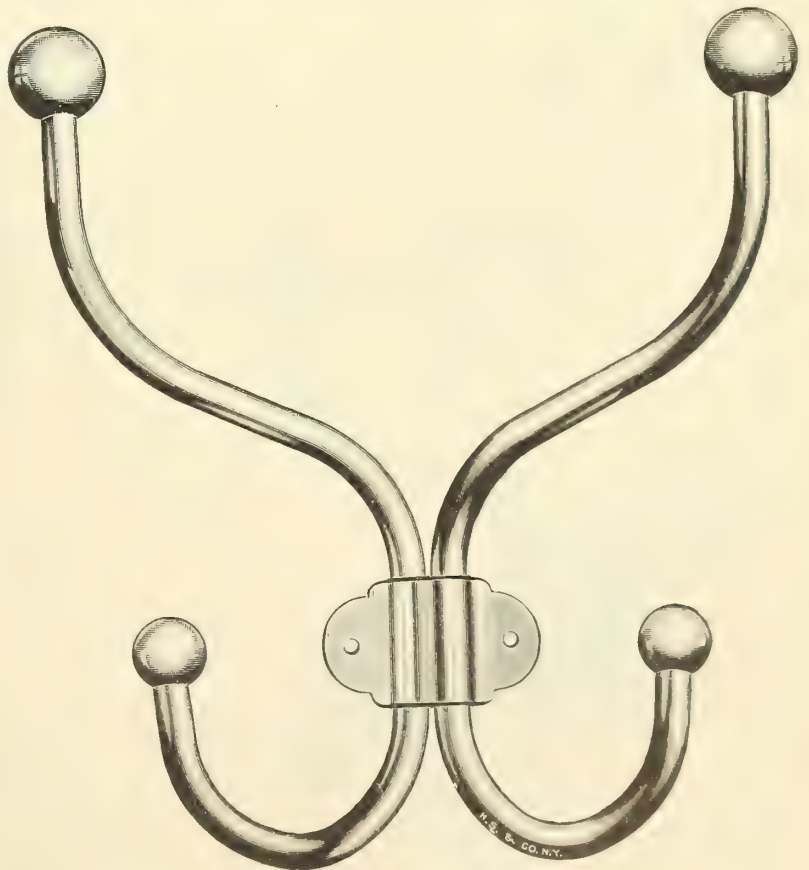
No. OB6306 Same as above, in old brass finish, dozen 11.50



Height $8\frac{1}{2}$ inches, projects 4 inches.
Packed with screws.

No. 5776 Solid brass, polished, polished brass balls, dozen . . . \$8.50

No. OB5776 Same as above, in old brass finish, dozen 10.50



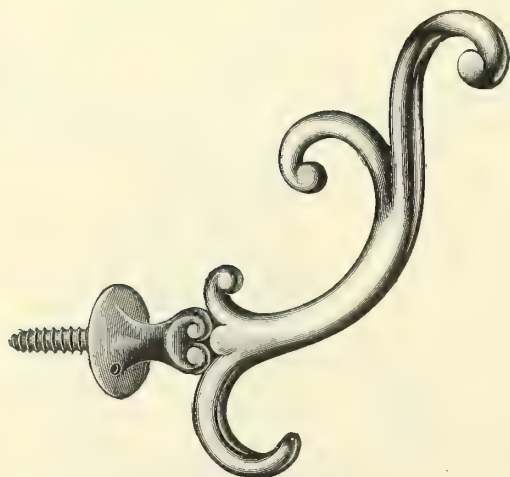
Height 9 inches, projects $3\frac{1}{2}$ inches.
Packed with screws.

No. 5791 Solid brass, polished, brass balls polished, dozen . . . \$20.00

No. OB5791 Same as above, in old brass finish, dozen 23.00

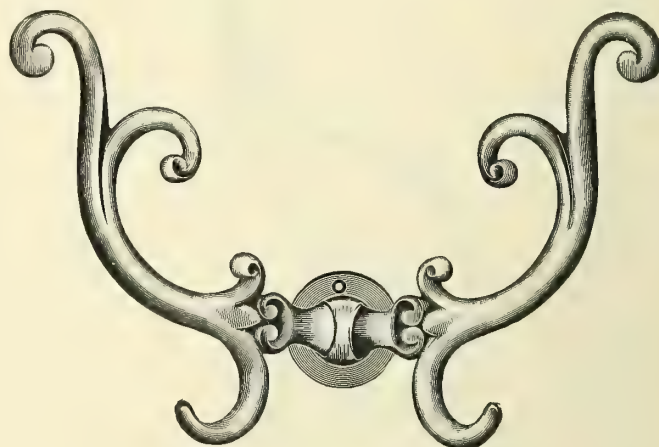
Coat and Hat Hooks

One Half Size Cuts



Height 5 inches, projects 4½ inches.

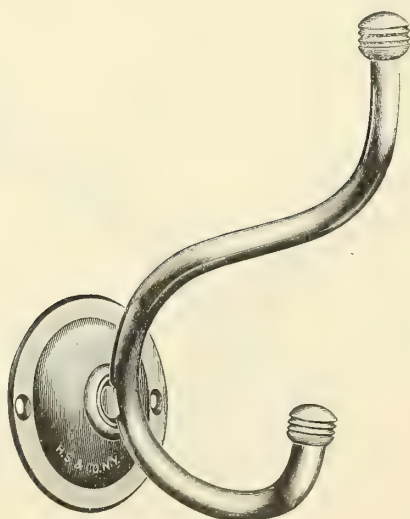
No. 124 Cast brass, polished, dozen..... \$4.90
No. OB124 Same as above, in old brass finish, dozen..... 5.20



Height 5 inches, projects 3½ inches.

Packed with screws.

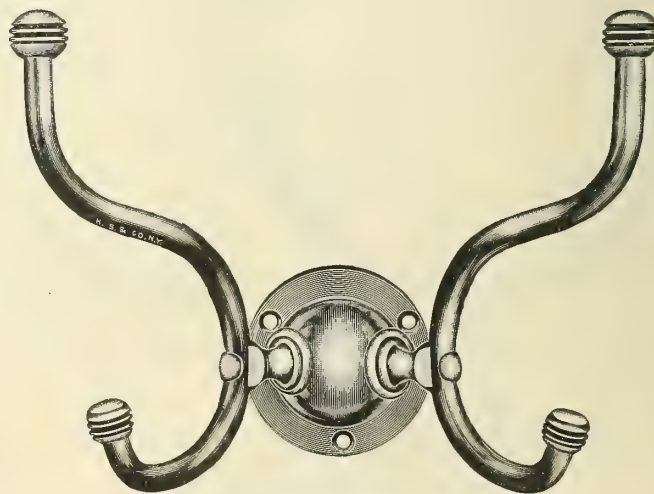
No. 1240 Cast brass, polished, dozen..... \$11.00
No. OB1240 Same as above, in old brass finish, dozen..... 11.35



No. OB5953

Height 5¼ inches, projects 4¼ inches.

Solid brass tubing, old brass finish, dozen..... \$12.00



No. OB5818

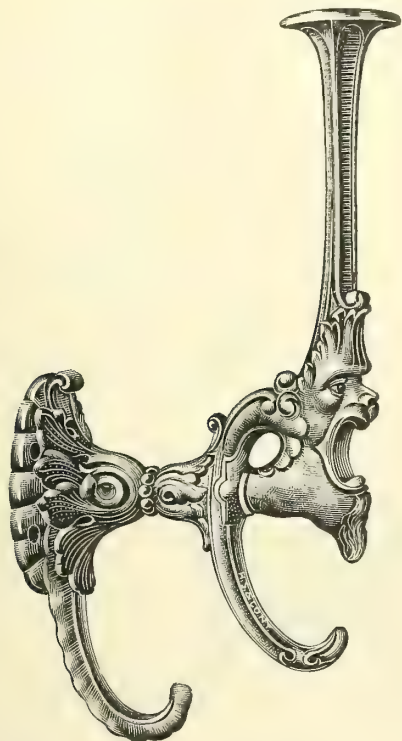
Height 5¼ inches, projects 3 inches.

Packed with screws.

Solid brass tubing, old brass finish, dozen..... \$24.00

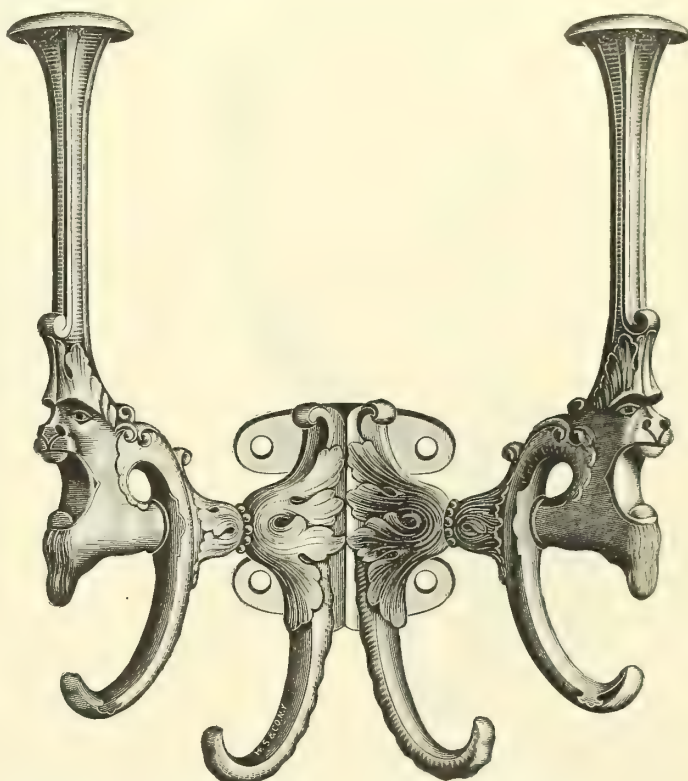
Coat and Hat Hooks

One Half Size Cuts

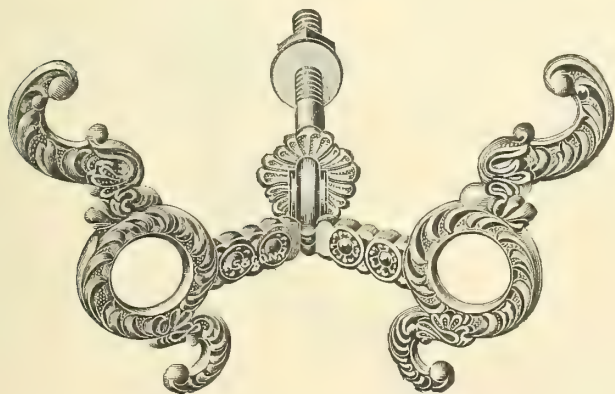


No. 981-024 Height 8 inches, projects 4 inches. Cast iron, oxidized copper finish, dozen \$3.30

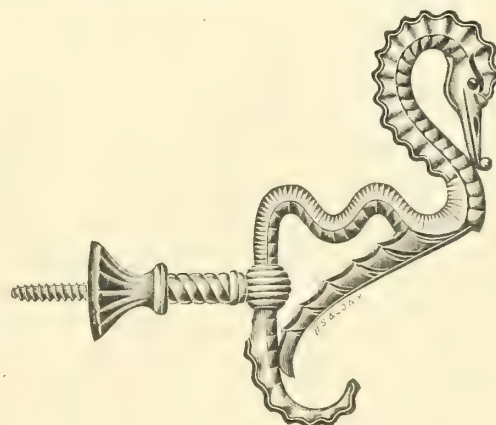
No. 981-087 Height 8 inches, projects 4 inches. Cast iron, dead black finish, dozen 6.70



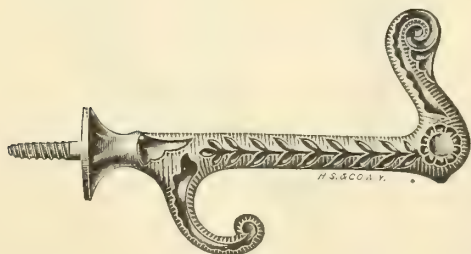
No. 982-024 Packed with screws. Height 8 inches, projects 3½ inches. Cast iron, oxidized copper finish, dozen \$6.25



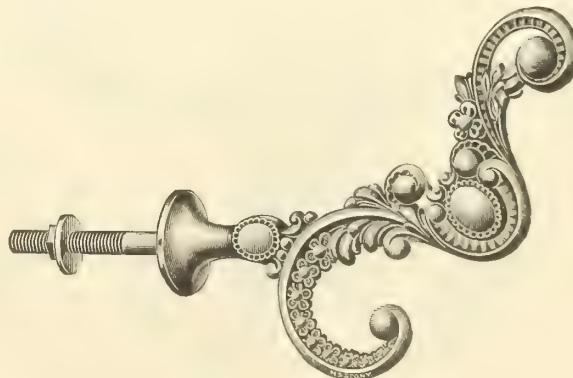
No. 1270 B. & N. Height 5 inches, projects 3½ inches. Cast iron, brass-plated, with bolt and nut. Can be taken apart for convenience in packing, dozen \$2.00



No. 64 W. S. Height 4½ inches, projects 4½ inches. Cast brass, polished, dozen \$2.75



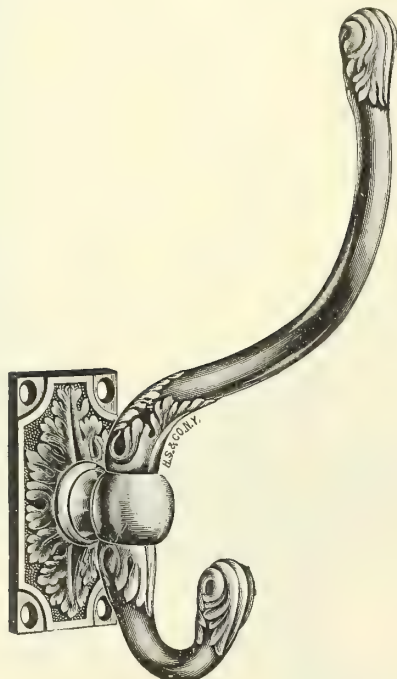
No. 34 W. S. Projects 4 inches. Cast brass, polished, dozen . . . \$2.50



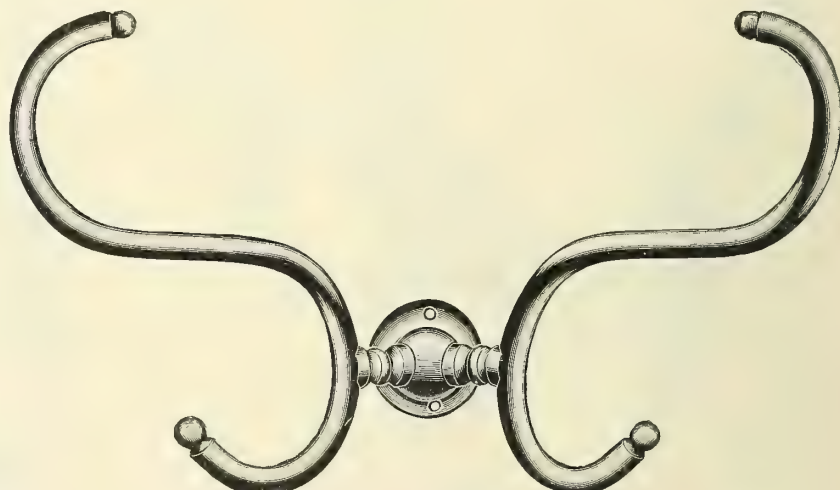
No. 117 Height 3¾ inches, projects 4½ inches. Cut shows bolt and nut. Iron, brass-plated. Also in stock with wood screw. Specify which is desired, dozen \$1.20
No. 1170 Same style as above, with but two hooks, dozen . . . 3.00

Coat and Hat Hooks

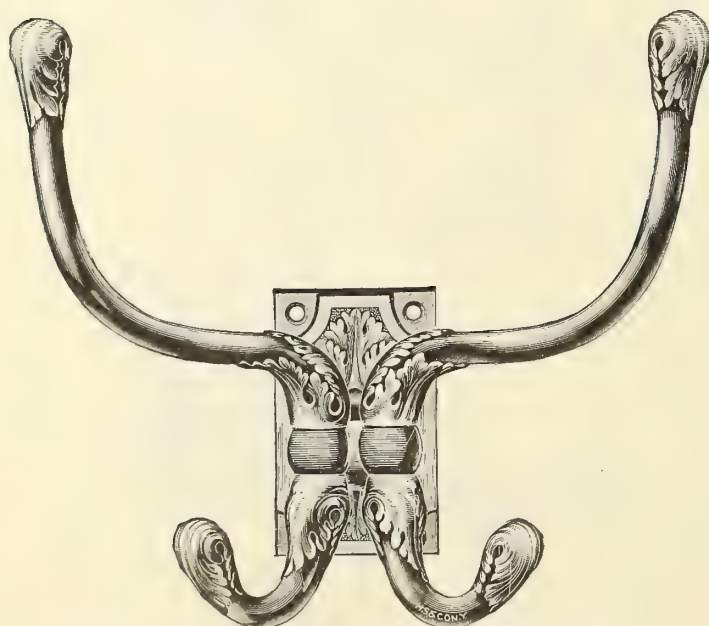
One-Half Size Cuts



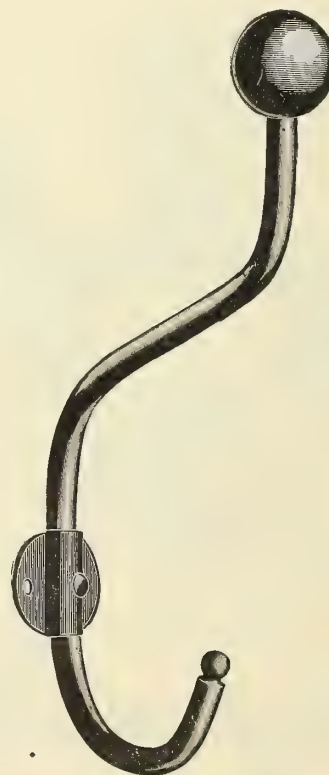
No. 6131 Height $7\frac{1}{2}$ inches, projects 4 inches. Packed with screws. Cast brass, antique brass finish, dozen..... \$28.00



No. 5185 Height 5 inches, projection $4\frac{1}{2}$ inches. Iron, brass-plated, dozen..... \$9.00



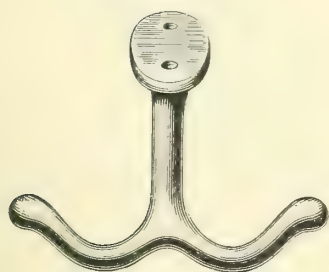
No. 6533 Height $6\frac{1}{2}$ inches, projection $4\frac{3}{4}$ inches, spread 7 inches. Packed with screws. Cast brass, antique brass finish, dozen..... \$56.00



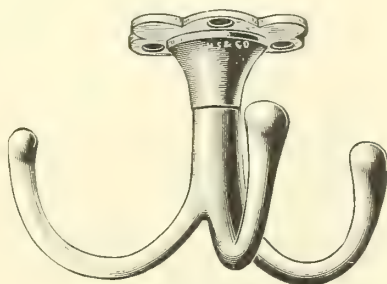
No. 5455 Height 7 inches, projection 4 inches. Bauer-Barff finish, dozen..... \$2.80

Ceiling Hooks

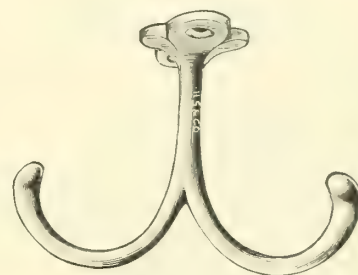
One Half Size Cuts



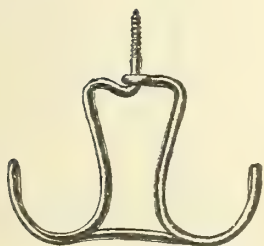
- Length $2\frac{3}{8}$ inches, spread $3\frac{1}{4}$ inches.
 No. 128 Iron, copper bronzed, gross.. \$5.00
 No. 1325 Packed with screws. Cast bronze, polished, dozen..... 2.50
 No. OB1325 Packed with screws. Cast brass, old brass finish, dozen 2.50



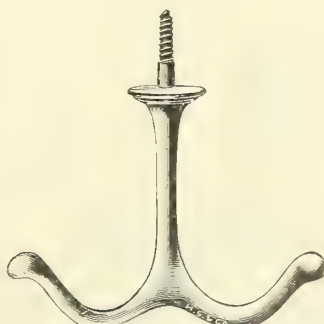
- Length $2\frac{1}{2}$ inches, spread $3\frac{1}{4}$ inches.
 No. 261 Revolving type, cast brass, polished dozen..... \$6.00



- Length $2\frac{3}{8}$ inches, spread $3\frac{1}{4}$ inches.
 No. 255 Cast brass, polished, dozen. \$2.40
 No. YT36 Iron, bronze-plated, gross. 8.00



- Length $1\frac{7}{8}$ inches, spread $2\frac{1}{2}$ inches.
 No. 582 Iron wire, brass-plated, gross \$6.00



- Length $2\frac{3}{8}$ inches, spread 3 inches.
 No. 1325 $\frac{1}{2}$ Cast bronze, polished, dozen..... \$2.40
 No. OB1325 $\frac{1}{2}$ Cast brass, old brass finish, dozen..... 2.40



- Length $1\frac{7}{8}$ inches, spread $3\frac{1}{2}$ inches.
 No. 088 Iron wire, coppered, gross... \$3.40
 No. 688 Iron wire, amber finish, gross 4.10

Wardrobe Hooks

One Half Size Cuts



- Projects $1\frac{3}{4}$ inches.
 Packed with screws.
 No. 1888 $\frac{1}{4}$ Bronze, nickel-plated, gross..... \$18.00



- Projects $1\frac{7}{8}$ inches.
 No. 249 Iron, brass-plated, gross... \$3.00



- Projects $1\frac{3}{8}$ inches.
 Packed with screws.
 No. 5472 Bronze, nickel-plated, gross \$22.70

Wardrobe Hooks

One Half Size Cuts

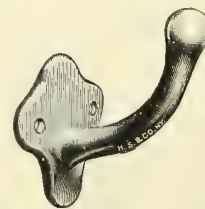


No. 5125

Projection 2 inches.
Cast brass, polished.
Gross..... \$17.50



Projection 1 3/4 inches.
Packed with screws.
No. 01092 Cast bronze, polished,
gross..... \$9.60
No. OB01092 Cast brass, old brass
finish, gross..... 9.60



Projection 1 3/4 inches.
Packed with screws.
No. 182 Bronze, cast bronze, pol-
ished, gross..... \$19.20
No. 182 Nickel, cast bronze, nickel-
plated, gross..... 19.20



No. 5618

Projection 1 3/4 inches.
Iron, brass-plated.
Gross..... \$6.00



No. 5789

Projection 1 5/8 inches.
Brass, polished.
Gross..... \$9.00



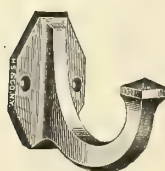
No. 1886

Projection 1 1/2 inches.
Packed with screws.
Cast bronze, polished.
Gross..... \$12.00



No. 5591

Projection 1 1/4 inches.
Brass, polished.
Gross..... \$16.00



No. OB 924

Projection 2 inches.
Cast iron, old brass finish.
Gross..... \$7.50

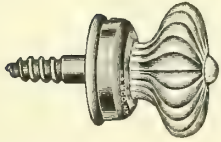


No. OB 57

Projection 1 3/4 inches.
Packed with screws.
Cast brass, old brass finish.
Dozen..... \$3.50

Pressed Glass Furniture Knobs

With Brass Mountings

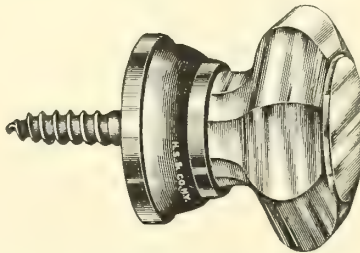


No. 299 With wood screw, knob is $\frac{11}{16}$ inch diameter, dozen \$2.20

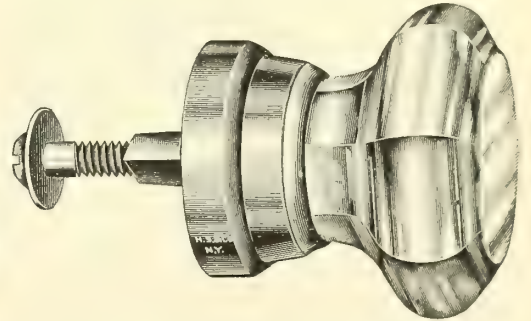
Following are exactly same design knob as above only larger and fitted with machine screw for attachment from within.

No. 300 Diameter knob $1\frac{1}{8}$ inches, dozen \$3.40

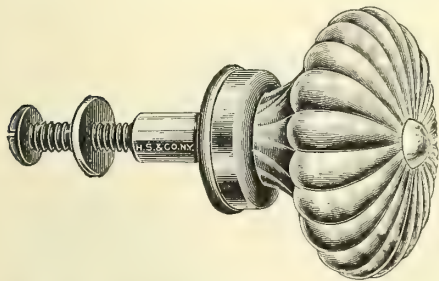
No. 301 Diameter knob $1\frac{1}{4}$ inches, dozen 4.00



No. 4S Octagon, flat top. Knob is $1\frac{1}{4}$ inches diameter. Wood screw, dozen \$7.50

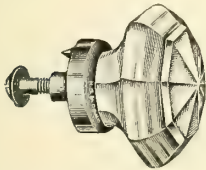


No. 4D Octagon, flat top. Knob is $1\frac{3}{4}$ inches diameter. Machine screw, dozen \$7.50

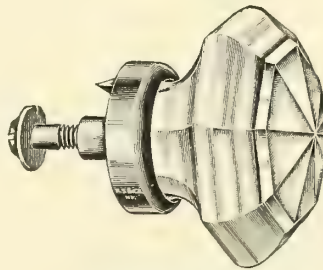


No. 302 Diameter knob $1\frac{1}{2}$ inches, dozen \$4.50

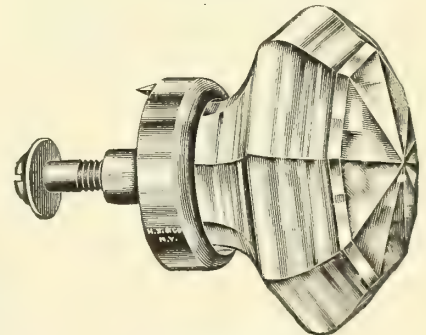
No. 304 Diameter knob $1\frac{3}{4}$ inches, dozen 6.00



No. 373 $\frac{1}{2}$ inch diameter, dozen . . \$2.30



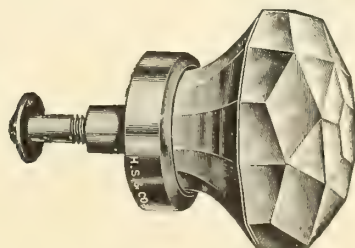
No. 373 $1\frac{3}{8}$ inches diameter, dozen . . \$2.30



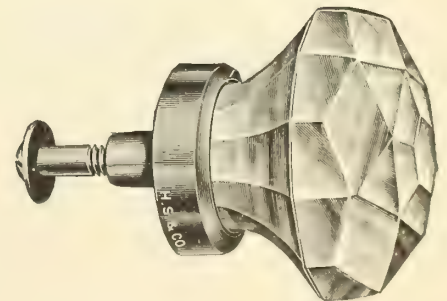
No. 374 $1\frac{3}{4}$ inches diameter, dozen . . \$2.40



No. 332 $\frac{7}{8}$ inch diameter, dozen . . . \$2.40



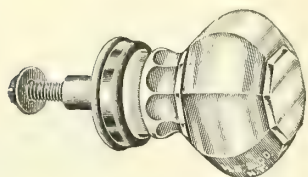
No. 333 $1\frac{1}{4}$ inches diameter, dozen . . \$2.60



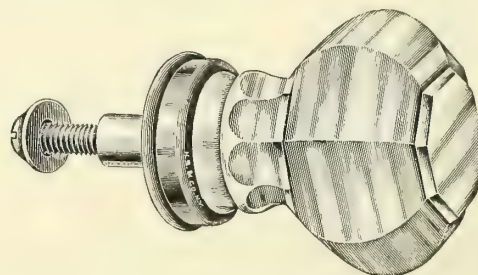
No. 334 $1\frac{5}{8}$ inches diameter, dozen . . \$2.90

Pressed Glass Furniture Knobs

With Brass Trimmings

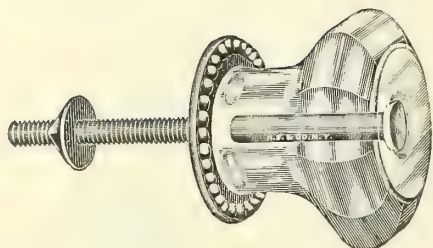


No. 50

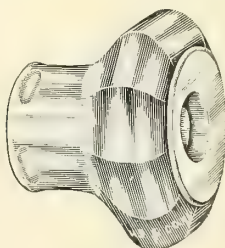


No. 52

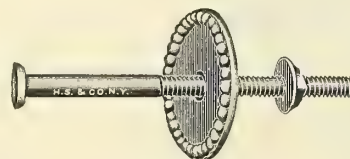
Number	Diameter Knob Inches	Dozen
50	1	\$3.60
51	1 1/4	4.20
52	1 3/8	5.00
53	1 5/8	5.60
55	2	7.40



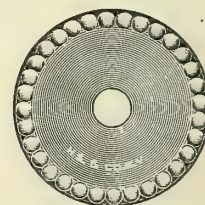
Knob Assembled



Knob



Bolt, Nut and Plate

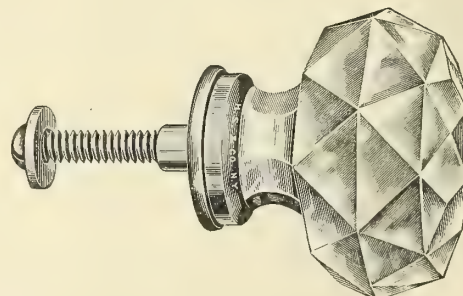
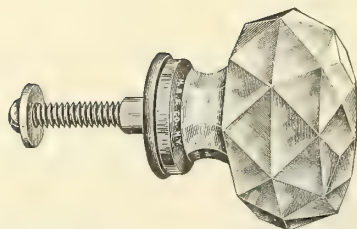
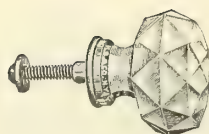


Plate

Number	Diameter Inches	Knob Complete Dozen	Glass Only Dozen	Bolt and Nut Dozen	Plate Only Dozen
140	1 1/8	\$7.00	\$4.50	\$2.00	\$.90
141	1 1/2	8.00	5.40	2.00	1.10
142	2 1/8	9.00	6.40	2.00	1.20

Cut Glass Knobs

With Brass Trimmings



These Knobs are made of the finest quality of imported crystal glass.

Number	Diameter Inches	Dozen
599	3/4	\$7.00
600	1	8.00
601	1 1/4	9.00
602	1 3/8	9.50
603	1 1/2	10.50
604	1 3/4	11.50

Furniture Knobs

Full Size Cuts



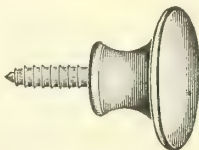
No. 60

Cast Brass with
Wood Screws
Old
Polished Brass
Gross Gross

No. 60	Diameter 1/2 inch....	\$5.60	\$7.30
No. 61	Diameter 5/8 inch....	6.30	8.00

With Machine
Screws

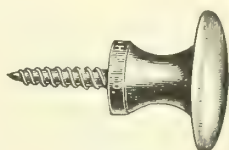
No. 110	Diameter 9/16 inch....	6.00	7.70
No. 112	Diameter 3/4 inch....	7.40	9.10



No. 5666

Size, inch.....	1/2	5/8	3/4	7/8
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No. 5666	Pol- ished, gross....	\$4.50	5.75	7.00	10.00
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No. 1161 Wrought Brass

Polished

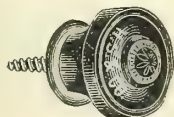
Diameter 5/16 inch, gross.....	\$3.50
Diameter 1/16 inch, gross.....	4.25
Diameter 3/16 inch, gross.....	5.00
Diameter 5/8 inch, gross.....	5.75
Diameter 3/4 inch, gross.....	7.00
Diameter 7/8 inch, gross.....	10.00

Old Brass

Diameter 9/16 inch, gross.....	6.00
Diameter 3/4 inch, gross.....	8.40
Diameter 7/8 inch, gross.....	12.00

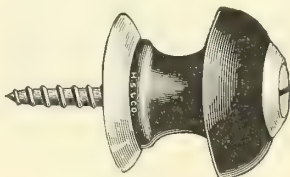
Nickel-plated

Diameter 7/8 inch, gross.....	12.50
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9/16 inch diameter

No. 12	Composition, black, with bases, gross.....	\$2.00
No. 12	Composition, black, without bases, gross.....	1.90
No. 15	Composition, brown, with bases, gross.....	2.00
No. 15	Composition, brown, without bases, gross.....	1.90

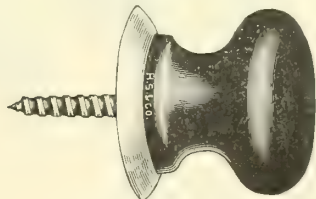


No. 6

Style of No. 7

Black Enamel, Brass Base

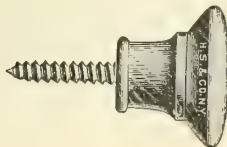
No. 6	Diameter 1 inch, gross.....	\$2.70
No. 7	Diameter 3/4 inch, gross.....	2.60



No. 334 Style of No. 332

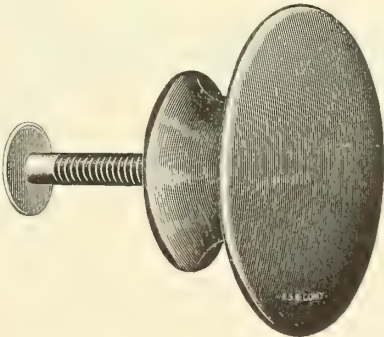
Black Enamel, 1 inch Diameter

No. 332	Without base, gross.....	\$3.00
No. 334	With brass base, gross.....	4.00



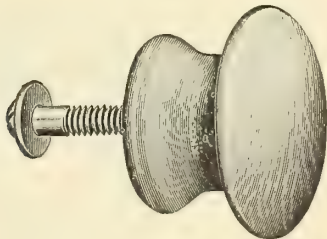
Per 1000 Per 100

No. 20	Polished oak.....	\$10.00	\$1.25
No. 30	Polished walnut.....	10.00	1.25
No. 40	Polished mahogany.....	10.00	1.25



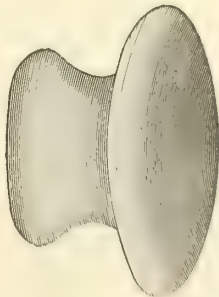
Finished Oak

Diameter 1 1/4 inches, per gross...	\$7.50
Diameter 1 1/2 inches, per gross...	8.00
Diameter 1 3/4 inches, per gross...	9.00
Diameter 2 inches, per gross....	10.00



Solid Mahogany, Unfinished

Diameter 1 1/4 inches, per gross.....	\$10.00
Diameter 1 1/2 inches, per gross.....	10.00
Diameter 2 inches, per gross.....	15.00

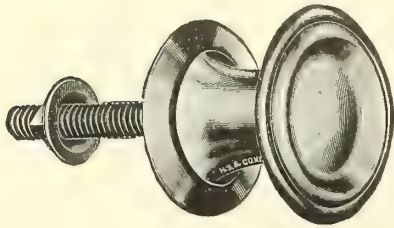


Finished Imitation Mahogany

Diameter 1 1/4 inches, per gross.....	\$7.50
Diameter 1 1/2 inches, per gross.....	8.00
Diameter 1 3/4 inches, per gross.....	9.00
Diameter 2 inches, per gross.....	10.00

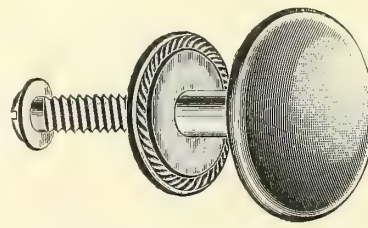
Furniture Knobs

Full Size Cuts



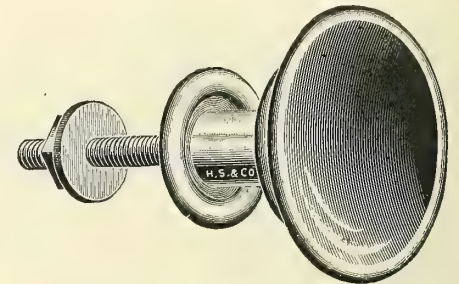
No. 1538 Wrought brass, polished

Diameter 1 inch, gross.....	\$5.60
Diameter 1¼ inches, gross.....	6.30



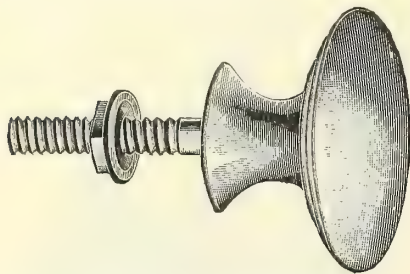
Wrought brass, polished

Number	Diameter Inches	Gross
5460	7/8	\$9.60
5459	1 1/8	12.00



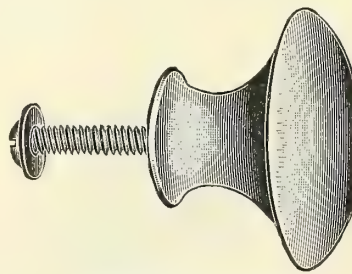
No. 165 Wrought brass, polished

Diameter 1 3/8 inches, gross.....	\$6.00
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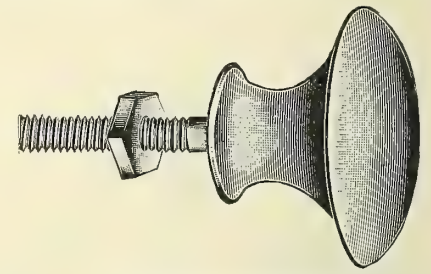
Wrought brass, polished

Number	Diameter Inches	Gross
5606M	1 1/8	\$6.40
5605M	1 3/8	7.20



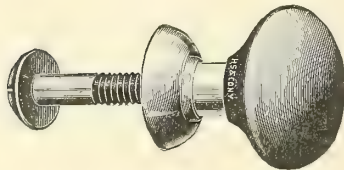
Wrought brass, polished
With reinforced tops

Number	Diameter Inches	Gross
6099	1 1/8	\$7.65
6098	1 3/8	8.45



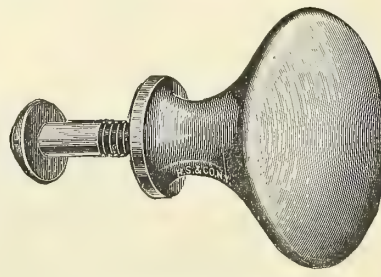
Wrought brass, polished
With reinforced tops

Number	Diameter Inches	Gross
6061	1 1/8	\$7.40
6060	1 3/8	8.20



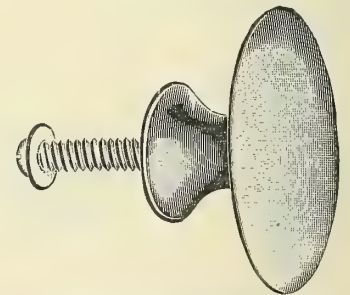
No. 198 Wrought brass, polished,
7/8 inch diameter, gross..... \$8.00

No. 198N Wrought brass, nickel-plated,
7/8 inch diameter, gross... 10.00



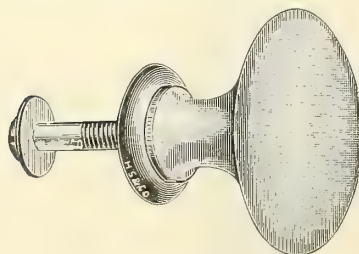
Wrought brass, polished

Number	Diameter Inches	Gross
199	1 1/8	\$11.20
200	1 3/8	12.80



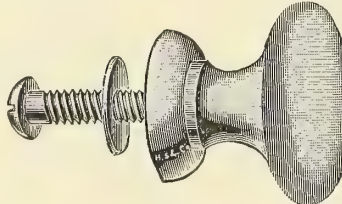
Wrought brass, polished

Number	Diameter Inches	Gross
5667	1 7/8	\$18.00
5668	1 1/2	16.20
5669	1 1/4	14.40



Colonial
Cast brass

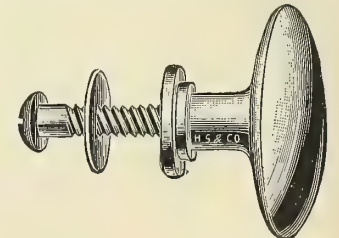
Number	Diameter Inches	Per Gross	
		Polished	Old Brass
148	7/8	\$11.20	\$14.40
149	1 1/4	19.20	22.40
151	1 1/8	14.40	19.20



Colonial

Cast Brass

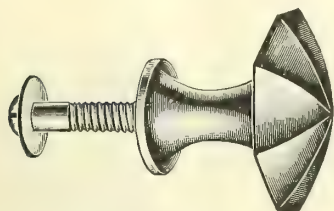
Number	Diameter Inches	Per Gross Polished
137	7/8	\$14.40
43	1 1/8	24.00
138	1 1/4	25.00
44	1 1/2	51.20



Colonial
Cast Brass

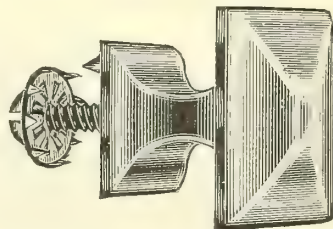
Number	Diameter Inches	Length Inches	Per Gross	
			Polished	Old Brass
181	5/8	7/8	\$16.20	
23	3/4	1 1/8	14.40	
24	1	1 3/8	20.80	24.00
16	1 1/4	1 3/4	32.00	

Furniture Knobs

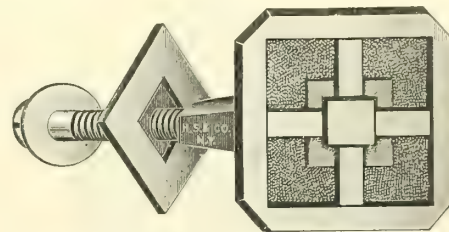


Cast brass, old brass finish.

Number	Diameter Inches	Gross
179	1 $\frac{1}{8}$	\$24.00
180	1 $\frac{3}{8}$	28.80

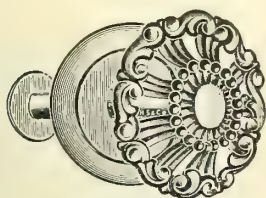


No. 210 Cast brass, old brass finish.
Mission. 1 $\frac{1}{8}$ inches diameter,
dozen..... \$3.40



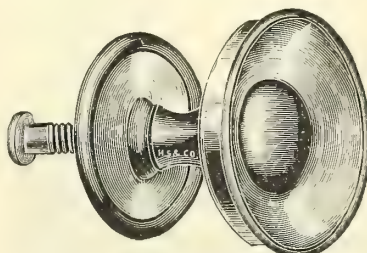
Cast brass, antique brass finish. Mis-
sion.

Number	Diameter Inches	Dozen
488	1 $\frac{3}{8}$	\$3.60



Louis XVI

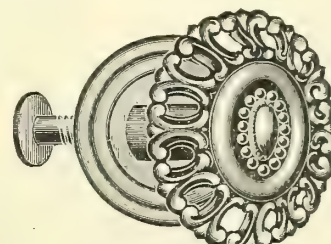
No. 143 Cast brass, stamped brass
rosette, gilt finish. 1 inch diam-
eter, gross..... \$7.20



Colonial

Wrought brass, old brass finish.

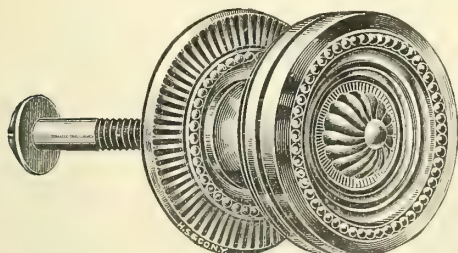
Number	Diameter Inches	Dozen
97	1 $\frac{1}{4}$	\$2.70
98	2	3.10



Louis XVI

Cast brass, stamped brass rosette.

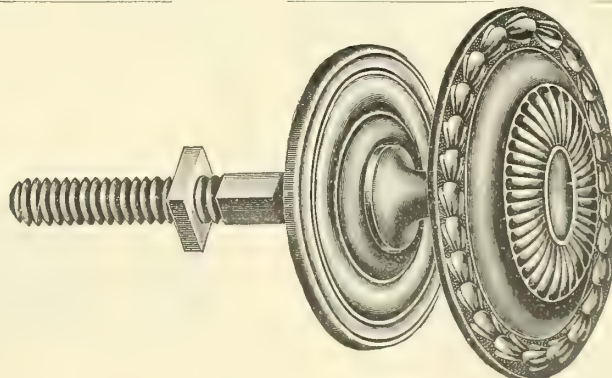
Number	Diameter Inches	Gross
160	1 $\frac{3}{8}$	\$8.40
161	1 $\frac{1}{2}$	9.60



Sheraton

Cast brass, stamped brass rosette.
Old brass finish.

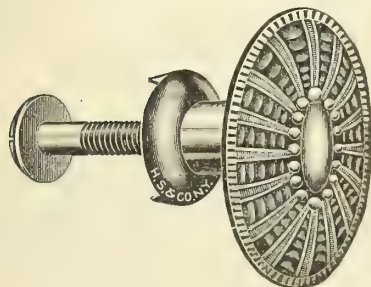
Number	Diameter Inches	Dozen
285	1 $\frac{1}{4}$	\$4.40
287	1	3.40
289	$\frac{3}{4}$	2.60
291	$\frac{5}{8}$	2.10



Adam

Wrought brass, old English finish.

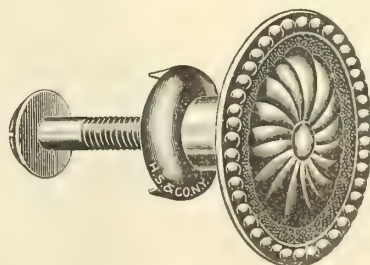
Number	Diameter Inches	Dozen
1631	1 $\frac{1}{4}$	\$3.25
1631	2	4.00



Adam

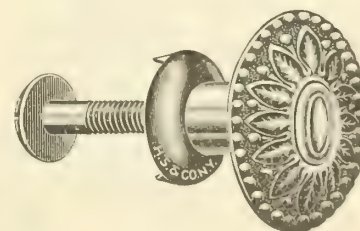
Cast brass, old English finish.

Number	Size Inches	Dozen
459	$\frac{15}{16}$ x 1 $\frac{7}{16}$	\$2.80
458	$\frac{3}{4}$ x 1 $\frac{1}{8}$	2.50
458 $\frac{1}{2}$	$\frac{5}{8}$ x 1 $\frac{1}{16}$	2.20



Adam

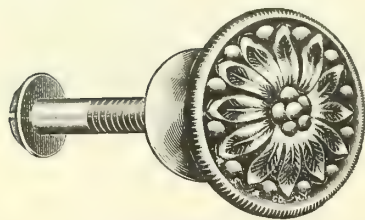
No. 389 $\frac{15}{16}$ x 1 $\frac{3}{8}$ inches. Cast brass,
old English finish, dozen..... \$2.30



No. 478 $\frac{7}{8}$ x 1 $\frac{1}{8}$ inches. Cast brass,
old English finish. Louis XVI,
dozen \$3.00

Furniture Knobs

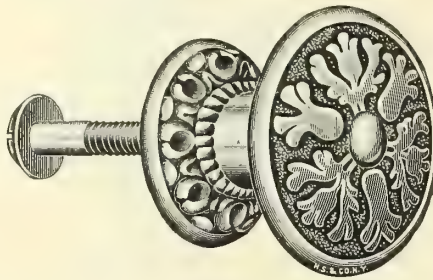
Full Size Cuts



Louis XVI

Cast brass, ormolu gold finish.

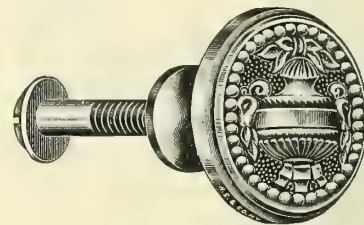
Number	Diameter Inches	Dozen
344½	¾	\$2.30
344	1	2.40
345½	1⅛	2.90
345	1¼	3.00



Adam

Cast brass, old English finish.

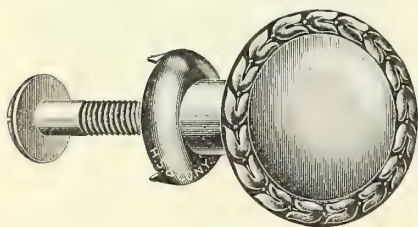
Number	Diameter Inches	Dozen
351½	1	\$2.70
351	1⅜	3.00



Adam

Cast brass, old English finish.

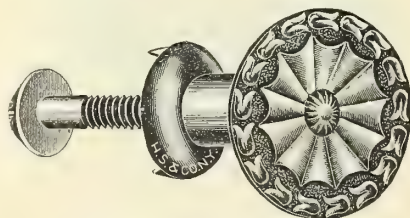
Number	Diameter Inches	Dozen
81	1⅛	\$1.20
82	1½	1.40



Sheraton

Cast brass, old English finish.

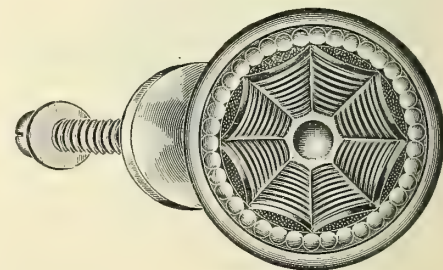
Number	Diameter Inches	Dozen
480	1⅛	\$3.00
479	1⅝	2.70



Adam

Cast brass, old English finish.

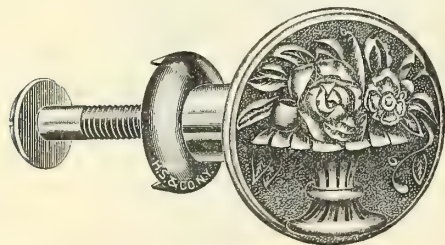
Number	Diameter Inches	Dozen
434	1⅛	\$2.90
433	7/8	2.60



Adam

Cast brass, old brass finish.

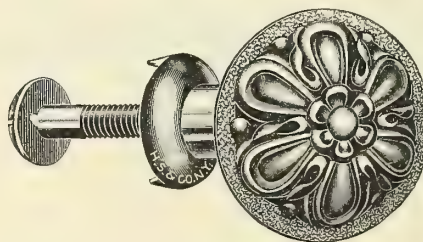
Number	Diameter Inches	Dozen
6313	1⅜	\$3.00
6312	¾	1.70



Adam

Cast brass, old English finish.

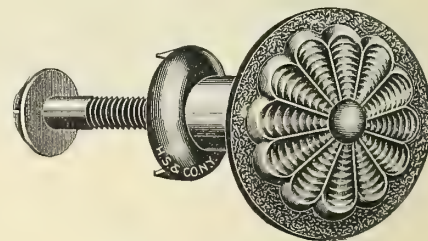
Number	Diameter Inches	Dozen
461	1¼	\$2.80
460	1	2.50



Georgian

Cast brass, old English finish.

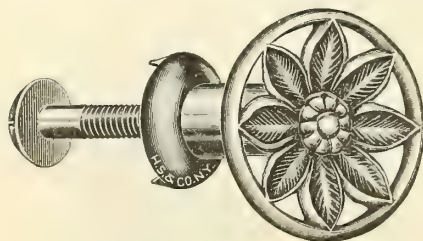
Number	Diameter Inches	Dozen
473	1⅜	\$2.80
472	7/8	2.50



Adam

Cast brass, old English finish.

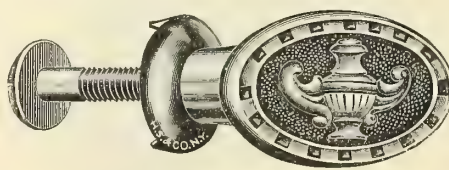
Number	Diameter Inches	Dozen
463	1⅜	\$2.00
462	7/8	1.65



Adam

Cast brass, old English finish.

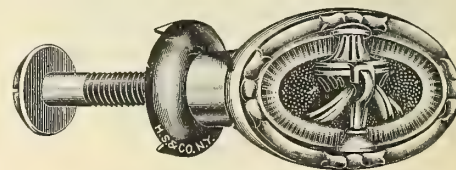
Number	Diameter Inches	Dozen
476	1¼	\$1.20
475	1	1.40



Adam

Cast brass, old English finish.

Number	Size Inches	Dozen
471	1⅜ x 1⅜	\$2.70
470	9/8 x 1⅝	2.30



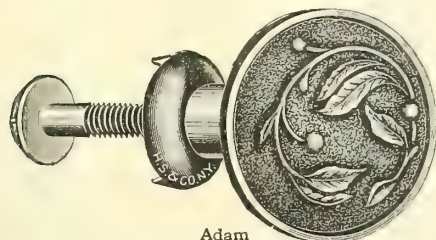
Hepplewhite

Cast brass, old English finish.

Number	Size Inches	Dozen
467	7/8 x 1⅜	\$2.70
466	5/8 x 1⅝	2.30

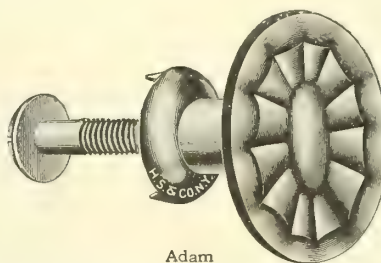
Furniture Knobs

Full Size Cuts



Adam

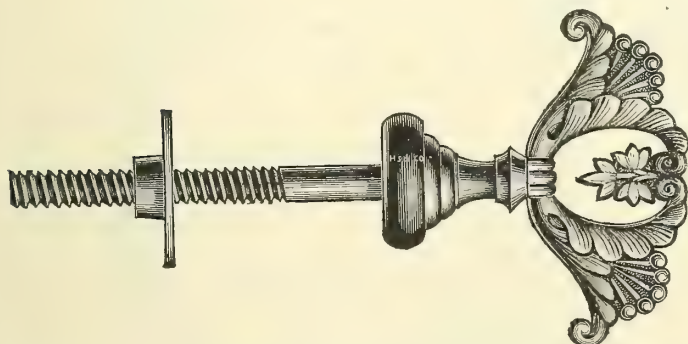
No. 457 Cast brass, old English finish, dozen. \$2.30



Adam

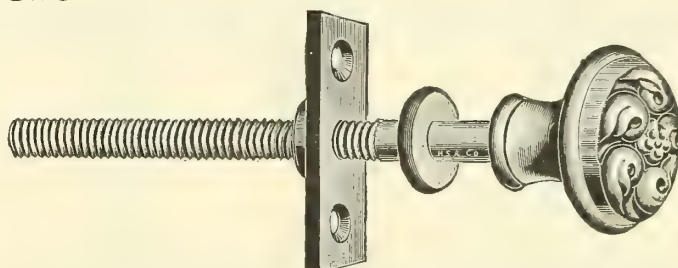
No. 450 Cast brass, old English finish, dozen. \$1.80

Toilet Screws



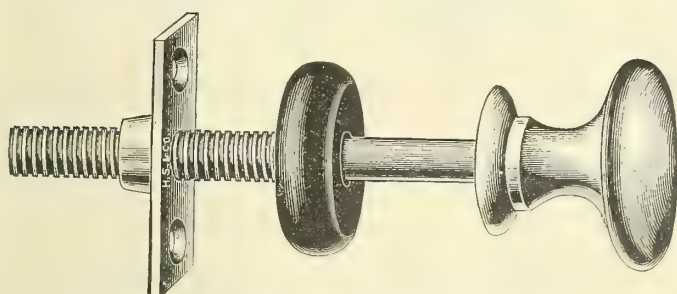
Louis XVI

No. 9 Cast brass, polished, dozen. \$2.60



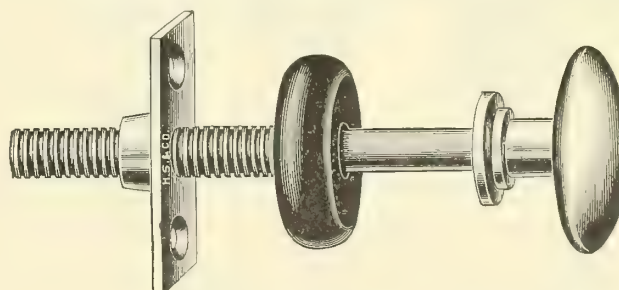
Louis XV

No. 31 Cast brass, polished, dozen. \$7.50



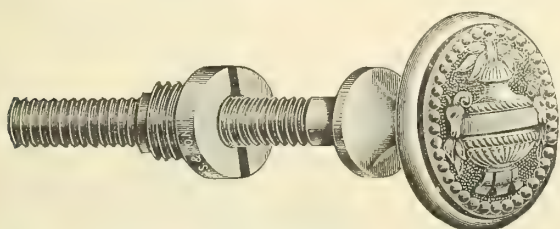
Colonial
Cast Brass

Number	Finish	Dozen
55	Polished	\$3.30
138	Polished	3.60
138 OB	Old Brass	4.00

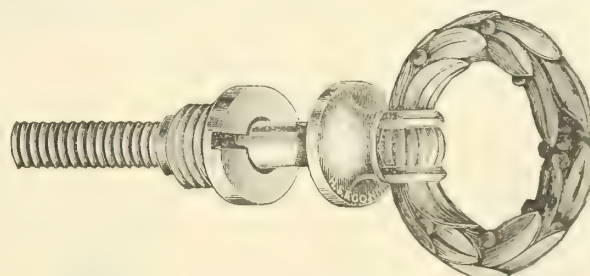


Colonial
Cast Brass

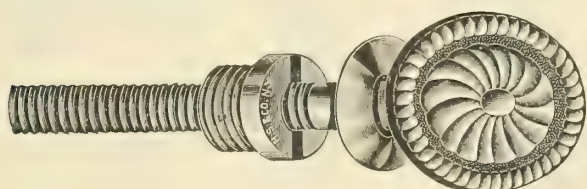
Number	Finish	Dozen
32	Polished	\$4.50
32 OB	Old Brass	5.00
36	Polished	3.00
36 OB	Old Brass	3.30



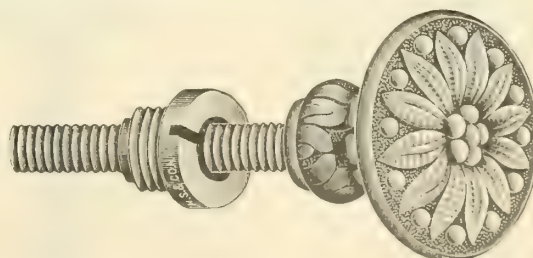
No. 81 Cast brass, old English finish, Adam. Diameter of head $1\frac{1}{8}$ inches, length of screw $2\frac{3}{4}$ inches, dozen. . . \$4.00



No. 48 Cast brass, old gold finish, Louis XVI. Diameter of ring $1\frac{1}{4}$ inches, length of screw $2\frac{3}{4}$ inches, dozen. \$2.30

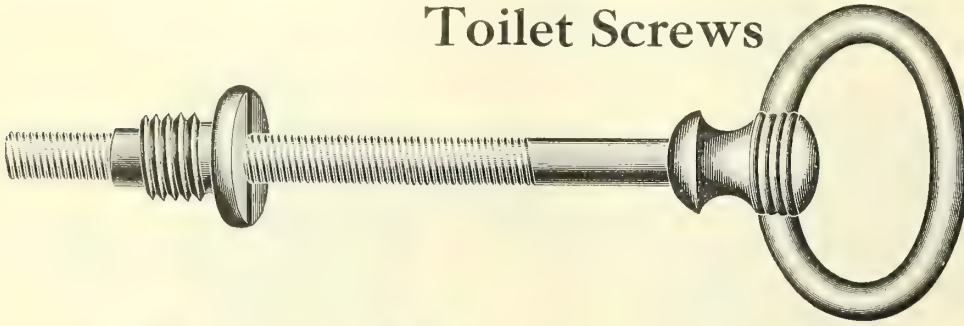


No. 389 Cast brass, old English finish, Adam. Size of head $1\frac{1}{8}$ inches, length of screw 3 inches, dozen. \$3.60

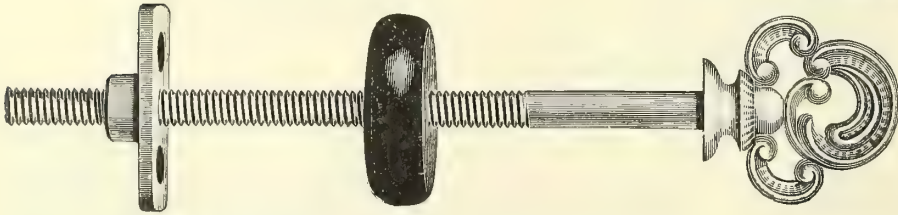


No. 74 Cast brass, old gold finish, Louis XVI. Dozen. \$2.60

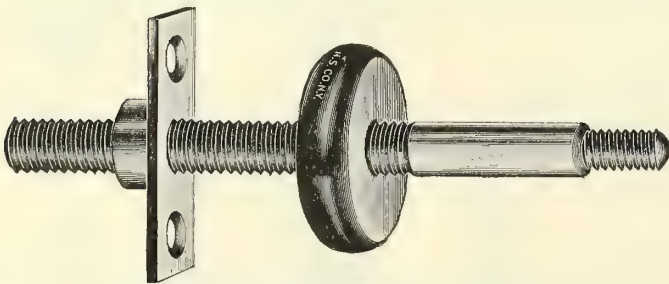
Toilet Screws



No. 193 Cast brass, polished; ebonized washer, dozen..... \$1.80



No. 4861 Cast brass, ebonized washer, dozen \$2.30



Rod and Plate for Toilet Screw

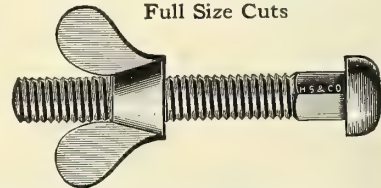
Can be fitted to Glass Knobs, Series 50, 300 and 600. Dozen... \$2.50

Washers for Toilet Screws

Brass, $\frac{1}{8}$ inch thick, 1 inch diameter, dozen..... \$.70
Brass, $\frac{1}{4}$ inch thick, 1 inch diameter, dozen..... 1.00
Ebonized, as shown with rod and plate opposite, $\frac{1}{4}$ inch thick, 1 inch diameter, dozen..... .15

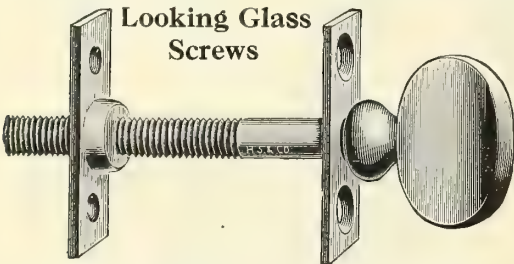
Brass Thumb Screws

Full Size Cuts



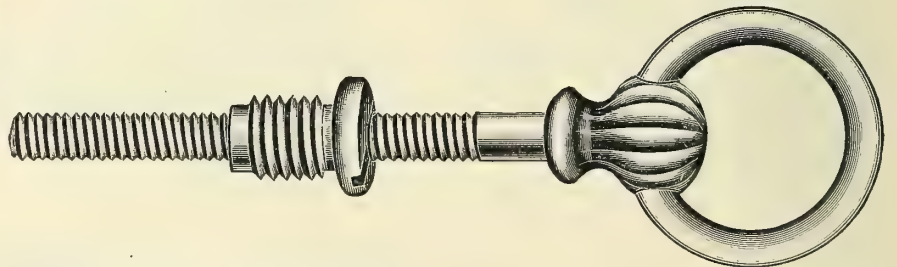
Brass, with polished head. $\frac{1}{4} \times 1\frac{3}{4}$ inches, gross..... \$12.00

Looking Glass Screws



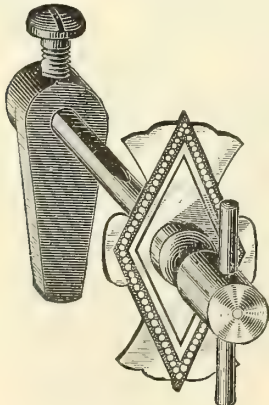
Cast brass, polished. Packed with screws.

Number	Size, Inches	Dozen
1045	2	\$1.70
1045	2 $\frac{1}{2}$	1.85
1045	3	2.20
1050	3	2.80

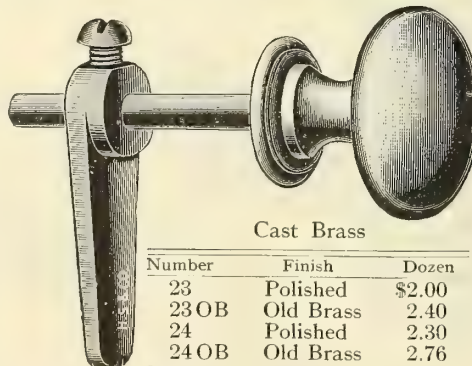


No. 5665 Cast brass, gilt finish, $1\frac{1}{8}$ -inch ring, dozen..... \$2.10

Commode Buttons

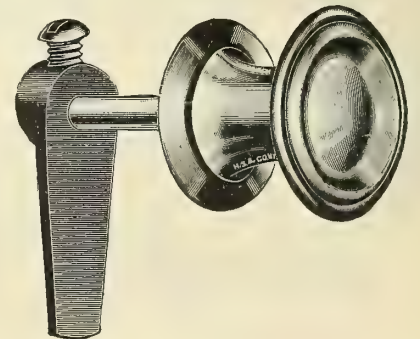


No. 922 Solid brass, polished, dozen.. \$1.00



Cast Brass

Number	Finish	Dozen
23	Polished	\$2.00
23 OB	Old Brass	2.40
24	Polished	2.30
24 OB	Old Brass	2.76



No. 1536 Wrought brass, polished, gross..... \$6.00

SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

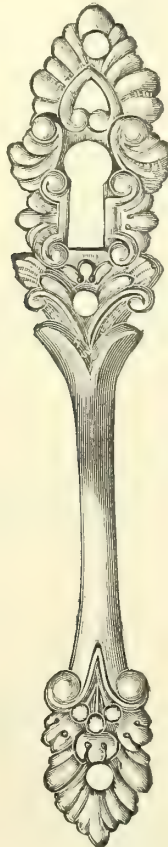
Furniture Pulls

Full Size Cuts



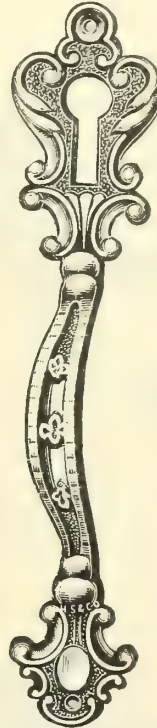
Colonial

No. 1945 Cast brass polished, dozen..... \$1.20



Louis XVI

No. 4767 Cast brass, gilt finish. Packed with screws. Dozen..... \$1.20



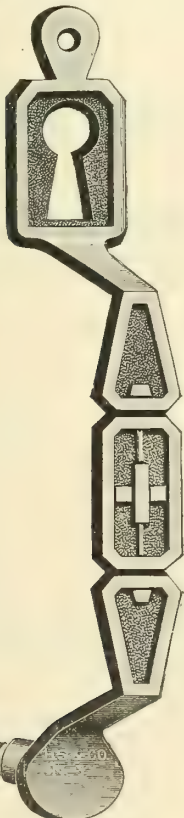
Louis XV

No. 951 Cast brass, gilt finish, dozen..... \$1.00

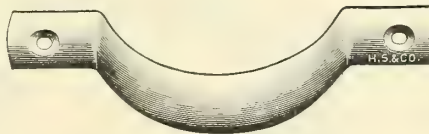


Louis XVI

No. 1017 Cast brass, polished, dozen..... \$1.40



No. 2731 Mission. Cast brass, antique finish, single boring, dozen... \$3.00



No. 100 Wrought brass, polished, gross..... \$4.80
No. 1924 1/4 Wrought steel, brass-plated, gross..... 1.80
No. 2045 Cast iron, japanned, gross..... 2.00

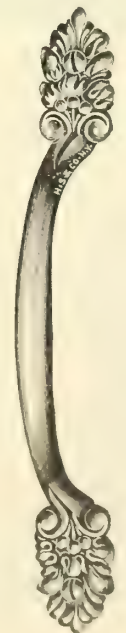


No. 101 Wrought brass, polished, gross..... \$4.80



No. 5356 Cast brass, polished, gross.....

\$8.00



Louis XVI

No. 4824 Cast brass, polished. Packed with screws. Dozen \$1.50

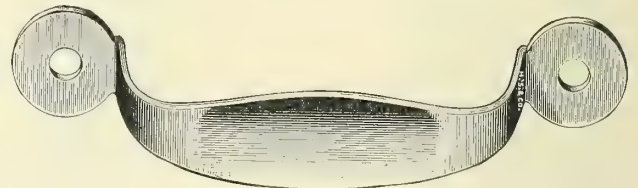
Furniture Pulls

Full Size Cuts



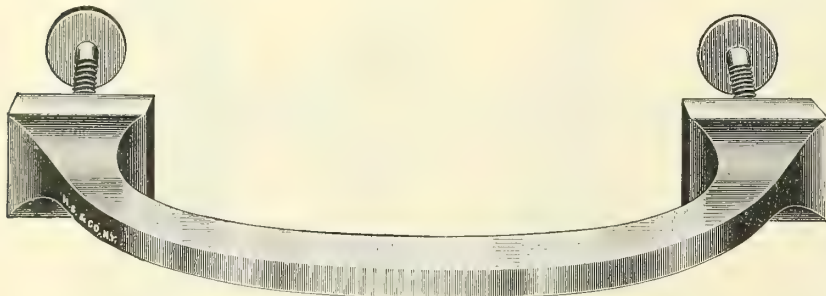
Cast Brass, Old Brass Finish

No. 2338	Spacing 3 inches, dozen.....	\$3.80
No. 2337	Spacing 3½ inches, dozen.....	4.20
No. 2336	Spacing 4 inches, dozen.....	4.65



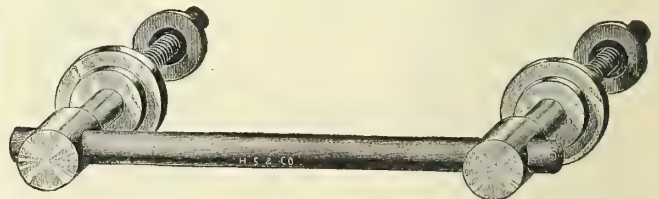
Packed with screws
3 inches overall

No. 444	Wrought bronze, polished, gross.....	\$9.00
No. 446	Wrought brass, polished, gross.....	8.40
2½ inches overall		
No. 443	Wrought bronze, polished, gross.....	8.30



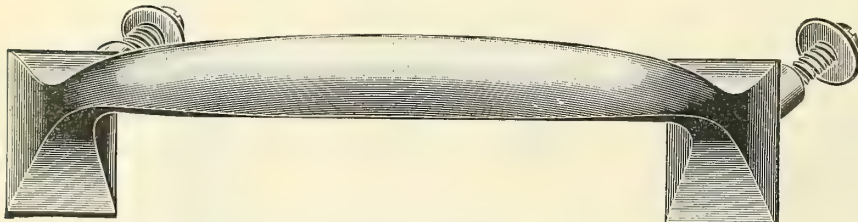
Cast Brass, Old Brass Finish

No. 2581	Spacing 3 inches, dozen.....	\$3.60
No. 2582	Spacing 4 inches, dozen.....	4.20

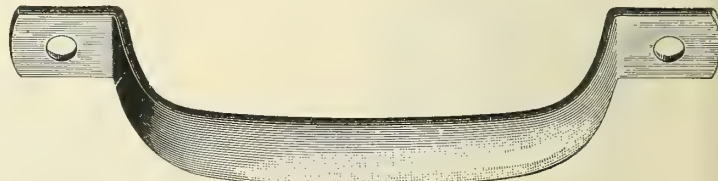


No. 4196

No. 4196	Cast brass, polished, spacing 3½ inches, dozen.....	\$3.00
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No. 5961½	Cast brass, bronze finish, spacing 3½ inches, dozen	\$5.00
No. 5961OB	Cast brass, old brass finish, spacing 3½ inches, dozen.....	5.25
No. 5962½	Cast brass, bronze finish, spacing 2¾ inches, dozen	3.55
No. 5962OB	Cast brass, old brass finish, spacing 2¾ inches, dozen.....	3.75
No. T407	Iron, Tuscan bronze finish, spacing 4 inches, dozen	2.80

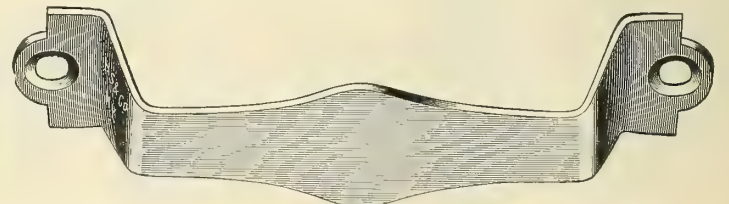


No. DA2400	Wrought steel, antique copper finish, gross.....	\$4.80
No. 2700	Wrought brass, old brass finish, gross.....	7.30



Cast Brass, Old Brass Finish

No. OB1431	Spacing 3 inches, dozen.....	\$3.80
No. OB1432	Spacing 3½ inches, dozen.....	4.10
No. OB1433	Spacing 4 inches, dozen.....	4.30



No. 6081	Wrought bronze, polished. Packed with screws, gross.....	\$14.00
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Furniture Pulls

Colonial

Full Size Cuts



No. 5636

No. 5636 Brass plated, polished, spacing 3 inches, dozen \$.55



Cast Brass

No. 936	Polished, spacing 3 inches, dozen	\$3.30
No. 936OB	Old brass finish, spacing 3 inches, dozen	3.65
No. 936X768	Polished, spacing 3½ inches, dozen	4.50
No. 936X768OB	Old brass finish, spacing 3½ inches, dozen	5.00



No. 5767

No. 5767 Wrought brass, swell bail, polished, spacing 3 inches, dozen \$2.35



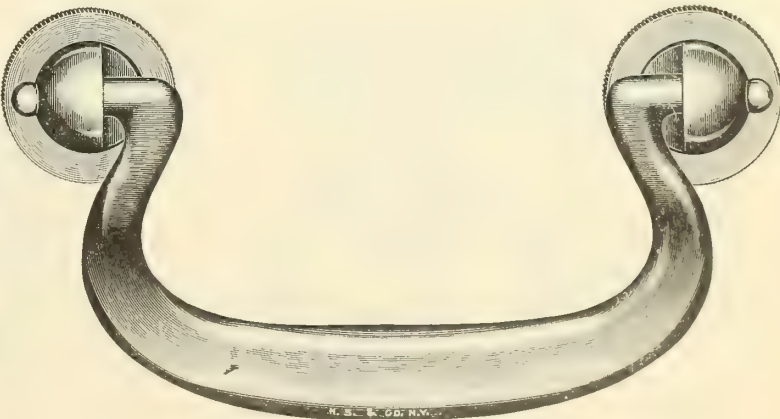
Cast Brass

No. 1004	Polished, spacing 2½ inches, dozen	\$2.40
No. 1004OB	Old brass finish, spacing 2½ inches, dozen	2.70
No. 1005	Polished, spacing 3 inches, dozen	2.60
No. 1005OB	Old brass finish, spacing 3 inches, dozen	2.90



No. 760

No. 760 Brass-plated, swell bail, polished, spacing 3 inches, dozen \$.60

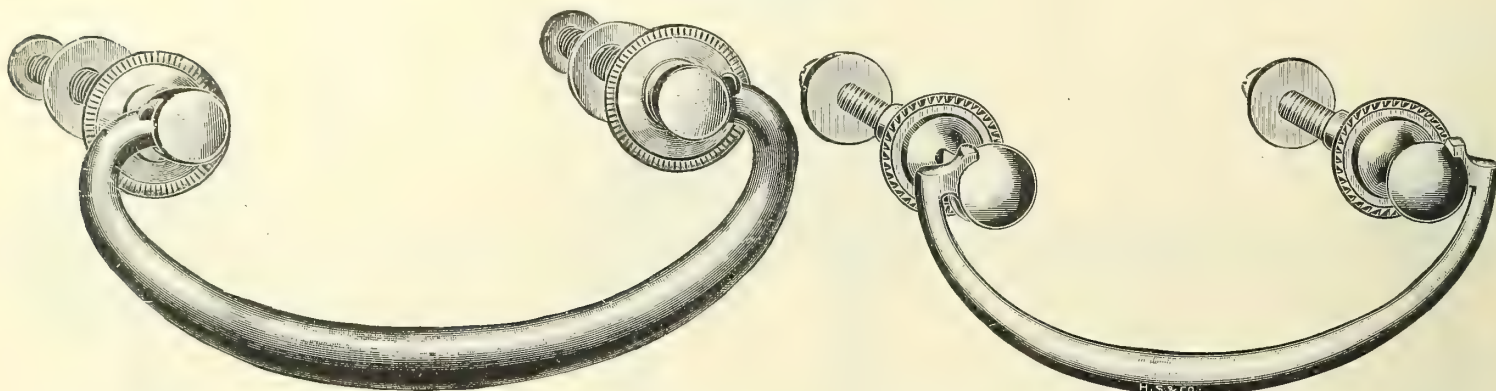


Cast Brass, Old Brass Finish

No. 1938OB	Spacing 3 inches, dozen	\$4.80
No. 1939OB	Spacing 3½ inches, dozen	6.00

Furniture Pulls

Colonial
Full Size Cuts

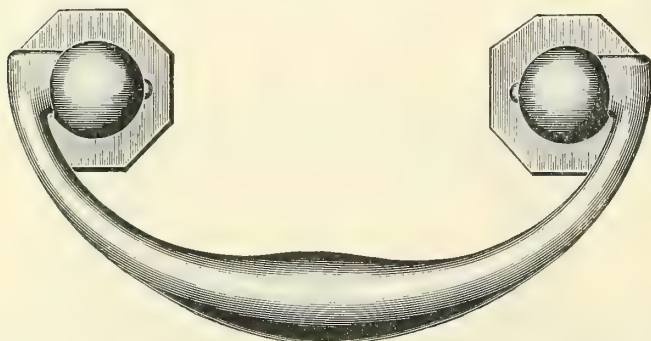


Wrought Brass, Polished

Cast Brass

Number	Size Boring Inches	Dozen
5194	2 1/2	\$2.20
5154	3	3.00

Number	Finish	Size Boring Inches	Dozen
935-755	Polished	2 1/4	\$3.00
935-755 OB	Old Brass	2 1/4	3.30
935-756	Polished	2 3/4	3.30
935-756 OB	Old Brass	2 3/4	3.65



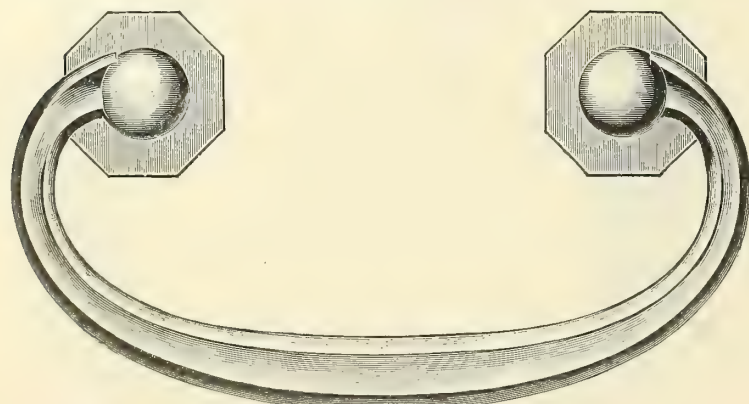
Cast Brass, Polished



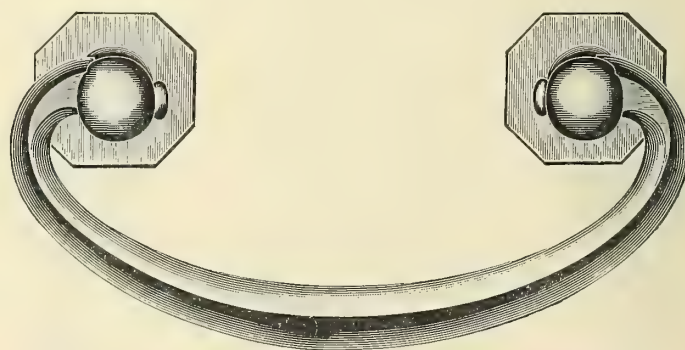
Wrought Brass, Polished

Number	Size Boring Inches	Dozen
1107-1165	2 1/2	\$3.25
1107-1166	3	4.25

Number	Size Boring Inches	Dozen
5559	3	\$1.90
5560	2	1.60



Cast Brass, Old Brass Finish



Cast Brass, Old Brass Finish

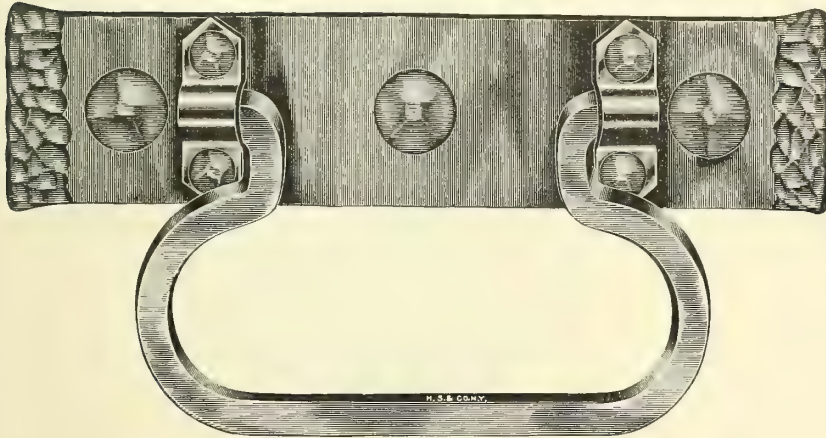
Number	Size Boring Inches	Dozen
1107 OB	2 1/2	\$7.40
1108 OB	3	7.40

Number	Size Boring Inches	Dozen
1189 OB	2 1/2	\$3.90
1190 OB	3	4.00

Furniture Pulls

Mission

Full Size Cuts



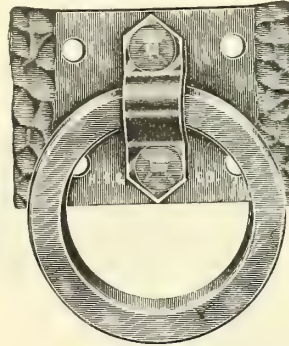
No. 1243-1243

No. 1243-1243 Plated bail and back plate, antique brass finish, 3-inch spacing, dozen \$4.60



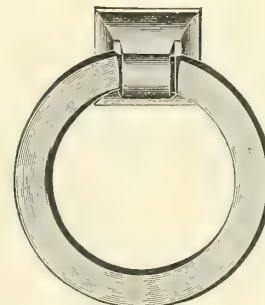
No. 1111-51

No. 1111-51 Extra heavy brass, antique brass finish, 3 inch spacing, dozen \$5.00



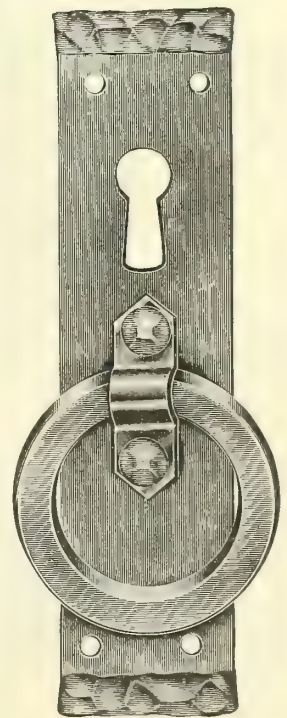
No. 1247-1247

No. 1247-1247 Plated ring and back plate, antique brass finish, dozen . . \$2.60



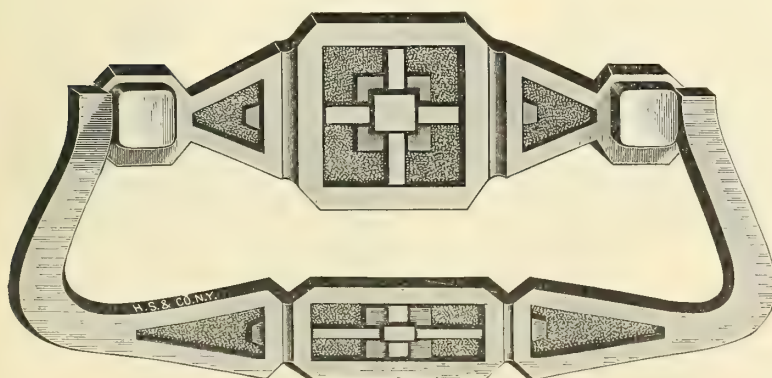
No. 1120-51

No. 1120-51 Brass ring, antique brass finish, dozen \$2.60



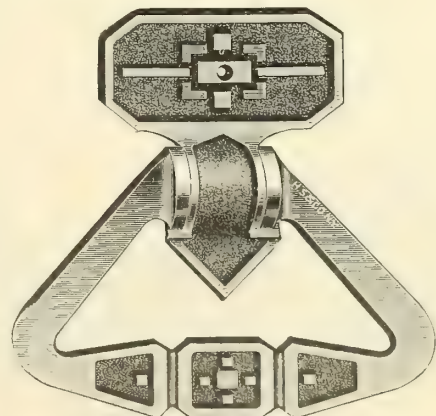
No. 1248-1247

No. 1248-1247 Plated ring and back plate, antique brass finish, dozen . . \$3.20



Cast Brass, Antique Brass Finish

No. 2733 Spacing 2½ inches, dozen \$2.00
No. 2780 Spacing 3 inches, dozen 2.50

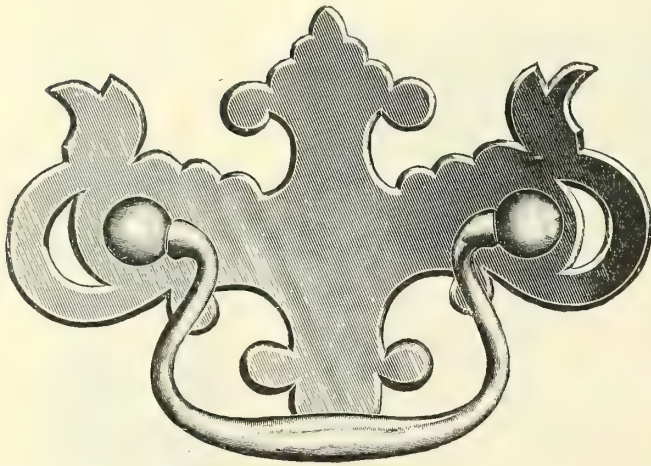


No. 2732 Cast brass, antique brass finish, single spacing, dozen \$1.50

Furniture Pulls

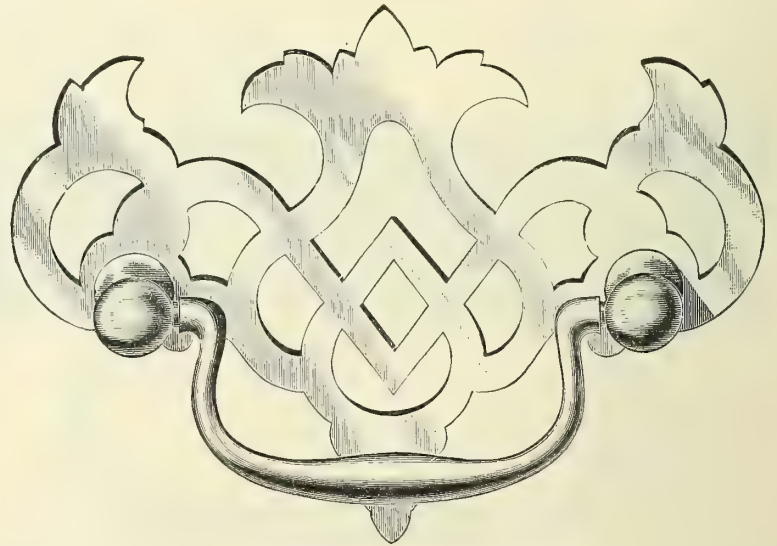
Colonial

Full Size Cuts



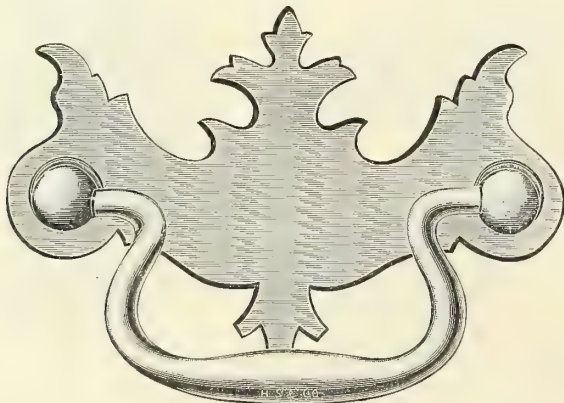
Cast Brass, Polished

No. 5396 Spacing 2 inches, dozen..... \$3.00
No. 5694 Spacing 3 inches, dozen..... 4.50

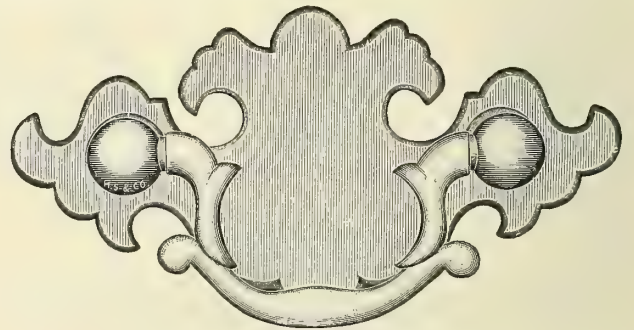


Cast Brass—Spacing 2½ inches

No. 4162 Polished, dozen..... \$3.00
No. 4162 OB Old brass finish, dozen..... 3.30



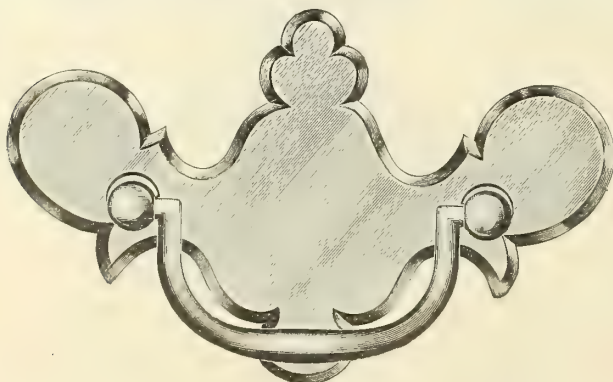
Cast Brass Bail



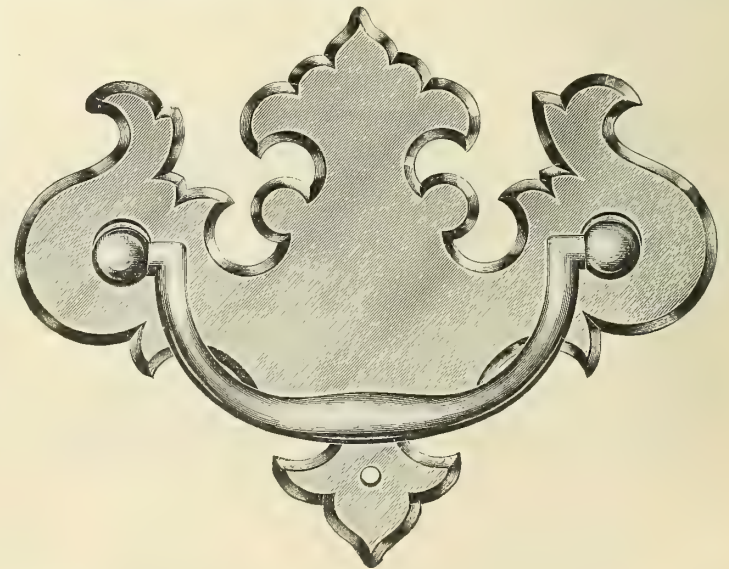
Cast Brass, Polished

No. 4782 Spacing 2 inches, dozen..... \$4.00
No. 4783 Spacing 2¾ inches, dozen..... 5.00

Number	Material	Finish	Spacing Inches	Dozen
4443	Brass	Polished	2	\$2.50
4444	Brass	Polished	3	3.25
4158	Heavy brass	Polished	2	3.35
4158 O.B.	Heavy brass	Old brass	2	4.05
4160	Heavy brass	Polished	3	4.40
4160 O.B.	Heavy brass	Old brass	3	5.25

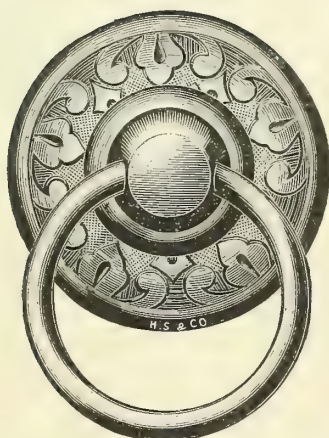


No. 5872 Cast brass, polished, spacing 1¾ inches, dozen \$5.75 No. 5873 Cast brass, polished, spacing 2½ inches, dozen \$6.25

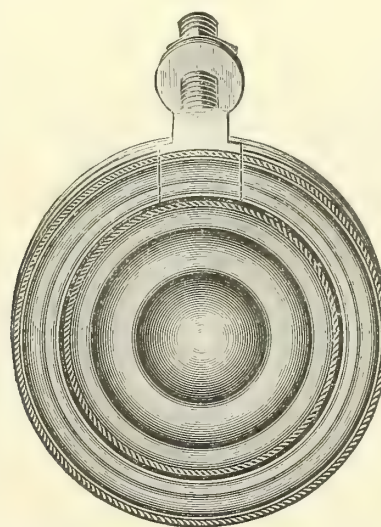


Furniture Pulls

Full Size Cuts



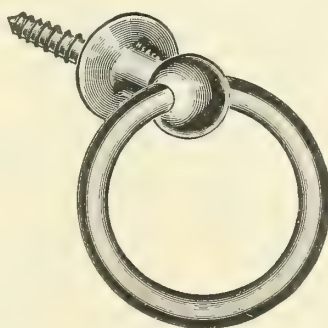
No. 1184 Wrought brass back, brass-plated ring, polished, dozen. \$.72



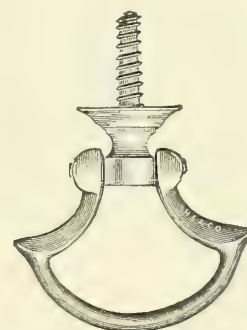
No. 1123 Old English. Cast brass back and ring, old brass finish, 2 inches over all, dozen. \$11.50



No. 10 Colonial. Cast brass, polished, 1/2-inch ring, gross. \$4.80

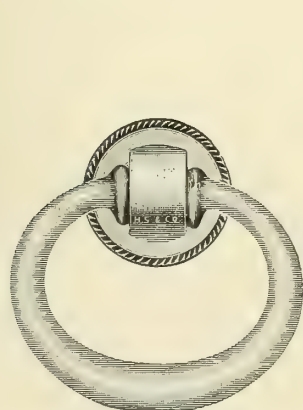


No. 1292 Colonial. Cast brass back, with 3/4-inch brass-plated ring, dozen. \$.80

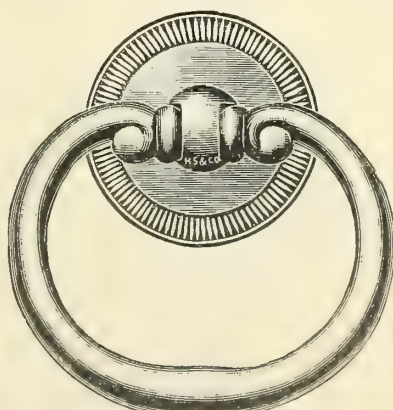


Colonial. Cast Brass, Polished

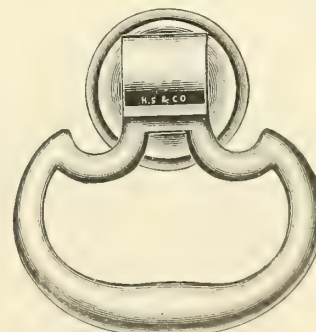
No. 4832 Size bail 1 1/4 inches, dozen. \$2.40
No. 4890 Size bail 1 1/8 inch, dozen. 2.10
No. 4891 Size bail 1 1/8 inch, dozen. 2.30



No. 989 Colonial. Cast brass, polished, dozen. \$2.00



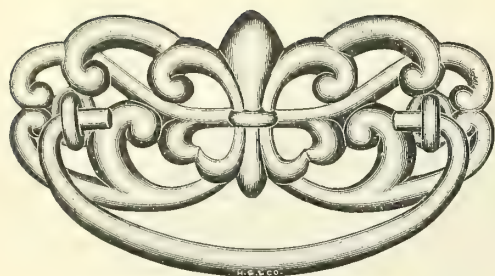
No. 5118 Colonial. Cast brass, polished, dozen. \$3.00



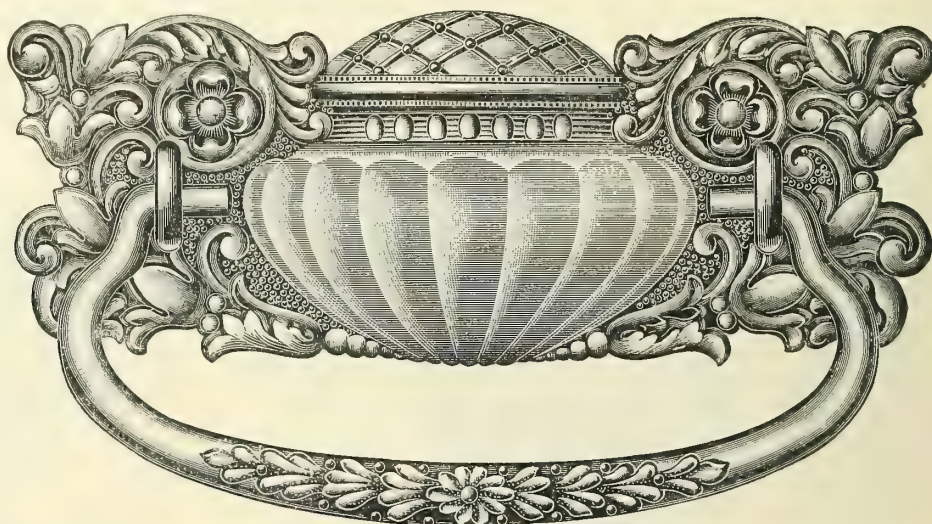
No. 1111 OB Colonial. Cast brass, old brass finish, dozen. \$2.60

Furniture Pulls

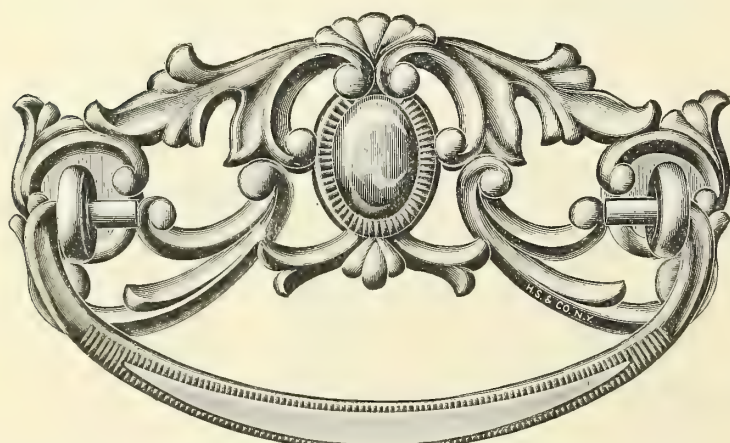
Full Size Cuts



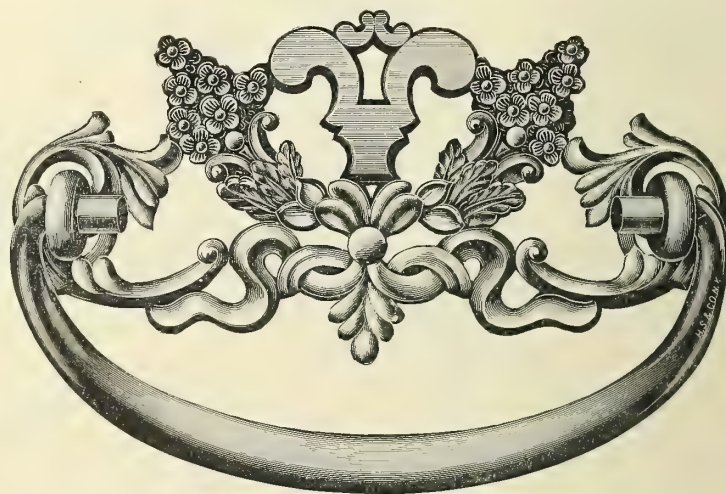
No. 1535 Wrought brass, polished, boring $1\frac{3}{4}$ inches, dozen \$.72



No. 864 Wrought brass, boring 3 inches
Polished, dozen \$.72
Oxidized, dozen90



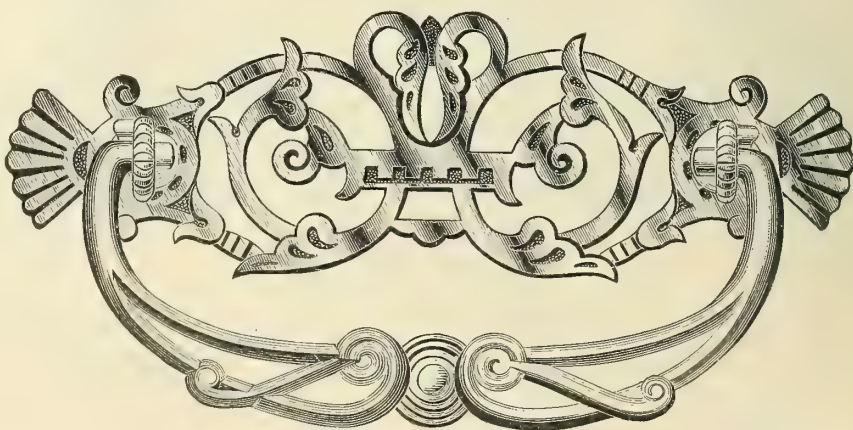
No. 775 Wrought brass, with plated wire bail, boring 3 inches.
Polished, dozen \$.90
Oxidized, dozen 1.08



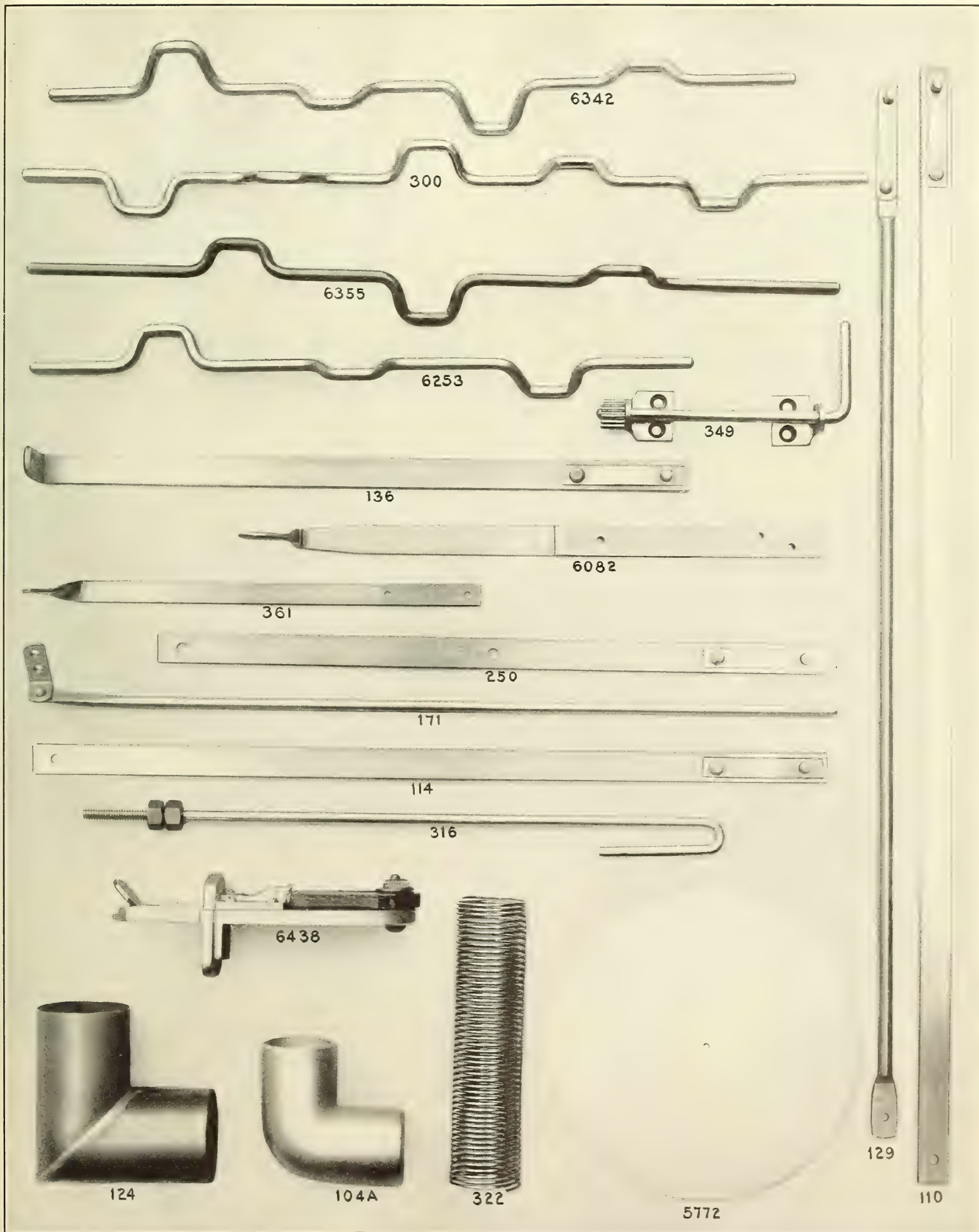
No. 1952 Cast brass, polished, plated wire bail, boring 3 inches, dozen \$1.20



No. 5180 Cast brass, polished, boring $1\frac{3}{4}$ inches, dozen \$1.80



Cast Brass, Polished
No. 4417 Size boring $2\frac{1}{2}$ inches, dozen \$2.40
No. 4418 Size boring 3 inches, dozen 2.40



See following page.

Also pages facing 313, 344 and 857

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

*Let us quote you
on Supplies and
Special Parts*

See preceding page.

Also pages facing 313, 344 and 857

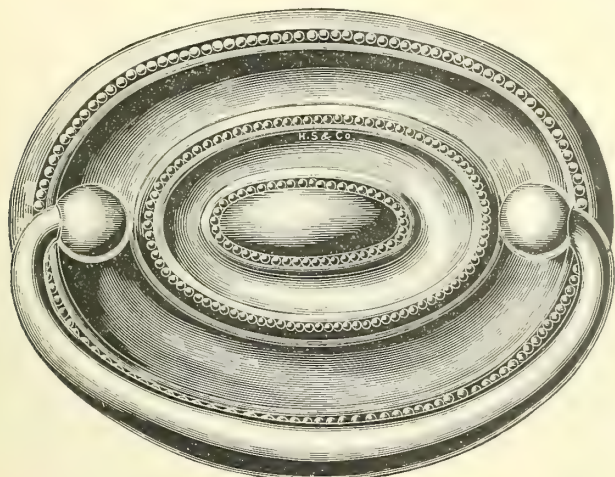
SINCE
1848

HAMMACHER SCHLEMMER & CO.

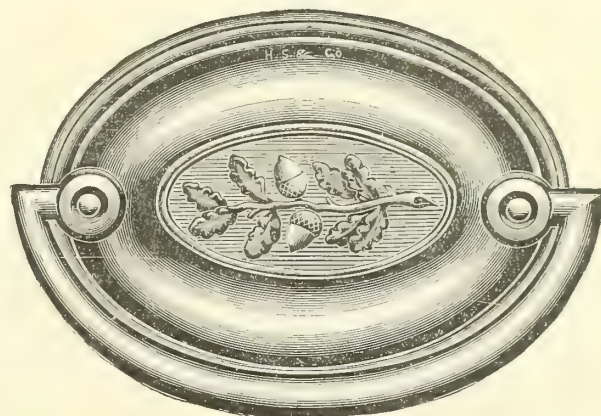
NEW
YORK

Furniture Pulls

Full Size Cuts



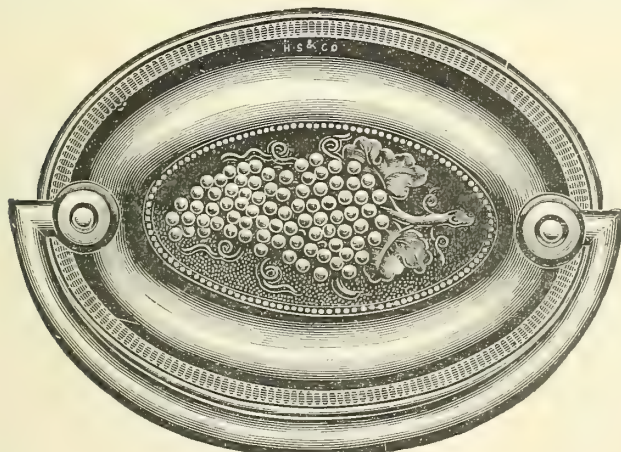
"Sheraton"



"Colonial"

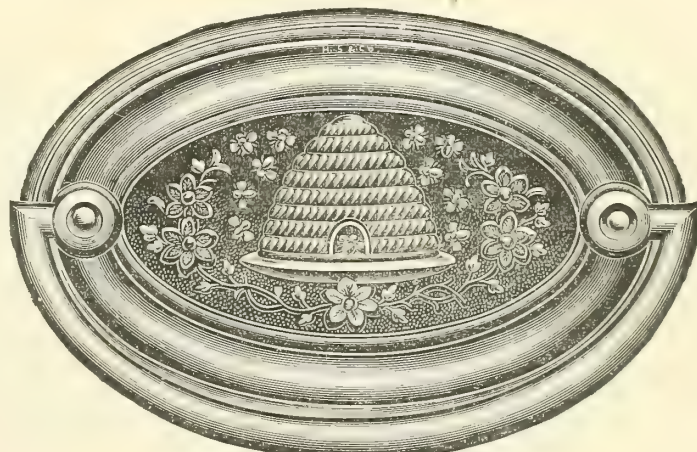
Number	Material	Finish	Size Boring, Inches	Dozen
385	Wrought brass	Polished	2	\$2.30
385N	Wrought brass	Natural	2	2.60
386	Wrought brass	Polished	2 1/4	2.60
386N	Wrought brass	Natural	2 1/4	2.90

No. 1422 Wrought brass plate, cast brass bail, old brass finish,
2 1/4-inch boring, dozen. \$3.90



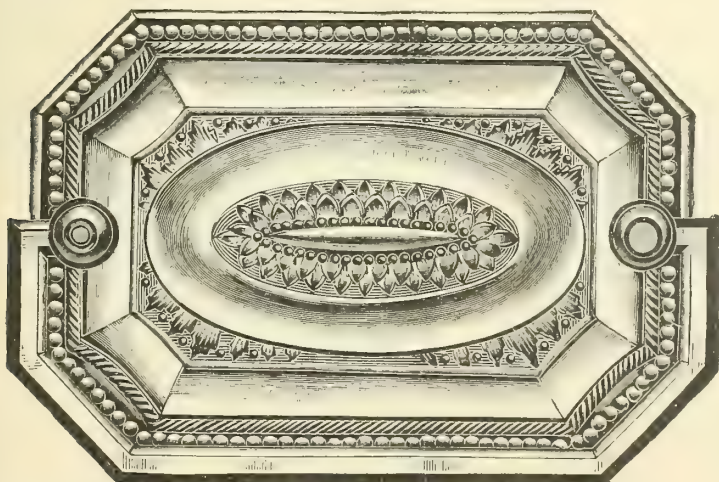
"Colonial"

No. 1419 Wrought brass plate, cast brass bail, old brass finish,
2 1/4-inch boring, dozen. \$3.90



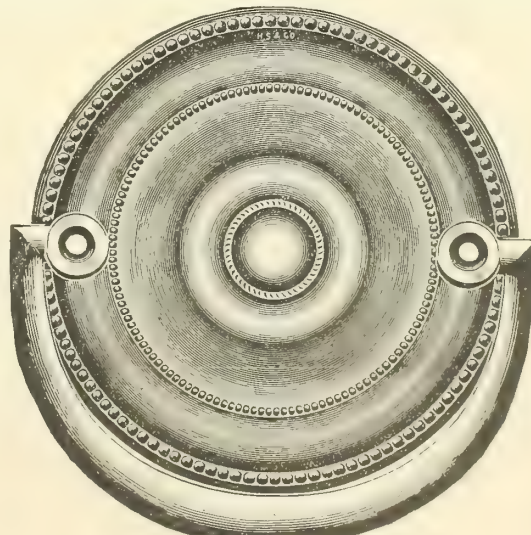
"Colonial"

No. 1423 Wrought brass plate, cast brass bail, old brass finish,
2 3/4-inch boring, dozen. \$4.30



"Sheraton"

No. 1418 Wrought brass plate, cast brass bail, old brass finish,
2 3/4-inch boring, dozen. \$4.00



"Colonial"

No. 1436 Wrought brass plate, cast brass bail, old brass finish,
2-inch boring, dozen. \$4.30

Furniture Pulls

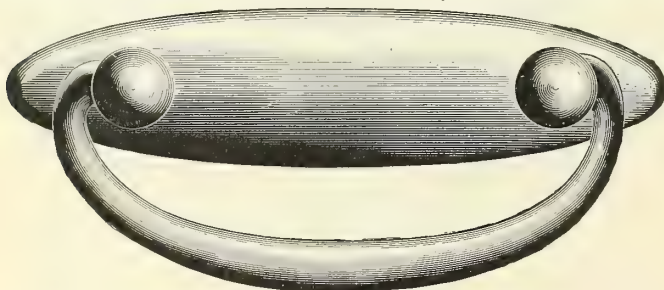
Full Size Cuts



"Colonial"

Cast brass back plate and ring. Polished.

- | | | |
|-----------|---|--------|
| No. 04114 | Size head 1 1/4 inches, diameter ring, 5/8 inch, dozen . . . | \$2.40 |
| No. 4114 | Size head 1 1/4 inches, diameter ring 1 inch, dozen . . . | 2.40 |
| No. 4115 | Size head 1 3/4 inches, diameter ring 1 1/4 inches, dozen . . | 4.20 |
| No. 4116 | Size head 2 1/4 inches, diameter ring 1 1/2 inches, dozen . . | 6.80 |
| No. 4117 | Size head 2 1/2 inches, diameter ring 1 3/4 inches, dozen . . | 9.00 |
| No. 4118 | Size head 3 inches, diameter ring 2 inches, dozen | 11.00 |



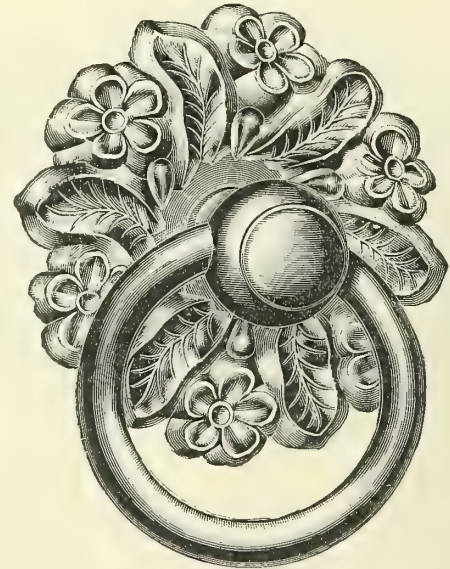
Cast brass back plate, bail and studs, old brass finish.

- | | | |
|----------|---|--------|
| No. 5410 | Size boring 2 1/4 inches, dozen | \$4.20 |
| No. 5411 | Size boring 3 inches, dozen | 5.20 |



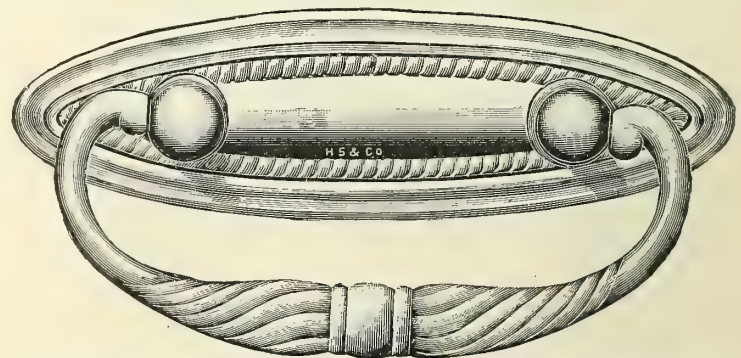
"Sheraton"

- | | | |
|---------|--|--------|
| No. 941 | Cast brass, old English finish, single boring, dozen . . . | \$3.80 |
|---------|--|--------|



"Colonial"

- Wrought brass back, solid brass ring, old brass finish.
- | | | |
|----------|---|--------|
| No. 1459 | Size base 1 1/2 inches, diameter ring 1 1/8 inches, dozen . . | \$2.40 |
| No. 1460 | Size base 2 1/4 inches, diameter ring 1 3/8 inches, dozen . . | 4.50 |
| No. 1461 | Size base 3 inches, diameter ring 1 3/4 inches, dozen | 5.00 |



- Wrought brass back plate, cast brass bail and studs, old brass finish.
- | | | |
|----------|---------------------------------------|--------|
| No. 1405 | Size boring 2 inches, dozen | \$3.90 |
| No. 1406 | Size boring 3 inches, dozen | 4.60 |



"Sheraton"

- | | | |
|-----------------|---|--------|
| No. 207A | Cast brass, old English finish, size boring, 2 inches | \$4.20 |
| dozen | | |

Furniture Pulls

English Period

Full Size Cuts



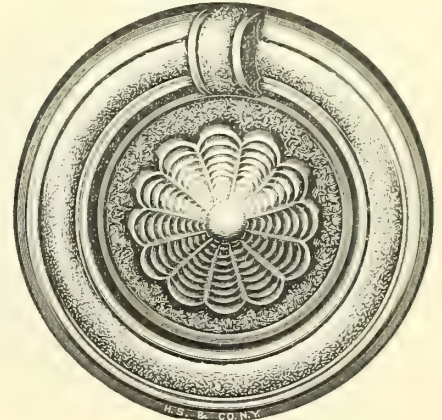
"Adam"

Cast Brass, Old English Finish
No. 2684 Diameter 2 inches, dozen . . . \$3.80
No. 2683 Diameter 1¾ inches, dozen . . 3.30



"Adam"

Cast Brass, Old English Finish
No. 788 Diameter 2 inches, dozen . . . \$3.30
No. 788½ Diameter 1½ inches, dozen . . 3.00



"Adam"

Cast Brass, Old English Finish
No. 2671 Diameter 1¾ inches, dozen . . \$3.80
No. 2672 Diameter 2¼ inches, dozen . . 4.20



"Adam"

Cast Brass, Old English Finish
No. 2699 Diameter 1½ inches, dozen . . \$2.20
No. 2700 Diameter 1¾ inches, dozen . . 2.50



"Adam"

Cast Brass, Old English Finish
No. 2669 Diameter 1⅞ inches, dozen . . \$4.20
No. 2670 Diameter 2⅞ inches, dozen . . 4.50



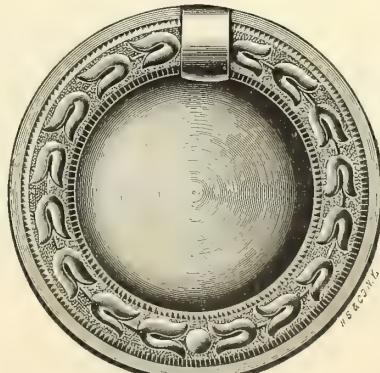
"Louis XVI"

Cast Brass, Old English Finish
No. 2685 Diameter 1⅞ inches, dozen . . \$4.20
No. 2686 Diameter 2¼ inches, dozen . . 4.70



"Adam"

Cast Brass, Old English Finish
No. 2653 Diameter 1⅞ inches, dozen . . \$3.00
No. 2654 Diameter 2 inches, dozen . . . 3.30



"Sheraton"

Cast Brass, Old English Finish
No. 2641 Diameter 1½ inches, dozen . . \$4.20
No. 2642 Diameter 2 inches, dozen . . . 5.00



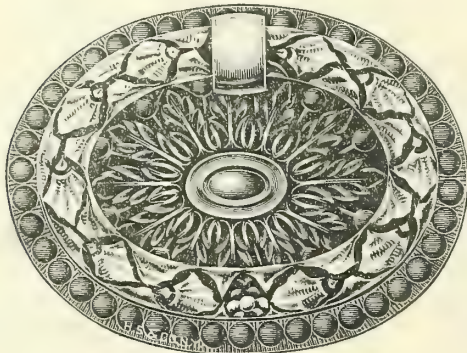
"Adam"

Cast Brass, Old English Finish
No. 2639 Diameter 1⅞ inches, dozen . . \$3.30
No. 2640 Diameter 2¼ inches, dozen . . 3.60

Furniture Pulls

English Period

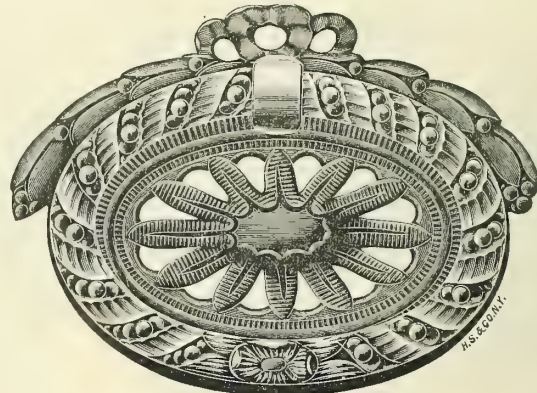
Full Size Cuts



"Adam"

No. 2659 Cast brass, old English finish, $1\frac{3}{4} \times 2\frac{3}{8}$ inches, dozen . . \$2.70

No. 2659 $\frac{1}{2}$ Cast brass, old English finish, $1\frac{7}{8} \times 1\frac{7}{16}$ inches, dozen 2.30

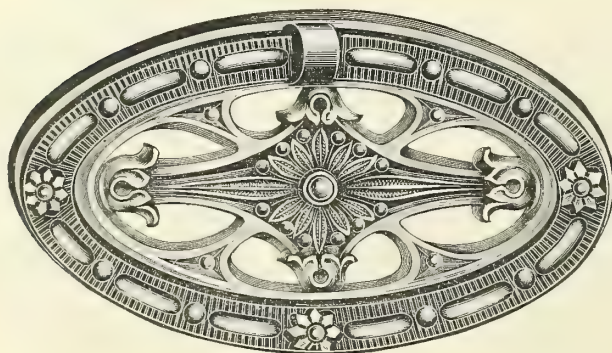


"Sheraton"

Cast brass, old English finish.

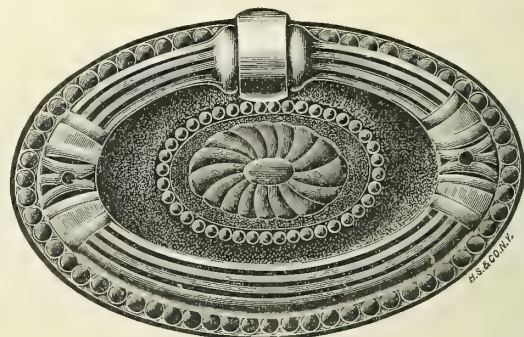
No. 2658 $2\frac{3}{4} \times 2$ inches, dozen \$4.50

No. 2658 $\frac{1}{2}$ $2\frac{1}{4} \times 1\frac{5}{8}$ inches, dozen 4.20



"Henry II"

No. 5857 Cast brass, old English finish, $1\frac{3}{4} \times 3$ inches, dozen . . \$4.00

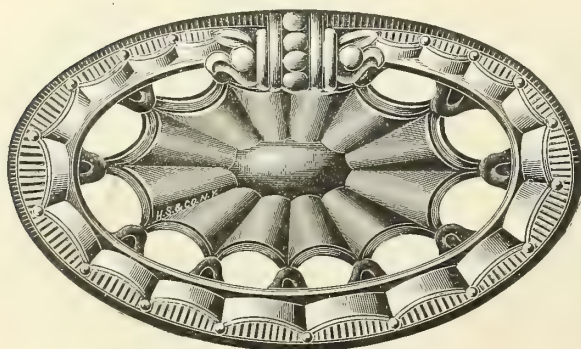


"Adam"

Cast brass, old English finish.

No. 2571 Size $1\frac{1}{2} \times 2\frac{1}{8}$ inches, dozen \$2.70

No. 2572 Size $1\frac{3}{4} \times 2\frac{5}{8}$ inches, dozen 3.00

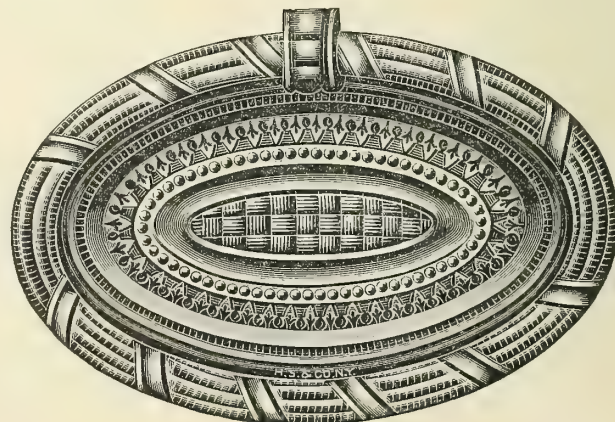


"Adam"

Cast brass, old English finish.

No. 2631 Size $1\frac{7}{8} \times 3$ inches, dozen \$3.70

No. 2631 $\frac{1}{2}$ Size $1\frac{1}{2} \times 2\frac{1}{4}$ inches, dozen 3.40



"Adam"

Cast brass, old English finish.

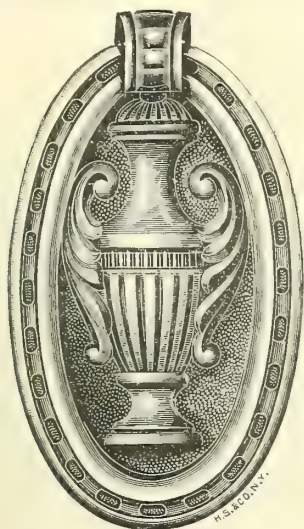
No. 2697 Size $1\frac{7}{8} \times 2\frac{5}{8}$ inches, dozen \$2.70

No. 2697 $\frac{1}{2}$ Size $1\frac{5}{8} \times 2$ inches, dozen 2.40

No. 2698 Size 2×3 inches, dozen 3.40

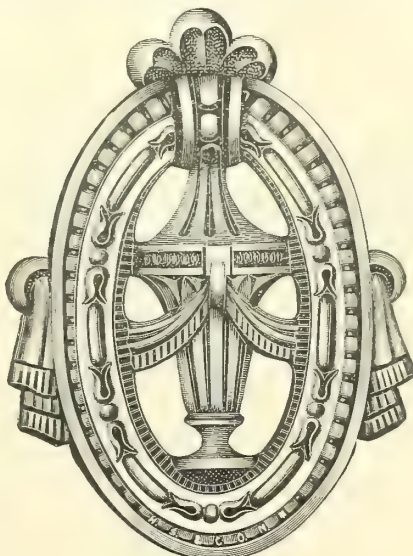
Furniture Pulls

English Period. Full Size Cuts



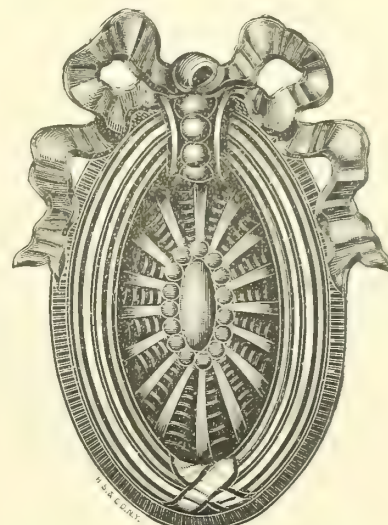
"Adam"

Cast brass, old English finish.
No. 2679 Size $1\frac{3}{8} \times 2$ inches, dozen... \$3.30
No. 2680 Size $1\frac{5}{8} \times 2\frac{1}{2}$ inches, dozen... 3.80



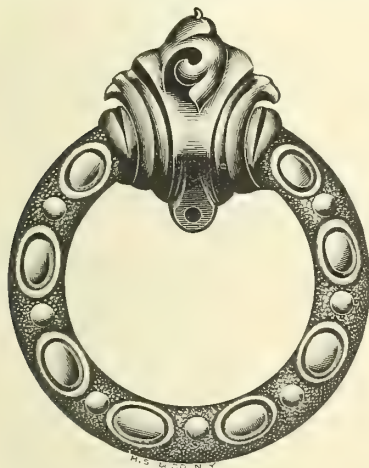
"Hepplewhite"

Cast brass, old English finish.
No. 2675 Size $1\frac{1}{2} \times 2\frac{1}{8}$ inches, dozen... \$3.30
No. 2676 Size $2 \times 2\frac{3}{4}$ inches, dozen... 3.80



"Louis XV"

Cast brass, old English finish.
No. 2687 Size $1\frac{1}{4} \times 2$ inches, dozen... \$3.80
No. 2688 Size $1\frac{1}{2} \times 2\frac{1}{4}$ inches, dozen... 4.20



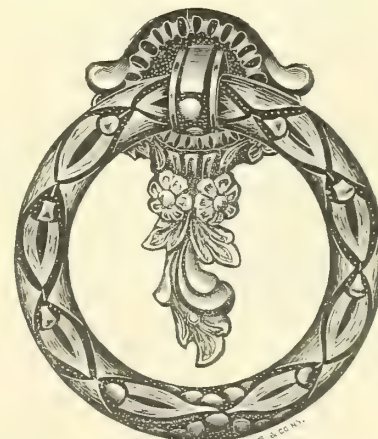
"Louis XV"

No. 2492 Cast brass, old English finish, $1\frac{7}{8}$ inches diameter, dozen... \$2.50



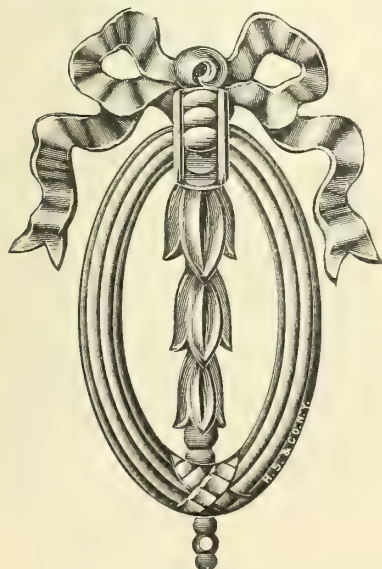
"Adam"

Cast brass, old English finish.
No. 2707 Size $1\frac{7}{8} \times 2\frac{1}{8}$ inches, dozen... \$2.00
No. 2708 Size $2\frac{1}{8} \times 2\frac{1}{2}$ inches, dozen... 2.20



"Louis XVI"

Cast brass, old English finish.
No. 2713 Diameter $1\frac{3}{8}$ inches, dozen... \$2.50
No. 2714 Diameter $1\frac{7}{8}$ inches, dozen... 2.80



"Adam"

Cast brass, old English finish.
No. 2721 Size ring $1\frac{5}{8} \times 1$ inches, dozen... \$1.80
No. 2722 Size ring $2 \times 1\frac{1}{4}$ inches, dozen... 2.20



"Louis XVI"

Cast brass, old English finish.
No. 2711 Size ring $1\frac{3}{16} \times 1\frac{3}{4}$ inches, dozen... \$2.20
No. 2712 Size ring $1\frac{3}{8} \times 2\frac{1}{8}$ inches, dozen... 2.50

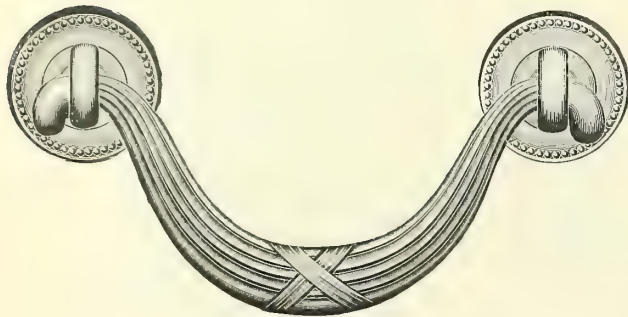


"Jacobean"

No. 2482 Cast brass, old English finish, dozen... \$2.70

Furniture Pulls

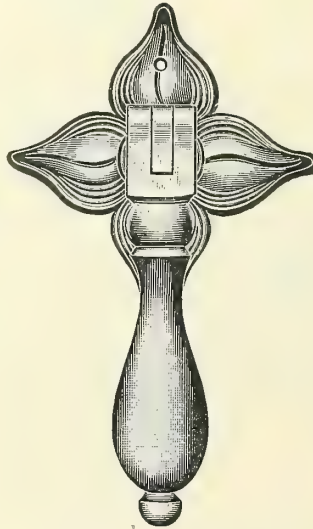
English Period
Full Size Cuts



"Sheraton"

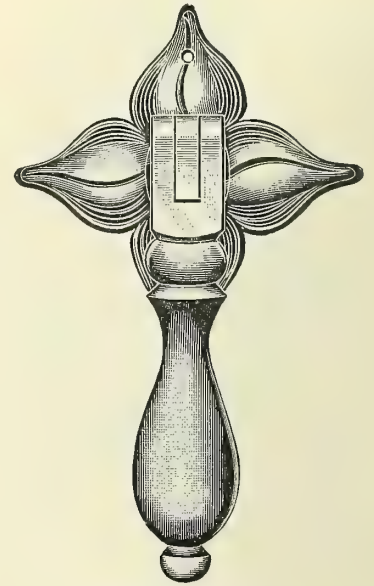
Cast brass, old English finish.

- | | | |
|----------|------------------------|---------|
| No. 6166 | Size boring 2½ inches, | |
| dozen | | \$10.50 |
| No. 6192 | Size boring 3 inches, | |
| dozen | | 11.50 |
| No. 6167 | Size boring 3½ inches, | |
| dozen | | 12.50 |



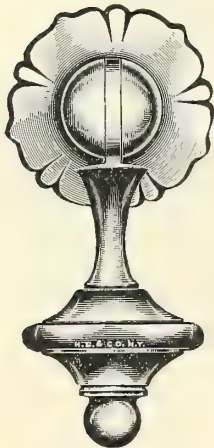
"William and Mary"

- | | | |
|----------|-------------------------------|--------|
| No. 6238 | Cast brass, old brass finish, | |
| dozen | | \$5.00 |



"William and Mary"

- | | | |
|----------|-------------------------------|--------|
| No. 6239 | Cast brass, old brass finish, | |
| dozen | | \$5.50 |



"William and Mary"

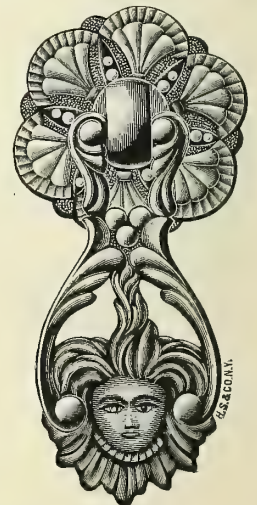
- | | | |
|----------|--|--------|
| No. 2475 | Cast brass, old
brass finish, dozen | \$3.00 |
|----------|--|--------|



- | | | |
|----------|--|--------|
| No. 2476 | Cast brass, old
brass finish, dozen | \$3.80 |
|----------|--|--------|



- | | | |
|----------|--|--------|
| No. 2477 | Cast brass, old
brass finish, dozen | \$4.20 |
|----------|--|--------|

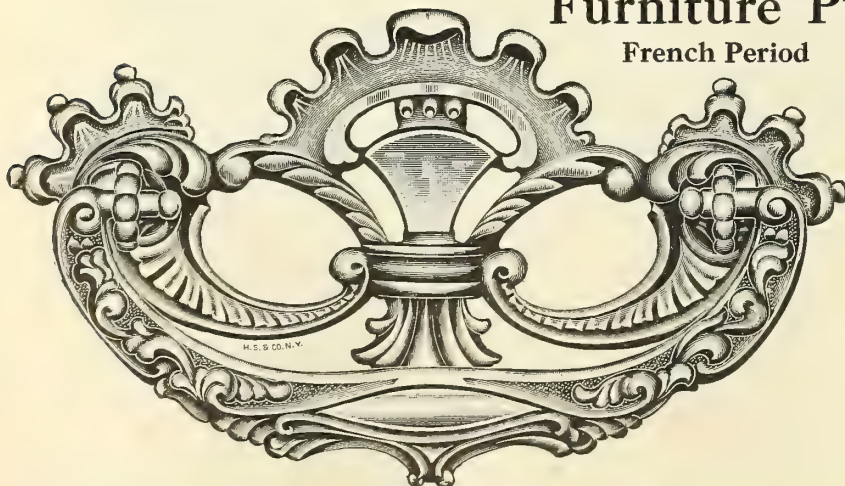


"Jacobean"

- | | | |
|----------|--|--------|
| No. 2496 | Cast brass, old
English finish, dozen | \$1.70 |
|----------|--|--------|

Furniture Pulls

French Period

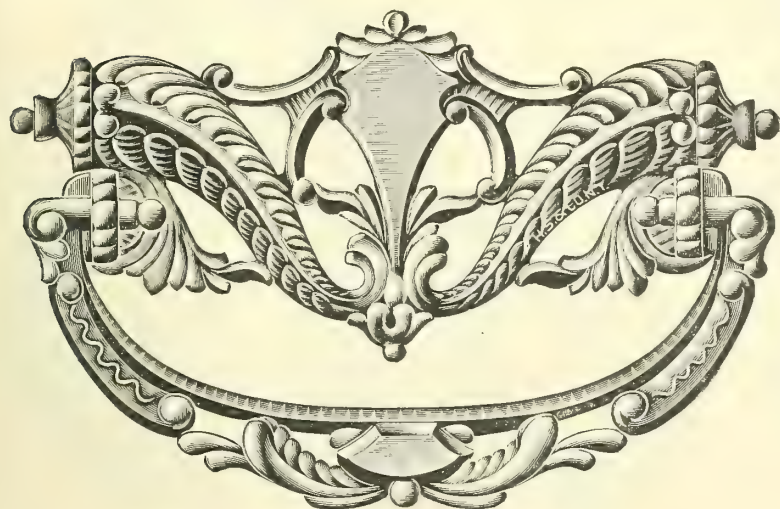


- | | | |
|----------|--------------------------------------|--------|
| No. 2246 | Cast brass, polished, 3-inch boring, | |
| dozen | | \$4.00 |

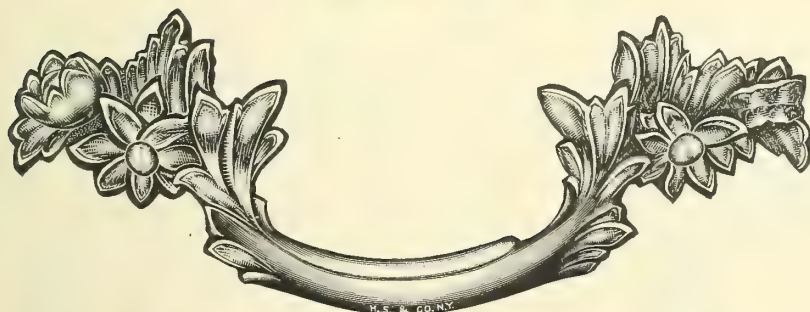
Furniture Pulls

French Period

Full Size Cuts



No. 2097 Cast brass, polished, 3-inch boring,
dozen..... \$3.00



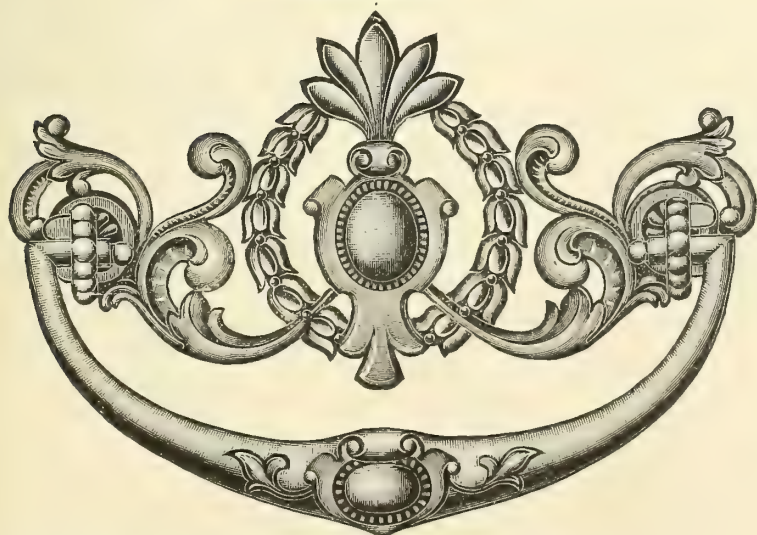
Cast brass, old gold finish.

No. 2155½ Size boring 2½ inches, dozen \$2.20

No. 2155 Size boring 3 inches, dozen 2.40



No. 5309 Packed with screws. Cast brass,
polished, dozen..... \$1.80

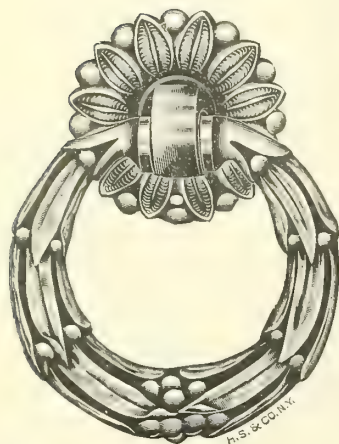


No. 901 Cast brass, polished, 3-inch boring,
dozen..... \$2.00

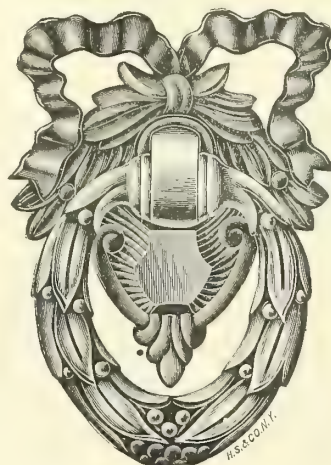
Furniture Pulls

Louis XVI Period

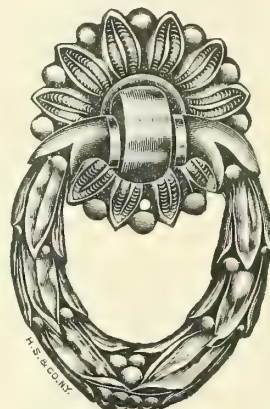
Full Size Cuts



No. 2664 2 inches diameter, dozen..... \$3.00
No. 2664½ 1½ inches diameter, dozen 2.50



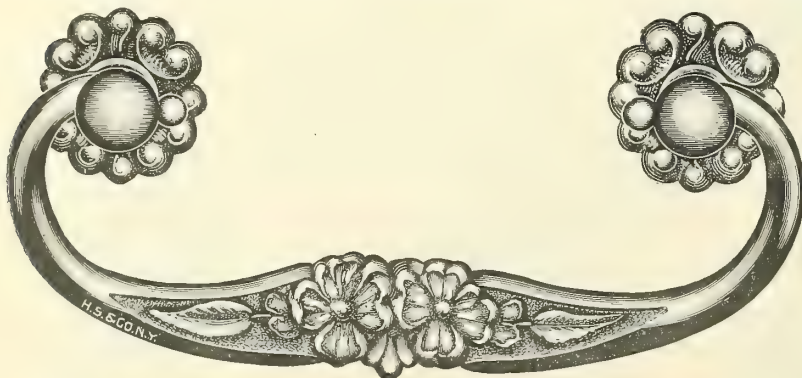
No. 2455 Cast brass, ormolu gold finish, dozen..... \$3.50



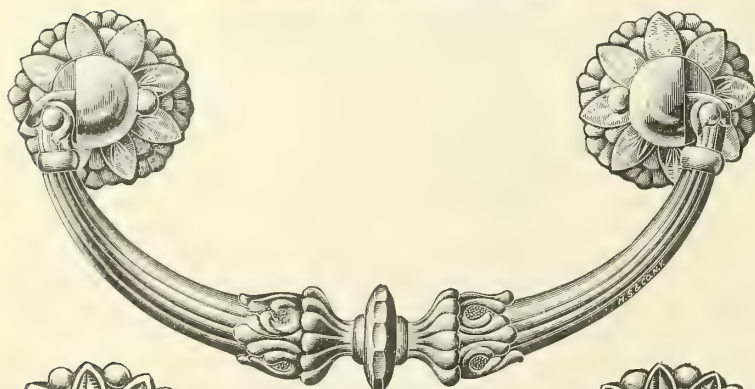
No. 2455-2664 Cast brass, ormolu gold finish, dozen..... \$4.35



Nos. 2456-2133 Cast brass, ormolu gold finish, dozen..... \$2.70



No. 2305 Cast brass, polished, 3-inch boring, dozen..... \$3.20



Cast brass, ormolu gold finish.

No. 2367 Size boring 3 inches, dozen..... \$5.00

No. 2367½ Size boring 2½ inches, dozen..... 4.20



No. 2587 Cast brass, ormolu gold finish, 3-inch boring, dozen..... \$3.00

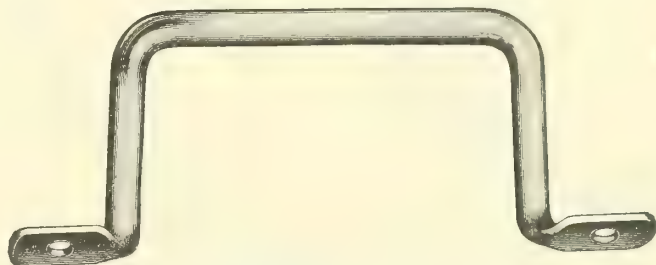
No. 2587 Cast brass, old English finish, 3-inch boring, dozen..... 3.00

Tray Handles

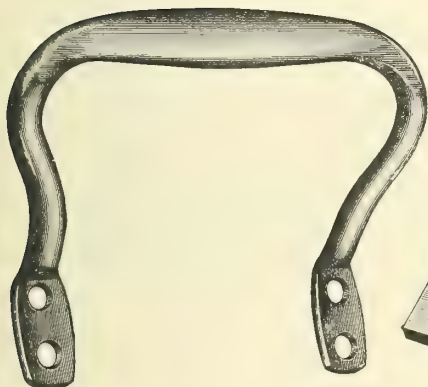
Full Size Cuts



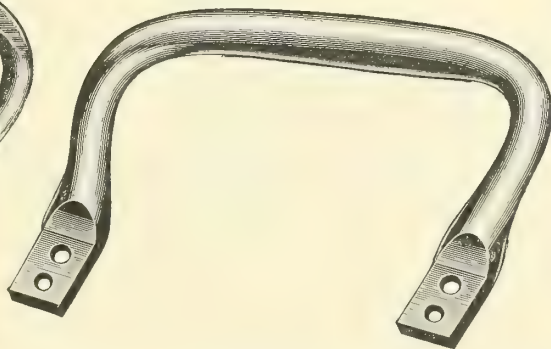
No. 39 Wrought brass, old brass finish, gross..... \$11.00



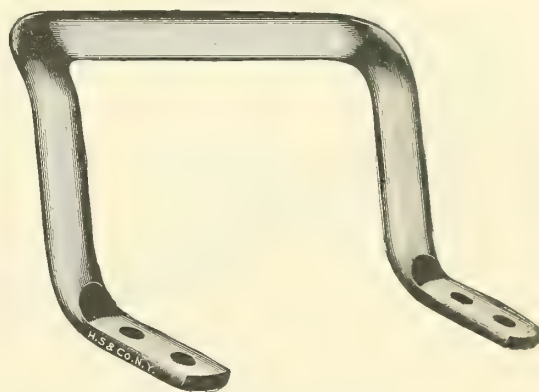
No. 19 Wrought brass, old brass finish, gross..... \$12.00



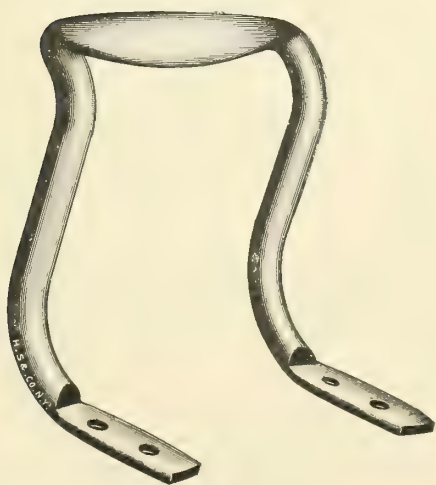
No. 44 Wrought brass, old gold finish, gross..... \$12.00



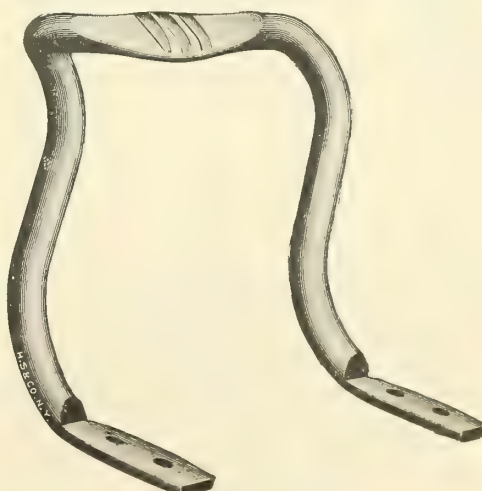
Wrought Brass
No. 1305 Polished finish, gross..... \$24.00
No. 1305 OB Old brass finish, gross..... 24.00



No. 20 Wrought brass, old brass finish, gross..... \$32.00



No. 41 Wrought brass, old brass finish, gross..... \$16.00



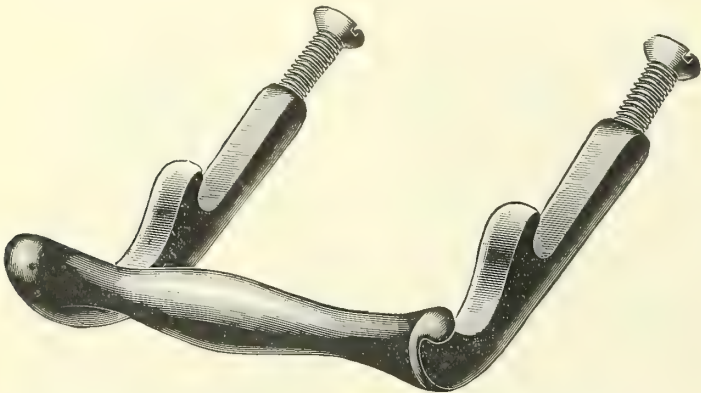
No. 28 Wrought brass, oxidized silver finish, gross..... \$18.00

SINCE
1848

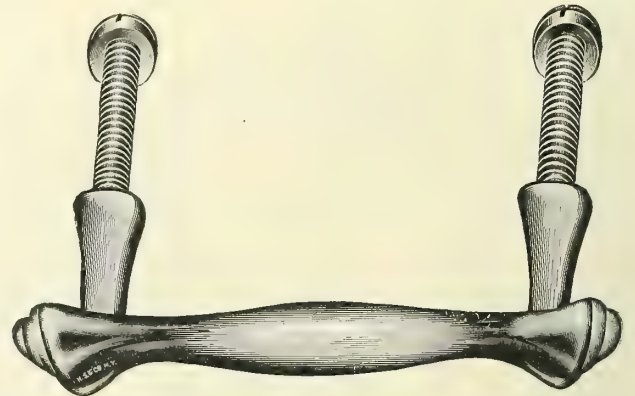
HAMMACHER SCHLEMMER & CO. NEW YORK

Tray Handles

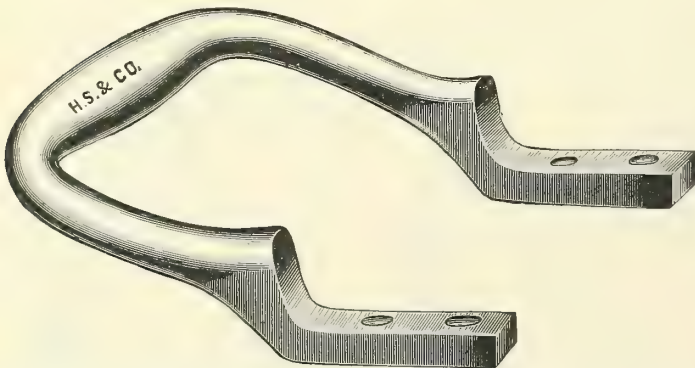
Full Size Cuts



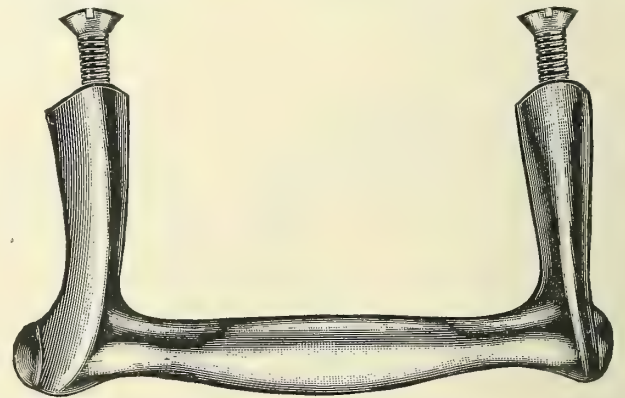
No. 759 Cast brass, polished, machine screw, 2 1/2-inch boring, dozen..... \$4.00



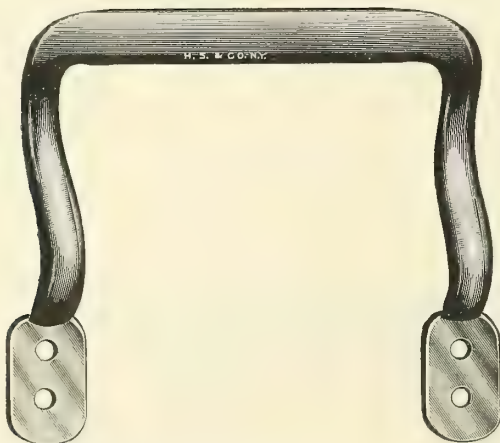
No. 758 Cast brass, polished, with slotted head nut, 2 1/2-inch boring, dozen..... \$4.00



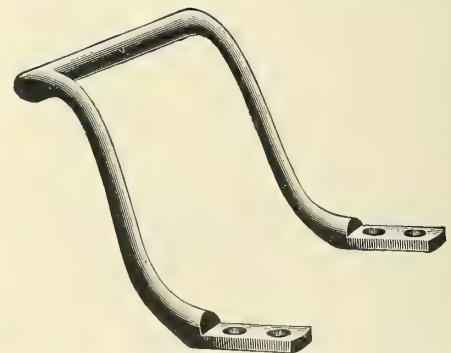
Cast brass, polished, holes countersunk on underside.
No. 724 3 1/4-inch boring, dozen..... \$3.00
No. 724 3/4 1 5/8-inch boring, dozen..... 2.40



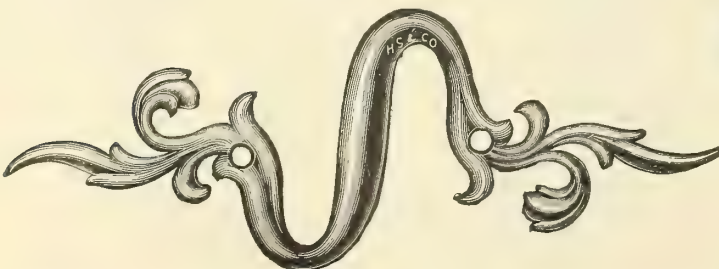
Cast brass, with machine screw, 3-inch boring.
No. 3 Polished, dozen..... \$4.00
No. 30B Old brass finish dozen..... 4.00



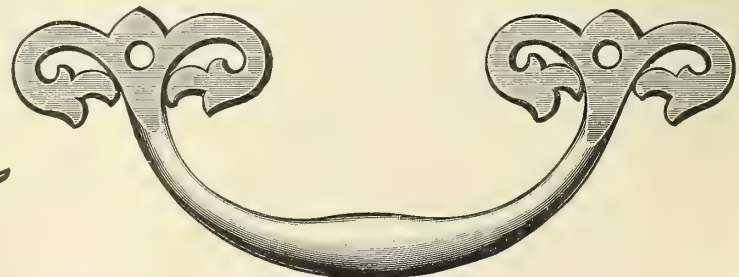
No. 8 Wrought brass, polished, gross..... \$9.00
No. 80B Wrought brass, old brass finish, gross..... 10.00



No. 987 Cast brass, polished, holes countersunk on underside, dozen..... \$3.00



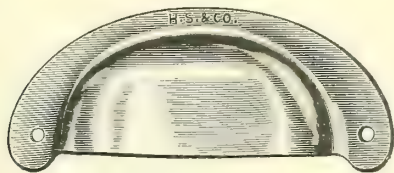
No. 740 Cast brass, polished, dozen..... \$1.30



No. 5484 Cast brass, polished, dozen..... \$1.20
No. 54840B Cast brass, old brass finish, dozen..... 1.40

Drawer Pulls

Half Size Cuts

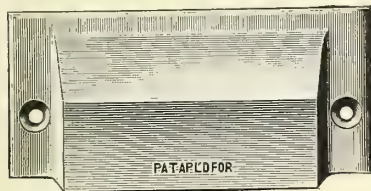


Packed with screws



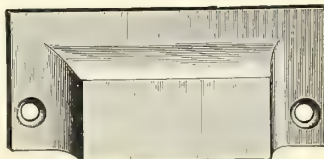
Packed with screws

Number	Material	Finish	Gross	Number	Material	Finish	Dozen
1 5⁄8 x 3 7⁄8 Inches				1 1⁄4 x 4 Inches			
2103 1⁄2	Wrought bronze	Polished	\$15.00	5854-9	Cast brass	Polished	\$2.20
DA 2103 1⁄2	Wrought brass	Old brass	13.20	5854-19	Cast brass	Nickel-plated	2.44
O 2103 1⁄2	Wrought steel	Amber, bronzed	6.10	5854-10	Cast bronze	Polished	2.66
EO 2103 1⁄2	Wrought steel	Nickel-plated	7.00	10836- 9	Wrought brass	Polished	11.20
NO 2103 1⁄2	Wrought steel	Bronze-plated	6.10	10836-23	Wrought brass	Old brass	13.45
RO 2103 1⁄2	Wrought steel	Antique copper	6.80	10836-10	Wrought bronze	Polished	11.70
1 1⁄2 x 3 1⁄2 Inches				10836-16	Wrought bronze	Antique copper	14.05
2106 1⁄2	Wrought bronze	Polished	12.60	10835-4/0	Wrought steel	Bronze-plated	7.00
O 2106 1⁄2	Wrought steel	Amber, bronzed	5.60	1 1⁄8 x 3 5⁄8 Inches			
NO 2106 1⁄2	Wrought steel	Bronze-plated	5.60	10834-9	Wrought brass	Polished	9.80
1 1⁄4 x 3 Inches				10834-23	Wrought brass	Old brass	11.75
2107 1⁄2	Wrought bronze	Polished	10.00	10834-10	Wrought bronze	Polished	10.10
DA 2107 1⁄2	Wrought brass	Old brass	9.00	10834-16	Wrought bronze	Antique copper	12.15
O 2107 1⁄2	Wrought steel	Amber, bronzed	4.90	10833-4/0	Wrought steel	Bronze-plated	6.00
NO 2107 1⁄2	Wrought steel	Bronze-plated	4.90				



Packed with screws

Number	Gross
1 3⁄4 x 3 7⁄8 Inches	
10895-4/0 Wrought steel, bronze-plated,.....	\$18.10
10896 Wrought bronze, polished	24.00



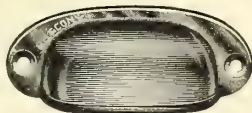
Packed with screws

Number		Dozen
Cast Bronze, Polished		
1241 1⁄2	1 3⁄8 x 3 1⁄8	\$3.96
1242 1⁄2	1 3⁄8 x 3 5⁄8	4.68
Cast Bronze, Statuary Bronze Finish		
LB1241 1⁄2	1 3⁄8 x 3 1⁄8	\$4.20
LB1242 1⁄2	1 3⁄8 x 3 1⁄8	4.90
Cast Iron, Bronze-plated		
01242 1⁄2	1 3⁄8 x 3 5⁄8	Gross 21.60



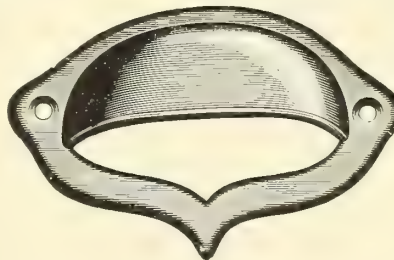
Packed with screws

Number		Gross
Cast Bronze, Polished		
1358	7⁄8 x 3 1⁄4	\$20.00
1359	7⁄8 x 3 3⁄4	24.00
1360	1 x 4 1⁄4	28.00



Cast Iron, Japped

No. 102 1 1⁄4 x 2 1⁄2 inches, gross \$2.10



Cast Iron, Japped

No. 10 2 1⁄2 x 3 7⁄8 inches, gross..... \$4.60



Cast Iron, Amber Bronzed

Packed with screws

No. 3358	Size 7⁄8 x 3 1⁄4 inches, gross.....	\$4.50
No. 3359	Size 7⁄8 x 3 3⁄4 inches, gross.....	4.86
No. 3360	Size 1 x 4 1⁄4 inches, gross.....	5.76



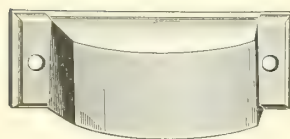
Cast Iron, Amber Bronzed

Packed with screws

No. 01225	Size 1 1⁄4 x 3 1⁄4 inches, gross.....	\$6.30
No. 01226	Size 1 3⁄8 x 3 3⁄4 inches, gross.....	7.20

Drawer Pulls

Half Size Cuts

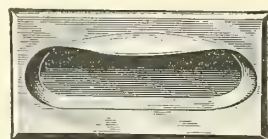


Cast Bronze, Polished

Packed with screws

No. 1352 Size 1 x 2 $\frac{7}{8}$ inches, gross... \$43.20

No. 1353 Size 1 x 3 $\frac{3}{8}$ inches, gross... 47.52

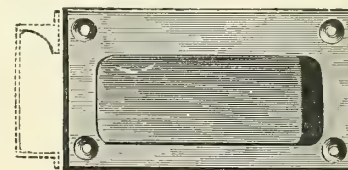


Packed with screws

No. 10410 Cast bronze, polished,

1 $\frac{1}{2}$ x 2 $\frac{3}{4}$ inches, flush pull, mortise

$\frac{1}{2}$ -inch, dozen..... \$3.00



Packed with screws

No. 150 Cast bronze, polished, 1 $\frac{3}{4}$ x

3 $\frac{1}{8}$ inches, flush pull, mortise $\frac{1}{2}$

inch, dozen..... \$4.20

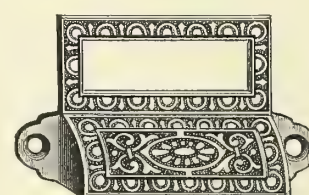
Druggist Drawer Pulls

Half Size Cuts



Packed with screws

Number	Size Inches	For Label Inches	Gross
Cast Iron, Bronze-plated			
NO1631	1 $\frac{3}{4}$ x 3 $\frac{1}{4}$	$\frac{5}{8}$ x 1 $\frac{3}{4}$	\$21.60
NO1632	2 $\frac{1}{4}$ x 4 $\frac{1}{8}$	$\frac{3}{4}$ x 2 $\frac{1}{2}$	25.20
Cast Bronze, Polished			
128P	1 $\frac{3}{4}$ x 3	$\frac{7}{8}$ x 1 $\frac{7}{8}$	2.75
129P	2 $\frac{1}{4}$ x 4 $\frac{1}{4}$	1 x 2 $\frac{5}{8}$	3.40



Cast Iron, Amber Bronzed

Packed with screws

Number	Size Inches	For Label Inches	Gross
3331	1 $\frac{3}{4}$ x 3 $\frac{1}{4}$	1 $\frac{1}{2}$ x 1 $\frac{3}{4}$	\$7.20
3332	2 $\frac{1}{4}$ x 4 $\frac{1}{8}$	$\frac{5}{8}$ x 2 $\frac{3}{8}$	9.00



Packed with screws

Size 1 $\frac{3}{4}$ x 3 $\frac{1}{8}$ inches. For label $\frac{3}{4}$ x 3 $\frac{1}{8}$ inches.

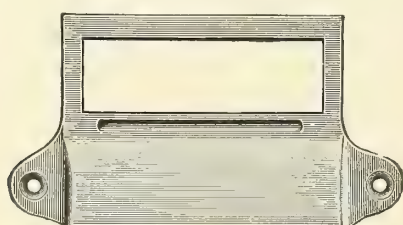
Number	Material	Finish	Gross
10911-4/0	Wrought steel	Bronze-plated	\$15.00
10912	Wrought bronze	Polished	20.30
10912-23	Wrought brass	Old brass	25.40



Cast Iron, Bronze-plated

Packed with screws

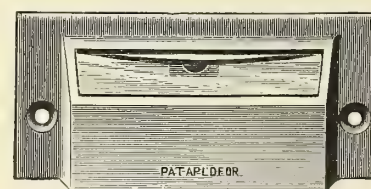
No. Y1386 Size 1 $\frac{5}{8}$ x 4 $\frac{1}{4}$ inches, for label $\frac{7}{8}$ x 2 $\frac{5}{8}$ inches, gross..... \$24.70



Packed with screws

Size 2 $\frac{1}{4}$ x 4 $\frac{1}{8}$ inches. For label 1 x 2 $\frac{3}{4}$ inches.

Number	Material	Finish	Gross
10913-4/0	Wrought steel	Bronze-plated	\$16.00
10914	Wrought bronze	Polished	24.00
10914-23	Wrought brass	Old brass	30.00

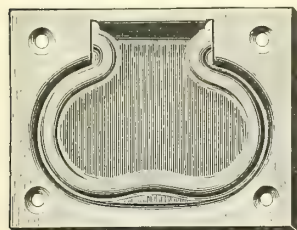


Packed with screws

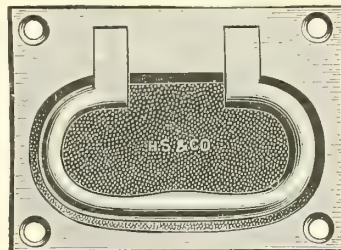
With patented spring holder for glass and label, which allows them to be inserted and securely held without removing the pull from the drawer. Size 1 $\frac{5}{8}$ x 3 $\frac{7}{8}$ inches. For label $\frac{3}{4}$ x 2 $\frac{5}{8}$ inches.

Number	Material	Finish	Gross
10901-4/0	Wrought steel	Bronze-plated	\$21.34
10902	Wrought bronze	Polished	24.00

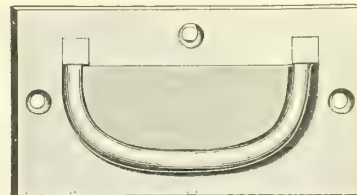
Flush Chest Handles Half Size Cuts



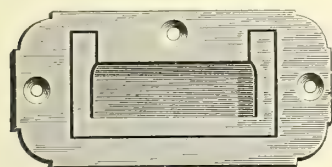
- Wrought Steel, Japanned
- No. 2231 Size $2\frac{5}{8} \times 3$ inches, dozen pair \$2.35
- No. 2232 Size $2\frac{5}{8} \times 3\frac{1}{2}$ inches, dozen pair 3.00
- No. 2233 Size $3\frac{1}{2} \times 4\frac{3}{8}$ inches, dozen pair 5.30
- No. 2234 Size $4\frac{1}{4} \times 5\frac{1}{4}$ inches, dozen pair 6.55



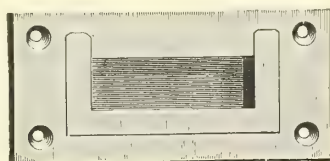
- No. 1 Packed with screws. Cast brass, polished, size $2 \times 3\frac{1}{2}$ inches, dozen pair \$24.60



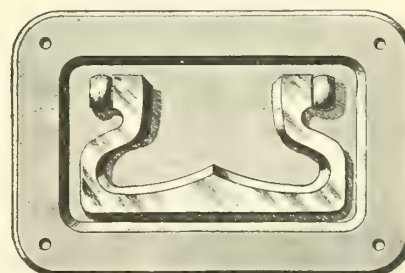
- Cast Brass, Polished
Packed with screws
- No. 724 Size $2 \times 3\frac{1}{2}$ inches, dozen pair \$9.60
- No. 727 Size $2\frac{1}{4} \times 4$ inches, dozen pair 12.00



- No. 44 Packed with screws. Cast brass, polished, size $1\frac{5}{8} \times 3\frac{3}{4}$ inches, dozen pair \$15.00

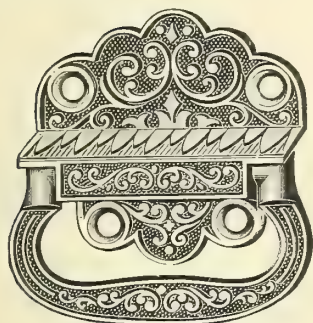


- No. P1467 Packed with screws. Cast bronze, polished, size $1\frac{5}{8} \times 3\frac{1}{4}$ inches, dozen pair \$13.50



- No. 167 Packed with screws. Cast brass, polished, size $2\frac{5}{8} \times 4$ inches, dozen pieces \$9.00

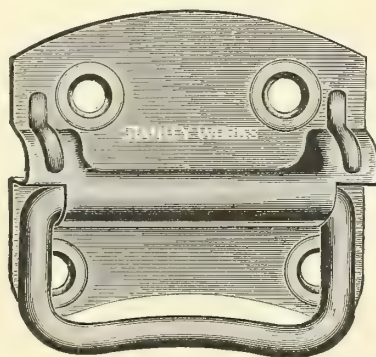
Chest Handles Half Size Cuts



Cast Iron, Amber Bronzed

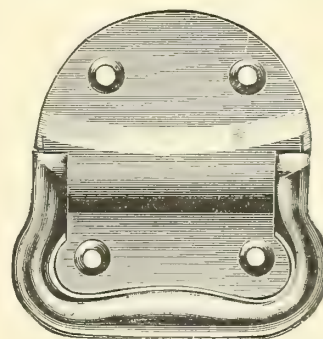
Packed with screws

- No. 3071 Width $3\frac{1}{4}$ inches, dozen pair \$2.43
- No. 3072 Width $3\frac{1}{2}$ inches, dozen pair 3.15
- No. 3073 Width 4 inches, dozen pair... 4.07



Heavy Wrought Steel, Japanned
Packed with screws

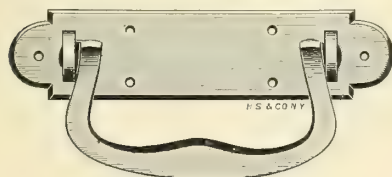
- No. 1205J Width $3\frac{1}{2}$ inches, dozen pair \$3.60
- No. 1205J Width 4 inches, dozen pair 5.00
- No. 1205J Width $4\frac{3}{4}$ inches, dozen pair 7.00



Cast Brass, Polished

Packed with screws

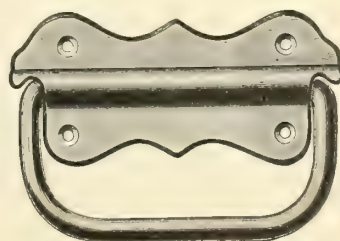
- No. 11605 Width $2\frac{3}{4}$ inches, dozen pair \$10.00
- No. 11606 Width $3\frac{3}{8}$ inches, dozen pair 14.00
- No. 11607 Width 4 inches, dozen pair 18.00



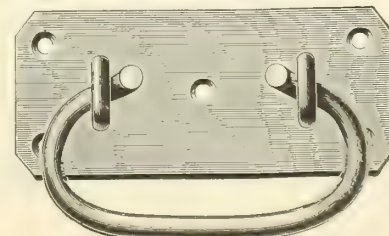
Half Size Cuts

Wrought and Cast Brass, Polished

- No. 154 Width 4 inches, gross pieces. \$6.00
- No. 155 Width $4\frac{7}{8}$ inches, gross pieces 6.75
- No. 174 Width $3\frac{3}{4}$ inches, gross pieces 3.75



- No. Y.T. 2041 Packed with screws. Wrought steel, bronze-plated, $3\frac{1}{2}$ inches wide, dozen pair \$2.00



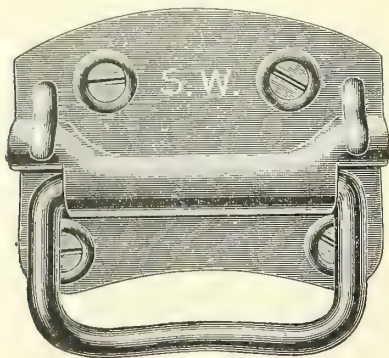
Wrought Steel, Japanned

Packed with screws

- No. 72 Size $1\frac{3}{4} \times 3\frac{7}{8}$ inches, dozen pair \$1.80
- No. 74 Size $1\frac{3}{4} \times 4\frac{3}{8}$ inches, dozen pair 2.20
- No. 76 Size $1\frac{3}{4} \times 5$ inches, dozen pair... 2.70

Chest Handles

Half Size Cuts



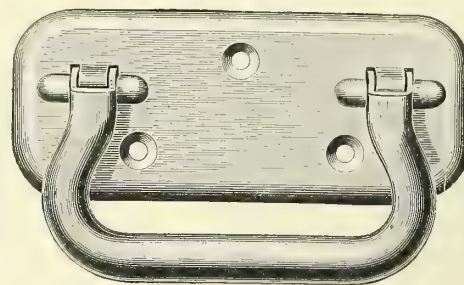
"Curved"

Packed with screws

Made with curved plate to fit oyster tubs, flower tubs, factory tubs and barrels and other curved surfaces.

Made of steel, galvanized. Width of handles $3\frac{1}{2}$ inches. Size of plate $2\frac{3}{4} \times 4$ inches.

No. 1348 Dozen pair \$10.00



Wrought Steel, Japaned

No. 2081	Size of plate $1\frac{7}{8} \times 4\frac{1}{4}$ inches, dozen pair.....	\$2.80
No. 2082	Size of plate $2 \times 4\frac{3}{4}$ inches, dozen pair.....	3.00
No. 2083	Size of plate $2\frac{1}{2} \times 5\frac{1}{2}$ inches, dozen pair.....	4.00

Wrought Steel, Bronze-plated
Packed with screws

No. Y T 2081	Size of plate $1\frac{7}{8} \times 4\frac{1}{4}$ inches, dozen pair.....	\$4.00
No. Y T 2082	Size of plate $2 \times 4\frac{3}{4}$ inches, dozen pair.....	4.50
No. Y T 2083	Size of plate $2\frac{1}{2} \times 5\frac{1}{2}$ inches, dozen pair.....	5.70



Cast Iron, Japaned
Riveted

No. 161	Width over all $3\frac{1}{4}$ inches, dozen pair.....	\$1.30
No. 162	Width over all $4\frac{1}{8}$ inches, dozen pair.....	1.60
No. 163	Width over all $4\frac{3}{8}$ inches, dozen pair.....	1.80



No. 1. Heavy Cast Brass, Polished, with Stop
Packed with screws

Size, inches.....	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Dozen pair.....	\$5.90	7.40	9.20	12.00

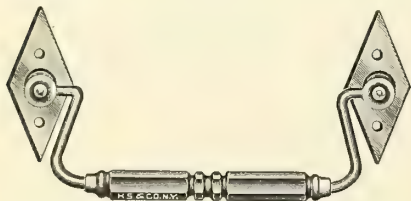
Lifting Handles

Half Size Cuts



Half Size Cut

No. 106N Brass, nickel-plated, gross pieces \$24.00



Half Size Cut

No. 108N Brass, nickel-plated, gross, pieces \$24.00



Half Size Cut

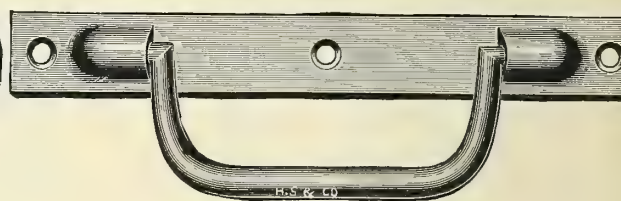
No. 133N Brass, nickel-plated, gross, pieces \$24.00



No. 5 Cast Brass, Polished

Packed with screws

Size, inches.....	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Dozen pair.....	\$5.00	5.50	7.00	8.50
No. 5N Cast Brass, Nickel-plated				
Size, inches.....		3	$3\frac{1}{2}$	
Dozen pair.....		\$6.68	8.75	



Half Size Cuts

Cast Brass, Polished

Packed with screws

No. 487	Size $\frac{3}{4} \times 6\frac{3}{4}$ inches, dozen pieces.....	\$9.72
No. 487N	Size $\frac{3}{4} \times 6\frac{3}{4}$ inches, dozen pieces.....	11.16



Half Size Cuts

Cast Brass

Size of Plate $1 \times 4\frac{1}{2}$ Inches

No. 951	Polished, gross pieces.....	\$11.25
No. 951N	Nickel-plated, gross pieces.....	11.25

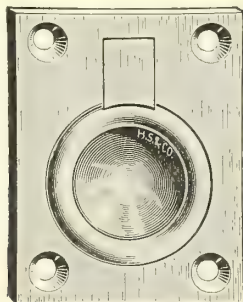
No. 2684	Polished, dozen pieces.....	\$4.70
No. 2684N	Nickel-plated, dozen pieces.....	5.10

Flush Ring Pulls

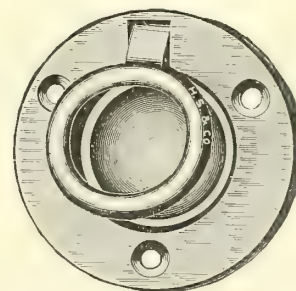
Full Size Cuts



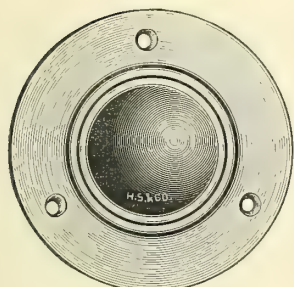
No. P.1025 Packed with screws. Cast bronze, polished, 1 inch square over all, dozen..... \$3.00



No. 0530 Cast brass, polished
Width, inches.... $1\frac{1}{4}$ $1\frac{3}{8}$ $1\frac{1}{2}$ $1\frac{7}{8}$
Length, inches... $1\frac{5}{8}$ $1\frac{3}{8}$ $1\frac{7}{8}$ $2\frac{3}{4}$
Dozen..... \$1.95 2.10 2.40 4.50



No. 1181 $\frac{1}{2}$ Cast brass, polished
Diameter overall, inches $1\frac{1}{4}$ $1\frac{3}{8}$ $1\frac{1}{2}$
Dozen..... \$2.31 2.48 2.80

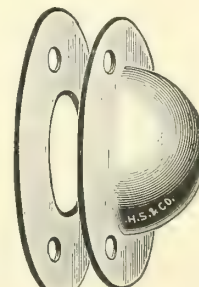


Front

Flush Pulls

Full Size Cuts

No. 131 $1\frac{1}{2}$ inches diameter over all, wrought brass, polished, gross..... \$12.80



Back

Leather Handles



Length over all 7 inches, machine-sewed handles, nickel trimmings.

No. 21 Color black, dozen..... \$6.00
No. 21 Color tan, dozen..... 6.00



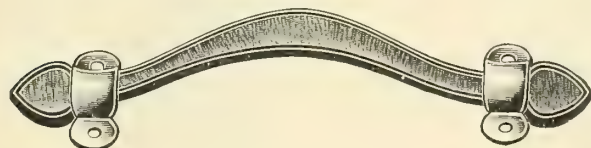
Length over all $6\frac{3}{4}$ inches, metal shell handles covered with black leather, nickel trimmings.

No. 23 Dozen..... \$3.60



Length over all $7\frac{1}{4}$ inches, machine-sewed handles, solid brass trimmings.

No. 127 Color tan, dozen..... \$6.00



Length over all 9 inches, flat handles, nickel trimmings; heavy.

No. 16 Color black, gross \$22.50
No. 16 Color tan, gross 22.50



Length over all $7\frac{3}{4}$ inches, flat handles, nickel trimmings; light.

No. 25 Color tan, gross \$21.30

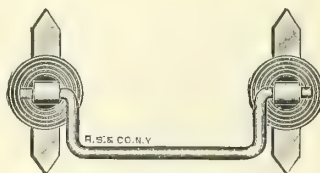
We sell loops only

Paper Box Handles

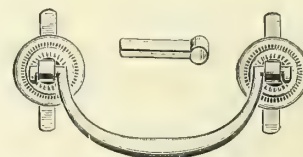
Half Size Cuts



No. 50 Brass, dipped, gross..... \$4.40



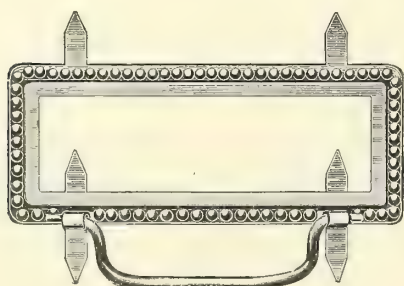
No. 42 Brass, dipped, gross..... \$5.00



No. 25 Cast brass, bail 2½ inches,
polished, gross..... \$14.40

Paper Box Handles and Label Holders

Half Size Cuts



For size card 1¼ x 3¾ inches

No. 11 Wrought brass, dipped, gross..... \$4.65
No. 11N Wrought brass, nickel-plated, gross..... 4.65



For size card 7⁄8 x 2½ inches

No. 6 Wrought brass, dipped, gross..... \$3.60
No. 6N Wrought brass, nickel-plated, gross..... 3.60

Paper Box Rings

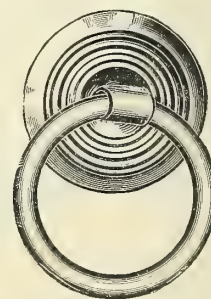
Full Size Cuts



No. 28 Brass, dipped, ½-inch ring,
gross..... \$1.40



No. 29 Brass, dipped, ½-inch ring,
gross..... \$1.40

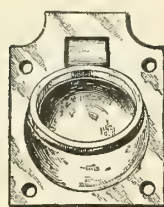


No. 31 Brass, dipped, ¾-inch ring,
gross..... \$1.60

Passe Partout Ring



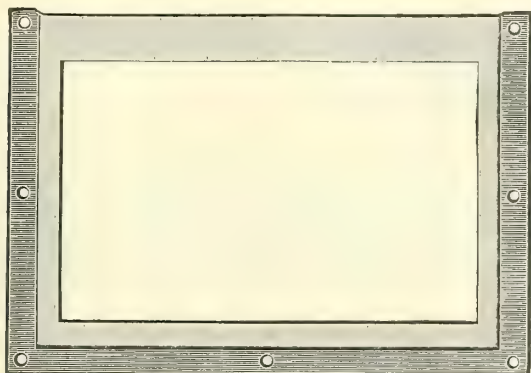
No. 973 Brass, dipped, ¾-inch ring,
gross..... \$.48



No. 1134 Brass, dipped, ½-inch ring,
gross..... \$4.50



No. 1046 Wrought brass, dipped,
½-inch ring, gross..... \$9.60



Card Frames

Over all $5\frac{1}{2} \times 3\frac{7}{8}$ inches. For card $4\frac{3}{4} \times 3\frac{1}{2}$ inches.

No. 1923 Wrought bronze, polished, with pins, gross.....	\$40.00
No. 1923 O.B. Wrought brass, old brass finish, with pins, gross.	50.00
No. 01923 $\frac{3}{4}$ Wrought steel, brass-plated, gross.....	14.70

Over all $6\frac{1}{8} \times 3\frac{5}{8}$ inches. For card $5\frac{3}{8} \times 3\frac{1}{8}$ inches.

No. 1924 Gross.....	\$63.00
No. 1924 O.B. Gross.....	78.75

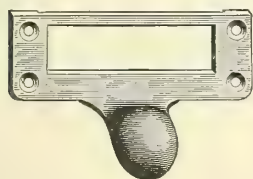
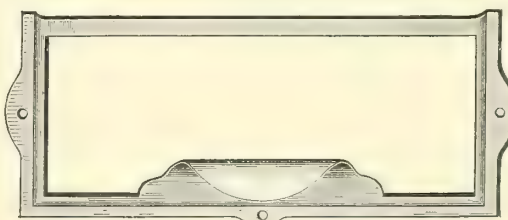
Over all $6\frac{3}{4} \times 4$ inches. For card $6 \times 3\frac{1}{2}$ inches.

No. 1890 Gross.....	\$80.00
No. 1890 O.B. Gross.....	100.00

Card Frame Pulls

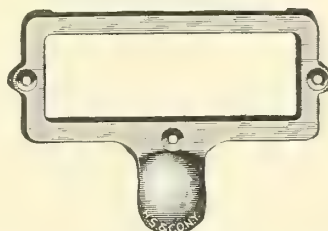
Packed with pins
 $4\frac{7}{8} \times 2\frac{1}{8}$ inches. For card $4\frac{1}{2} \times 2$ inches

No. 1894 Wrought bronze, polished, gross.....	\$13.50
No. 1894 O.B. Wrought brass, old brass finish, gross.....	16.90



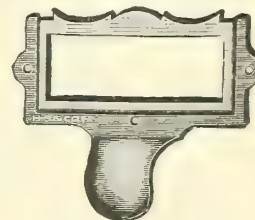
Packed with screws
 $2\frac{1}{2} \times 1\frac{5}{8}$ inch. For card $1\frac{1}{2} \times \frac{3}{4}$ inch

No. 11025 Cast bronze, polished, dozen.....	\$2.40
No. 11025 O.B. Cast brass, old brass finish, dozen.....	2.70



Packed with screws
 $3 \times 1\frac{1}{4}$ inches. For card $2\frac{5}{8} \times 1$ inch

No. 5 Cast bronze, polished, gross. . .	\$26.00
No. 5 O.B. Cast brass, old brass finish, gross.....	26.00



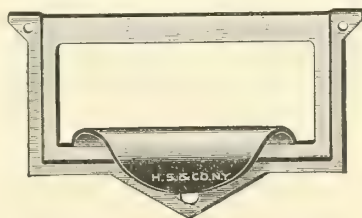
Packed with screws
 $2\frac{1}{2} \times 1\frac{1}{4}$ inches. For card $2 \times \frac{7}{8}$ inch

No. 3 Wrought brass, polished, gross.	\$5.90
No. 3 O.B. Wrought brass, old brass finish, gross.....	7.40



Packed with screws
 $2\frac{1}{8} \times 1\frac{3}{4}$ inches. For card $1\frac{1}{4} \times 1\frac{1}{8}$ inches

No. 1787 Wrought bronze, polished, gross.....	\$6.20
No. 1787 O.B. Wrought brass, old brass finish, gross.....	7.75
$3\frac{7}{8} \times 1\frac{5}{8}$ inches. For card $2\frac{7}{8} \times 1\frac{1}{4}$ inches	
No. 1788 Wrought bronze, polished, gross.....	9.80
No. 1788 O.B. Wrought brass, old brass finish, gross.....	12.25



Packed with screws
 $3\frac{1}{2} \times 2$ inches. For card $3 \times 1\frac{1}{2}$ inch

No. 600 Wrought bronze, polished, gross.....	\$10.80
No. 600 O.B. Wrought brass, old brass finish, gross.....	13.50



Packed with screws
 $1\frac{1}{8} \times 1\frac{1}{8}$ inch. For card $1\frac{1}{8} \times \frac{1}{8}$ inch

No. 1906 Wrought bronze, polished, gross.....	\$5.40
No. 1906 O.B. Wrought brass, old brass finish, gross.....	6.75



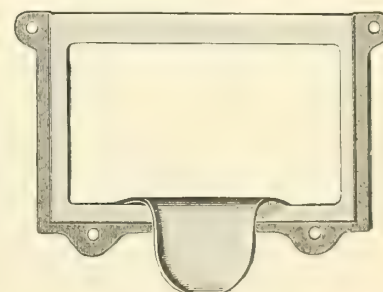
Packed with screws
 $3\frac{1}{8} \times 1\frac{1}{2}$ inches. For card $2\frac{7}{16} \times 1$ inch

No. 5511 Wrought bronze, polished, gross.....	\$8.40
No. 5511 O.B. Wrought brass, old brass finish, gross.....	10.50



Packed with pins and screws
 $3 \times 1\frac{1}{2}$ inches. For card $2\frac{1}{2} \times \frac{3}{4}$ inch

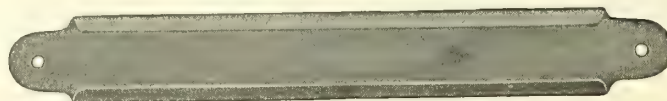
No. 5243 Wrought brass, polished, gross.....	\$7.75
No. 5243 O.B. Wrought brass, old brass finish, gross.....	9.35



Packed with screws
 $3\frac{3}{8} \times 2\frac{1}{4}$ inches. For card $3 \times 2\frac{1}{16}$ inches

No. 5501 Wrought bronze, polished, gross.....	\$22.60
No. 5501 O.B. Wrought brass, old brass finish, gross.....	28.25

Card Frames



No. 33 Packed with pins. Wrought brass, dipped. For card $2\frac{1}{2} \times \frac{3}{8}$ inch, gross..... \$3.00

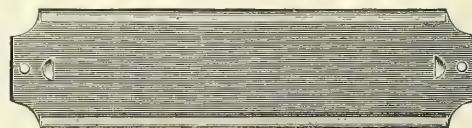


Packed with pins

$1\frac{1}{8} \times \frac{1}{8}$ inch. For card $1\frac{3}{16} \times \frac{1}{16}$ inch

No. 40 Wrought bronze, polished, dozen..... \$4.15

No. 40 O.B. Wrought brass, old brass finish, gross..... 5.25



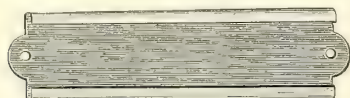
Wrought Brass, Dipped

No. 25060 For card $1\frac{1}{2} \times \frac{5}{8}$ inch..... \$4.40

No. 25069 For card $2\frac{1}{4} \times \frac{5}{8}$ inch..... 4.60

No. 25071 For card $3\frac{1}{4} \times \frac{5}{8}$ inch..... 4.80

No. 25066 For card $4 \times 1\frac{1}{8}$ inches..... 7.20



No. 026 Wrought brass, dipped. For card $1\frac{1}{2} \times \frac{7}{8}$ inch. Gross..... \$3.00

No. 029 For card $3 \times \frac{7}{8}$ inch. Gross.. 3.45

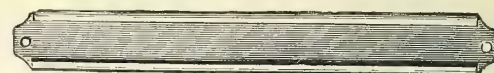


Packed with pins

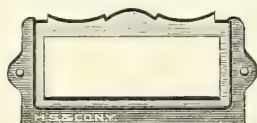
$2\frac{3}{4} \times \frac{1}{8}$ inch. For card $2\frac{7}{16} \times \frac{3}{4}$ inch

No. 34 Wrought brass, dipped, gross. \$3.00

No. 35 Wrought bronze, dipped, gross 4.50



No. 31 Packed with pins. Wrought brass, dipped. For card $2\frac{1}{4} \times \frac{1}{4}$ inch, gross..... \$2.80



Packed with pins

$2\frac{1}{2} \times 1\frac{1}{8}$ inches. For card $2 \times \frac{7}{8}$ inch

No. 30 Wrought bronze, polished, gross..... \$4.00

No. 30 O.B. Wrought brass, old brass finish, gross..... 5.00



Packed with pins

$2\frac{1}{8} \times 1\frac{3}{8}$ inches. For card $1\frac{3}{4} \times 1\frac{1}{16}$ inches

No. 1789 Wrought bronze, polished, gross..... \$4.80

No. 1789 O.B. Wrought brass, old brass finish, gross..... 6.00

$3\frac{3}{8} \times 1\frac{1}{8}$ inches. For card $2\frac{7}{8} \times 1\frac{1}{4}$ inches

No. 1790 Wrought bronze, polished, gross..... \$8.00

No. 1790 O.B. Wrought brass, old brass finish, gross..... 10.00

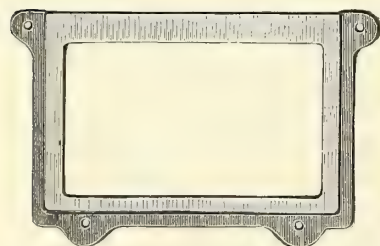


Packed with pins

$3\frac{1}{8} \times 1\frac{1}{2}$ inches. For card $2\frac{1}{2} \times 1$ inch

No. 5512 Wrought bronze, polished, gross..... \$7.20

No. 5512 O.B. Wrought brass, old brass finish, gross..... 9.00



Packed with pins

$3\frac{3}{8} \times 2\frac{1}{4}$ inches. For card $3 \times 2\frac{1}{16}$ inches

No. 5502 Wrought bronze, polished, gross..... \$16.00

No. 5502 O.B. Wrought brass, old brass finish, gross..... 20.00



Cast Bronze, Polished

Packed with screws

No. 1065P Size $2\frac{1}{8} \times \frac{7}{8}$ inch, for card $2\frac{1}{2} \times \frac{3}{4}$ inch, gross..... \$12.80

No. 1066P Size $3\frac{1}{2} \times 1\frac{1}{2}$ inches, for card $2\frac{1}{8} \times 1\frac{1}{4}$ inch, gross..... 18.20

No. 1067P Size $3\frac{1}{8} \times 2$ inches, for card $3\frac{1}{8} \times 1\frac{3}{4}$ inches, gross..... 19.90



Packed with screws

$3\frac{1}{2} \times 1\frac{1}{8}$ inches. For card $3\frac{3}{16} \times 1\frac{1}{2}$ inches

No. 25 Cast bronze, polished, gross.. \$24.70

No. 25 O.B. Cast brass, old brass finish, gross..... 24.70

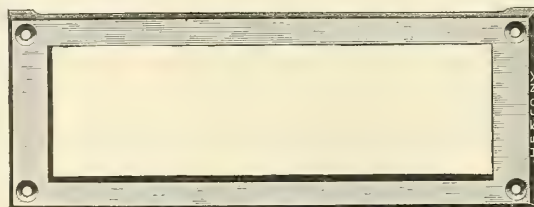


Packed with screws

$3 \times 1\frac{1}{4}$ inches. For card $2\frac{5}{8} \times 1$ inch

No. 1899 Cast bronze, polished, gross..... \$24.00

No. 1899 O.B. Cast brass, old brass finish, gross.. 30.00

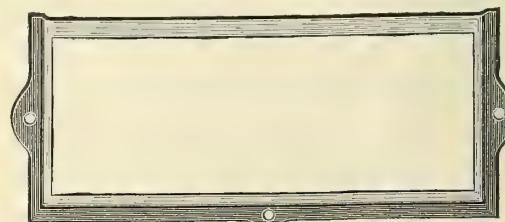


Packed with screws

$5\frac{1}{4} \times 2$ inches. For card $4\frac{3}{4} \times 1\frac{3}{4}$ inches

No. 1070P Cast bronze, polished, gross \$40.00

No. 1070 O.B. Cast brass, old brass finish, gross..... 50.00



Over all $4\frac{7}{8} \times 2\frac{1}{8}$ inches. For card $4\frac{1}{2} \times 2$ inches.

Packed with pins

No. 1884 Wrought bronze, polished, gross \$15.00

No. 1884 O.B. Wrought brass, old brass finish, gross..... 18.75

Thread Escutcheons

Full Size Cuts



No. 386



No. 128



No. 129



No. 139



Wrought Brass



Wrought Brass
Packed with pins

Cast Brass, Emery Finish		Cast Brass, Polished		No. 79 Dipped finish, gross..... \$2.00		Packed with pins No. 1445 Dipped finish, gross..... \$2.00	
Size 3⁄8 inch, gross..	\$1.44	No. 128	Size 1⁄16 inch, gross...	\$3.00			No. 1445 O.B. Old brass finish, gross..... 3.20
Size 1⁄2 inch, gross..	1.54	No. 129	Size 1⁄16 inch, gross...	3.00	No. 79 O.B. Old brass finish, gross..... 2.10		No. 1445 O.E. Old English finish, gross..... 3.50
Size 5⁄8 inch, gross..	1.92				Other finishes to order		
Size 3⁄4 inch, gross..	3.00	No. 139	Size 5⁄8 inch, gross...	3.00			

Escutcheons

Full Size Cuts



No. 48 Style of number 1 3⁄4. Wrought Brass, Dipped					
No. 48 Diameter 7⁄8 inch, gross	\$.80				
No. 1 3⁄4 Diameter 1 inch, gross.....	.80	No. 1537 Packed with pins. Wrought brass, polished, gross....		\$1.50	

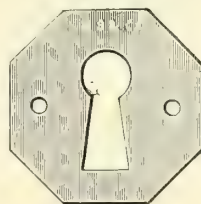


Wrought Brass
Packed with pins

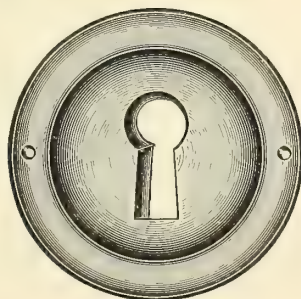
No. 935 Polished, gross.....	\$3.30	No. 1514 Polished, gross.....	\$1.35	No. 1108 Polished, dozen.....	\$.70
No. 935 O.B. Old brass finish, gross..	3.60	No. 1514N Nickel-plated, gross.....	1.35	No. 1108 O.B. Old brass finish, dozen.	.80



Wrought Brass
Packed with pins



Wrought Brass
Packed with pins



Packed with pins

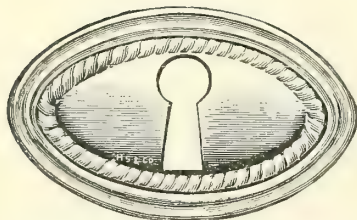
No. 145 Cast brass, polished, dozen.....	\$.90	No. 144 Polished, dozen.....	\$.76
		No. 144 O.B. Cast brass, dozen.....	.90



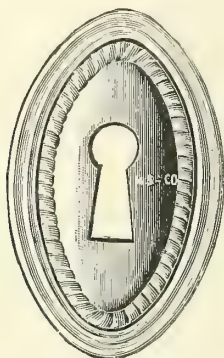
Cast Brass
Packed with pins

Escutcheons

Full Size Cuts



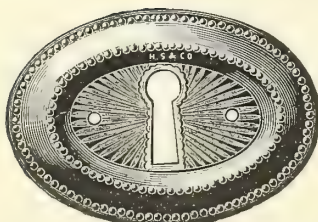
No. 1404 O.B. Packed with pins. Wrought brass, old brass finish, gross \$5.40



No. 1407 O.B. Packed with pins. Wrought brass, old brass finish, gross \$5.40



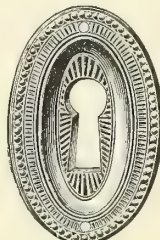
No. 1428 O.B. Packed with pins. Wrought brass, old brass finish, gross \$6.00



Wrought Brass

Packed with pins

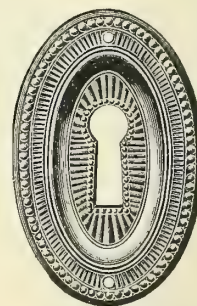
No. 402 O.B. Old brass finish, gross . . \$4.00
No. 402 O.E. Old English finish, gross 4.00



Wrought Brass

Packed with pins

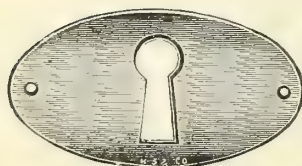
No. 382 O.B. Old brass finish, gross . . \$3.00
No. 382 O.E. Old English finish, gross 3.00



Wrought Brass

Packed with pins

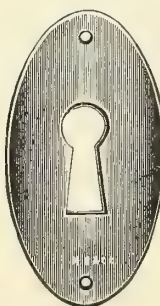
No. 383 O.B. Old brass finish, gross . . \$3.60
No. 383 O.E. Old English finish, gross 3.60



Wrought Brass

Packed with pins

No. 1519 Polished, gross \$4.32
No. 1519 O.B. Old brass finish, gross. 4.32



Wrought Brass

Packed with pins

No. 1520 Polished, gross \$4.32
No. 1520 O.B. Old brass finish, gross. 4.32



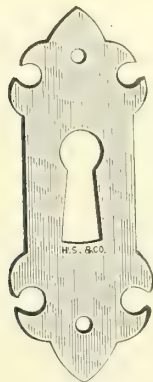
Cast Brass, Polished

Packed with screws

No. 5390 Dozen \$.60

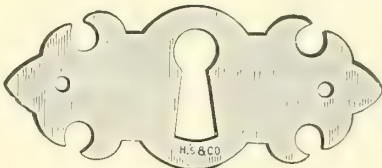
Escutcheons

Full Size Cuts



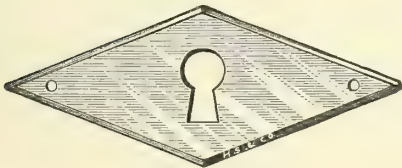
Wrought Brass

No. 119	Polished, gross.....	\$1.80
No. 119N	Nickel-plated, gross.....	2.40



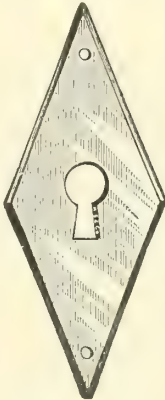
Wrought Brass, Polished

No. 118	Gross.....	\$1.80
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Wrought Brass

No. 0	Polished, gross.....	\$2.10
No. 0N	Nickel-plated, gross.....	2.10



Wrought Brass

No. 00	Polished, gross.....	\$2.10
No. 00N	Nickel-plated, gross.....	2.10



Packed with pins

No. 230	Wrought brass, polished, gross.....	\$2.40
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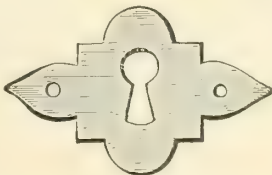


Packed with screws

No. 428	Wrought brass, polished, gross.....	\$5.00
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No. 120½	Wrought brass, nickel-plated, gross.....	\$5.20
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No. 749	Wrought bronze, nickel-plated, gross.....	\$1.95
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Escutcheons

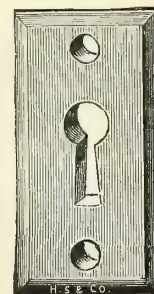
Full Size Cuts



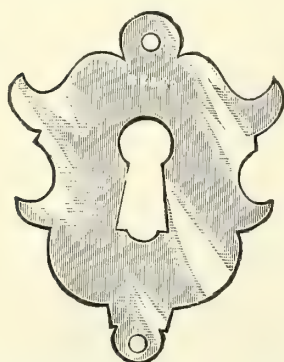
No. 2694 Packed with screws.
Wrought brass, polished, gross... \$7.00



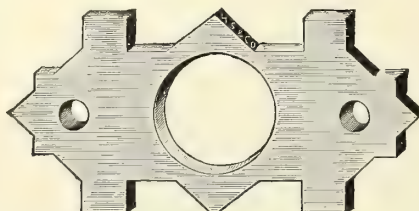
No. 0745 Packed with screws.
Wrought bronze, polished, gross... \$12.60



Packed with screws
No. 0744 Wrought brass, polished,
gross... \$9.00
No. 0744½ Wrought bronze, pol-
ished, gross... 9.00



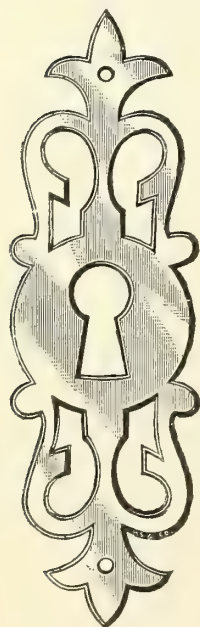
No. 4176 Packed with pins. Cast
brass, polished, gross... \$8.00



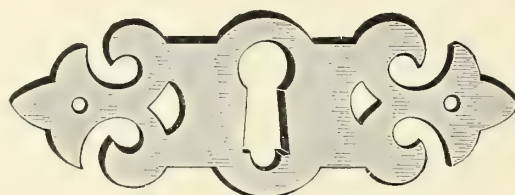
No. 1355 Packed with screws. Wrought
brass, polished, gross... \$8.00



No. 1356 Packed with screws.
Wrought brass, polished, gross... \$8.00



Packed with pins
Cast Brass, Polished
No. 4023½ Gross... \$11.00



No. 5391 Packed with pins. Cast brass, polished, dozen... \$.90



No. 4023 Packed with pins. Cast brass, polished, gross... \$11.40



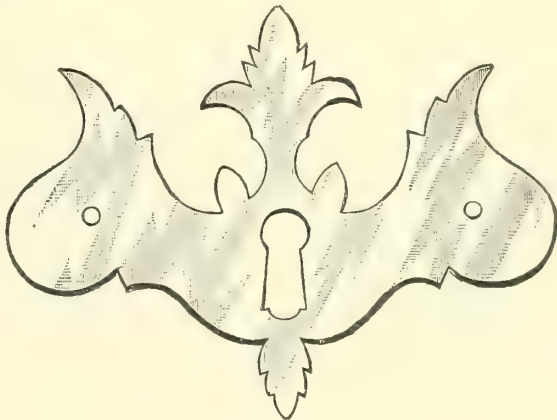
Packed with pins
Cast Brass, Polished
No. 4021 Gross... \$8.00

Escutcheons

Full Size Cuts

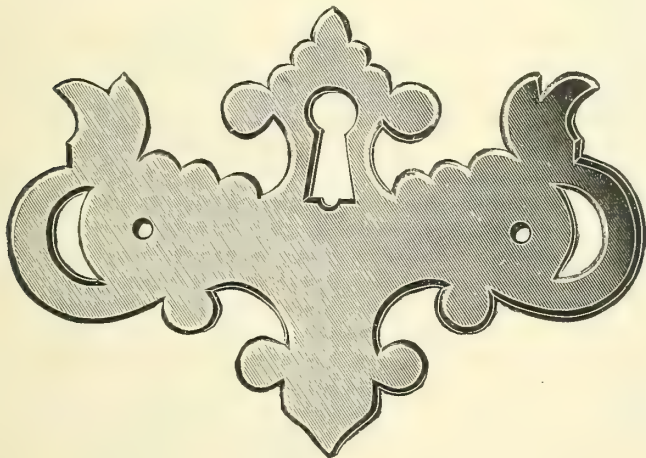


No. 4791 Cast brass, polished, dozen..... \$1.80

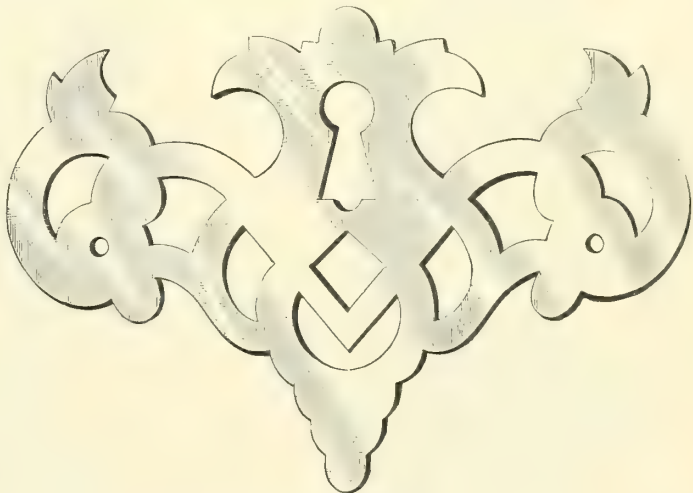


Cast Brass
Packed with pins

No. 4172 Polished, width 3 7/8 inches, dozen..... \$1.70
No. 4174 Polished, width 2 7/8 inches, dozen..... 1.20
No. 4174 O.B. Old brass finish, width 2 7/8 inches, dozen..... 1.20

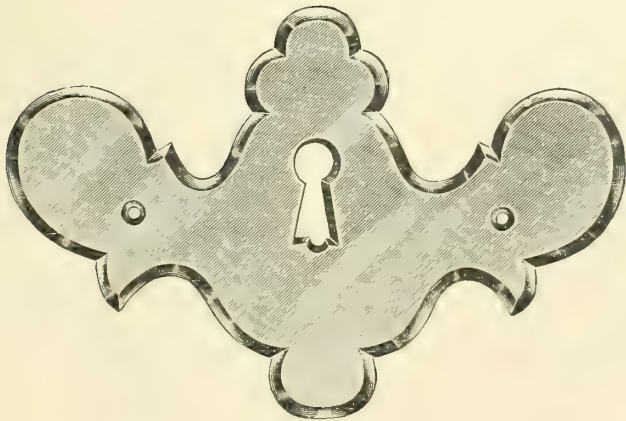


No. 5395 Cast brass, polished, dozen..... \$1.40

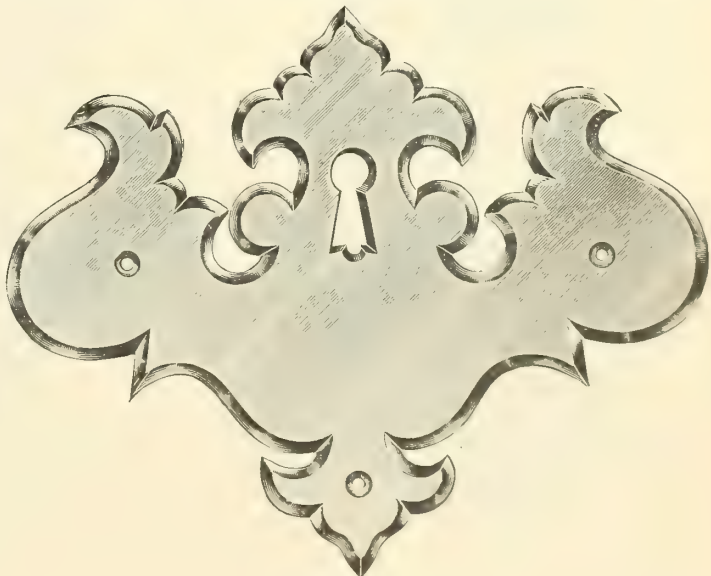


Packed with pins

No. 4170 Cast brass, polished, dozen..... \$1.40



No. 5881 Cast brass, polished, dozen..... \$3.75



Packed with pins

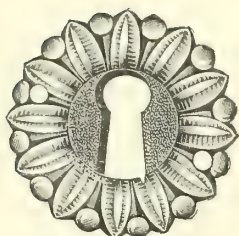
No. 5882 Cast brass, polished, dozen..... \$4.25

SINCE
1848

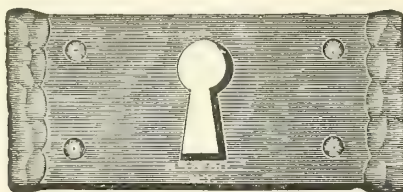
HAMMACHER SCHLEMMER & Co. NEW YORK

Escutcheons

Full Size Cuts

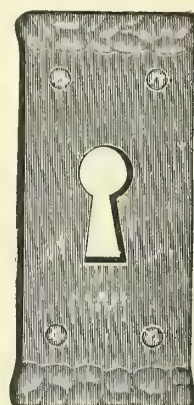


No. 1036 Packed with pins. Cast brass, old gold finish, dozen..... \$.90
No. 1036 Old English finish, dozen.. .90



Mission

No. 266 Packed with wrought nails. Wrought brass, antique finish, dozen..... \$.80

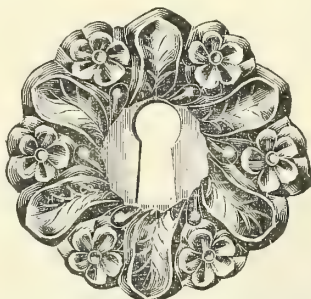


Mission

No. 267 Packed with wrought nails. Wrought brass, antique finish, dozen..... \$.80



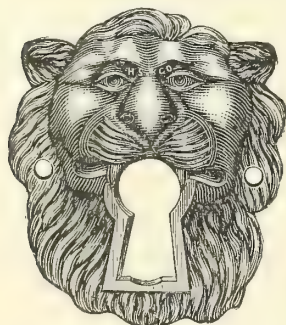
No. 70 Packed with pins. Cast brass, polished, gross..... \$4.00



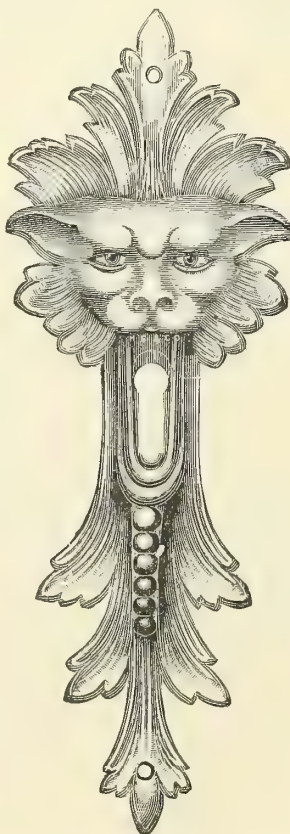
No. 907 Packed with pins. Wrought brass, old brass finish, gross..... \$6.00



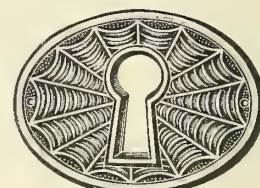
No. 6477



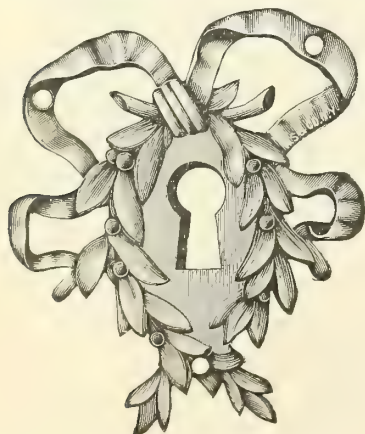
No. 4194 Packed with pins. Cast brass, polished, gross..... \$9.00



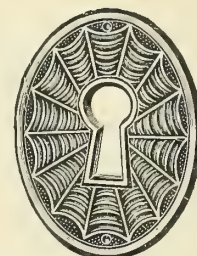
No. 4983 Packed with pins. Cast brass, polished, dozen..... \$2.10



No. 6478



No. 1039 Packed with pins. Cast brass, old English finish, dozen.. \$2.40
No. 1039 Old gold finish, dozen 2.40



No. 6479

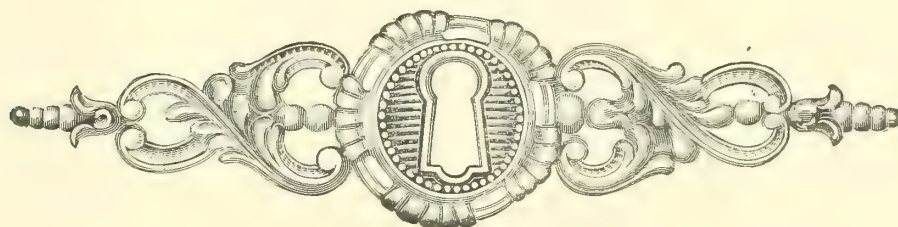
Cast Brass, Old English Finish

Packed with pins

No. 6477 Dozen..... \$1.35
No. 6478 Dozen..... 1.40
No. 6479 Dozen..... 1.40

Escutcheons

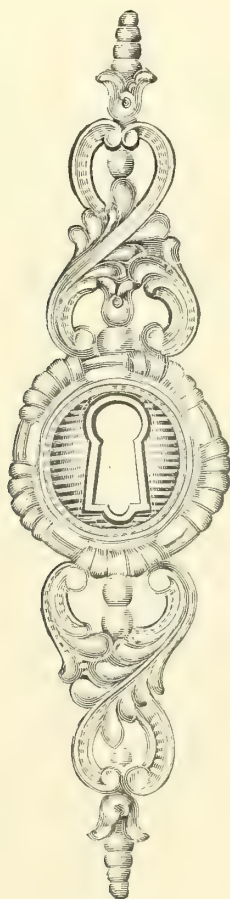
Full Size Cuts



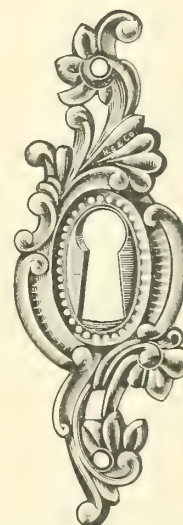
Packed with pins
No. 4816 Cast brass, polished, dozen..... \$1.80



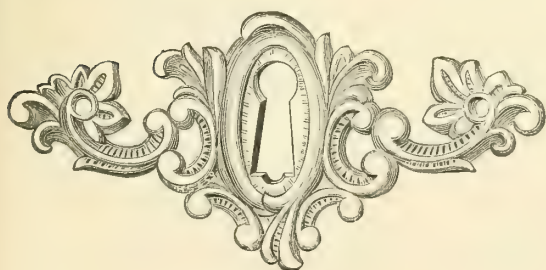
Packed with pins
No. 5252 Wrought brass, polished,
gross..... \$2.80



Packed with pins
No. 4817 Cast brass, polished, dozen.. \$1.80



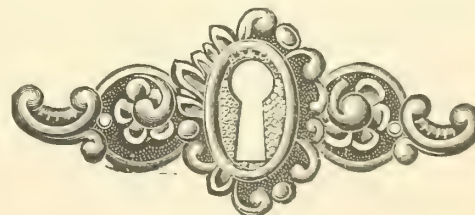
Packed with pins
No. 4652 Cast brass, polished, gross... \$8.00



Packed with pins
No. 4641 Cast brass, gross..... \$9.00



Packed with pins
No. 728 Cast brass, gilt, dozen..... \$.46



Packed with pins
No. 525 Heavy wrought brass, pol-
ished, gross..... \$3.00

Locks

Unless otherwise specified, all Locks are furnished without screws.

Alike

Making Secure Levers alike or alike with special length of tube, see schedule on next page.

Making Pin Tumbler Locks alike, or alike with special length of tube, see schedule on next page.

All Different

Making any Two Lever Lock, with more than 12 changes of keys, charge \$2.00 per dozen extra.

Making any Three or Four Lever Lock, with more than 12 changes of keys, charge \$1.00 cents per dozen extra.

Prices for Special Features

Making Flat Keyed Locks with special length of tube, see schedule on next page.

Making Pin Tumbler Locks with special length of tube, see schedule on next page.

Numbers 1015, 1016 and 01932, when ordered for wood thinner or thicker than that for which the regular Locks are adapted, add same extras as Flat Key Cabinet Locks, with special length of tube, see schedule on next page.

No allowance will be made on locks like Nos. 1015, 1016 and 01932 when furnished without tubes.

Metal Tags ordered in connection with locks or keys, 50 cents per dozen Tags.

An extra charge will be made for any special features required by a customer that necessitates making the Locks from the parts.

Master Keying

Making any Two Lever Lock to Master Key, charge \$3.00 per dozen extra. Minimum charge \$3.00.

Making any Three Lever Lock to Master Key, charge \$2.00 per dozen extra. Minimum charge \$2.00.

Making Secure Lever Locks to Grand Master Key, add \$3.00 to the regular price for Master Keying.

Making Secure Lever Drawer and Wardrobe Locks to the same Master Key, double the regular Master Key charge on the Drawer Locks only, the minimum extra charge on such Master Key work, \$6.00.

Making Pin Tumbler Locks to Master Key

1 Lock.....	\$1.00
2 Locks.....	2.00
3 Locks.....	3.00
4 Locks.....	4.00
5 Locks.....	5.00
6 Locks.....	6.00
7 to 12 locks, inclusive.....	6.50
Over 12 locks, per dozen.....	6.50

25 cents net will be charged for each Master Key, either Secure Lever or Pin Tumbler.

Variations in Keys

Locks listed with Iron Keys, when furnished with Gilt Keys, charge \$1.30 per dozen extra.

When Locks are furnished with Keys made from higher priced blanks than regular, charge difference in net price of blanks.

No deductions will be made when a lower-priced Key than the regular one is furnished.

Bulk Allowance

Cabinet Locks sold in bulk, deduct 1 cent per dozen net. This allowance limited to lots of 100 dozen where no limit for bulk allowance is otherwise specified.

Cabinet Locks

Schedule of extra charges for special work

Quantity Only	Alike Net	Special Lengths of Tube up to 1½-inch Wood Net	Alike and Special Lengths of Tube up to 1½-inch Wood Net	Special Lengths of Tube Over 1½-inch Wood Net	Alike and Special Lengths of Tube Over 1½-inch Wood Net
1	\$.70	\$.70	\$1.00	\$1.00	\$1.30
2	.70	.90	1.00	1.20	1.30
3	.90	.90	1.00	1.20	1.30
4	.90	.90	1.00	1.20	1.30
5	1.20	1.20	1.40	1.60	1.80
6	1.20	1.20	1.40	1.60	1.80
7	1.50	1.50	1.80	2.00	2.30
8	1.50	1.50	1.80	2.00	2.30
9	1.50	1.50	1.80	2.00	2.30
10	2.00	2.00	2.30	2.50	2.80
11	2.00	2.00	2.30	2.50	2.80
12	2.00	2.00	2.30	2.50	2.80
Dozen	Dozen Net	Dozen Net	Dozen Net	Dozen Net	Dozen Net
1 to 2½	2.00	2.00	2.30	2.50	2.80
3 to 3½	1.70	1.70	2.00	2.20	2.50
4 to 4½	1.50	1.50	1.80	1.80	2.20
5 to 5½	1.20	1.20	1.20	1.50	1.70
6 to 11½	1.00	1.00	1.20	1.20	1.40

12 dozen or over, no extra charge.

Pin Tumbler Locks

Schedule of extra charges for special work

Quantity	Alike Net	Special Lengths of Tube up to 1¼-inch Wood Net	Alike and Special Lengths of Tube up to 1¼-inch Wood Net	Special Lengths of Tube Over 1¼-inch Wood Net	Alike and Special Length of Tube Over 1¼-inch Wood Net
1	\$.70	\$.70	\$1.00	\$1.00	\$1.30
2	.70	.90	1.00	1.20	1.30
3	.90	.90	1.00	1.20	1.30
4	.90	.90	1.00	1.50	1.60
5	1.20	1.20	1.40	1.50	1.60
6	1.20	1.20	1.40	1.70	1.80
7	1.50	1.50	1.80	1.70	1.80
8	1.50	1.50	1.80	2.20	2.40
9	1.50	1.50	1.80	2.20	2.40
10	2.00	2.00	2.30	2.50	2.80
11	2.00	2.00	2.30	2.50	2.80
12	2.00	2.00	2.30	2.50	2.80
Dozen	Dozen Net				
1 to 2½	2.00	2.00	2.30	2.50	2.80
3 to 3½	1.70	1.70	2.00	2.20	2.50
4 to 4½	1.50	1.50	1.80	2.00	2.30
5 to 5½	1.20	1.20	1.50	1.80	2.00
6 to 11½	1.00	1.00	1.20	1.50	1.70

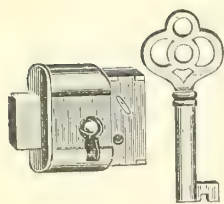
SINCE
1848

HAMMACHER SCHLEMMER & CO.

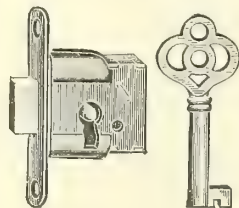
NEW
YORK

Eagle Mortise Cupboard and Drawer Locks

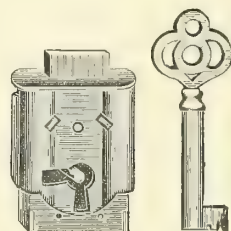
One-Half Size Cuts



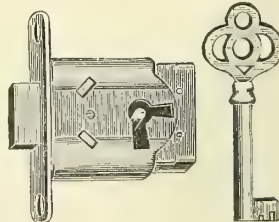
No. 2242



No. 2244



No. 2272



No. 2274

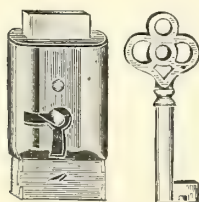
Style of No. 2243

Style of No. 2373

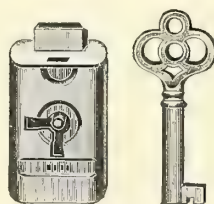
Mortise, backspring. Can be made for either right or left-hand doors.

Mortise, double keyhole. Backspring. Can be made for either right or left-hand doors. Illustrations show right-hand.

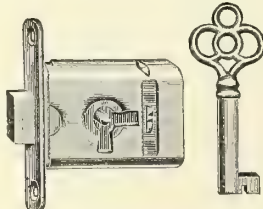
Number	Size Inches	Selvage to Key-Pin Inch	Material	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
2242	1 x 1	$\frac{1}{32}$	Iron	5204	\$.40	.43	.50	.66
2243	1 x $1\frac{1}{32}$	$\frac{1}{16}$	Iron, brass selvage	5204	.75	.78	.85	1.01
2244	1 x $1\frac{1}{32}$	$\frac{1}{16}$	Iron, brass selvage	5204	....	....	....	1.50
2272	$1\frac{1}{8}$ x $1\frac{1}{32}$	$\frac{7}{8}$	Iron	76 $\frac{1}{2}$	.46	.49	.55	.72
2273	$1\frac{1}{8}$ x $1\frac{1}{32}$	$\frac{15}{16}$	Iron, brass selvage	76 $\frac{1}{2}$	.81	.84	.91	1.07
2274	$1\frac{1}{8}$ x $1\frac{1}{32}$	$\frac{15}{16}$	Iron, brass selvage	76 $\frac{1}{2}$	....	....	....	1.50



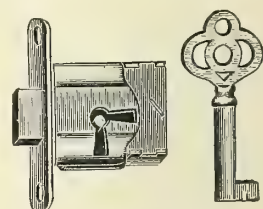
No. 2247



No. 2187



No. 2189



No. 2269

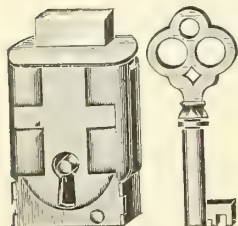
Style of Nos. 2248, 2267, 2268
7701 and 7702

Style of No. 2188

Style of Nos. 2249 and 7703

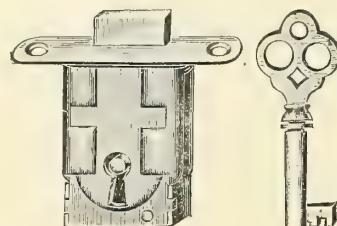
Mortise. Backspring. Double keyhole. Can be made for either right or left-hand. Illustrations show right-hand.

Number	Size Inches	Selvage to Key-Pin Inch	Material	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
2267	1 x $1\frac{3}{16}$	$\frac{15}{32}$	Iron	5204	\$.40	.43	.50	.66
2268	1 x $1\frac{1}{4}$	$\frac{1}{2}$	Iron, brass selvage	5204	.75	.78	.85	1.01
2247	1 x $1\frac{11}{16}$	$\frac{7}{8}$	Iron	5204	.46	.49	.55	.72
2248	1 x $1\frac{23}{32}$	$\frac{29}{32}$	Iron, brass selvage	5204	.81	.84	.91	1.07
7701	1 x $1\frac{7}{16}$	$\frac{11}{16}$	Iron	5204	.40	.43	.50	.66
7702	1 x $1\frac{1}{2}$	$\frac{23}{32}$	Iron, brass selvage	5204	.75	.78	.85	1.01
2187	1 x $1\frac{7}{16}$	$\frac{5}{8}$	Iron	5204	.40	.43	.50	.66
2188	1 x $1\frac{1}{2}$	$\frac{31}{32}$	Iron, brass selvage	5204	.75	.78	.85	1.01
2269	1 x $1\frac{1}{4}$	$\frac{1}{2}$	Iron, brass selvage	5204	....	....	....	1.50
2249	1 x $1\frac{31}{32}$	$\frac{29}{32}$	Iron, brass selvage	5204	....	....	....	1.50
2189	2 x $1\frac{1}{2}$	$\frac{11}{16}$	Iron, brass selvage	5204	....	....	....	1.50
7703	2 x $1\frac{1}{2}$	$\frac{23}{32}$	Iron, brass selvage	5204	....	....	....	1.50

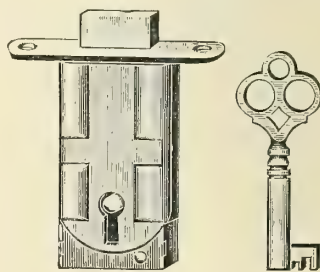


No. 2190

Style of No. 2191



No. 2192



No. 2255

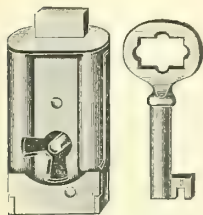
Mortise. Tumbler. Fancy bow key. Can be made for either right or left-hand doors.

Number	Size Inches	Selvage to Key-Pin Inches	Material	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
2190	$1\frac{1}{4}$ x $1\frac{3}{4}$	$\frac{1}{16}$	Iron	161	\$.85	\$.90	\$.95	\$1.15
2191	$1\frac{1}{4}$ x $1\frac{3}{4}$	$\frac{1}{8}$	Iron, brass selvage	161	1.20	1.24	1.30	1.50
2192	$2\frac{1}{4}$ x $1\frac{3}{4}$	$1\frac{1}{8}$	Iron, brass selvage	161	....	....	....	1.50
2255	$1\frac{1}{8}$ x $2\frac{1}{4}$	$1\frac{9}{16}$	Iron, brass selvage	161	....	....	....	1.80

For extras and special features, see pages 914 and 915

Eagle Mortise Machine Drawer Locks

One-Half Size Cuts

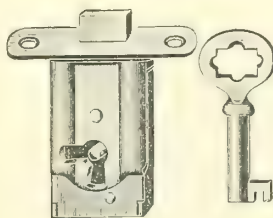


No. 7713-Tumbler

Iron, 3/8 inch from selvedge to key-pin.

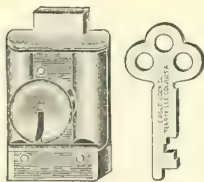
No. 7714-Tumbler

Iron, brass selvedge. 1 inch from selvedge to key-pin.



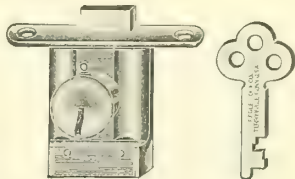
No. 1715

Iron, brass selvedge. 1 inch from selvedge to key-pin. Back spring. Can be made for left-hand doors.



No. 7721

Iron, brass selvedge. 5/8 inch from selvedge to center of key cylinder. Tumbler, brass cylinder, buffed and lacquered. For right-hand doors. Can be made to order for left-hand doors.

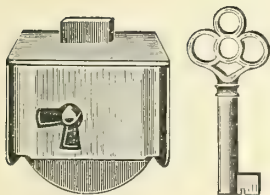


No. 7722

Number	Size Inches	Key Blank	12 KD. Dozen	6 KD. Dozen	4 KD. Dozen	3 KD. Dozen
7713	1 x 1 11/16	7721	\$.72	\$.55	\$.49	\$.46
7714	1 x 1 11/16	7721	1.07	.91	.84	.81
7715	2 x 1 11/16	5204	1.50			
7721	1 x 1 3/8	7721	2.50			
7722	2 x 1 3/8	7721	3.00			

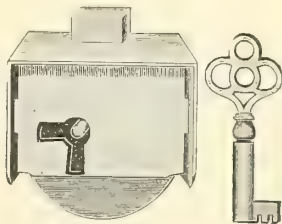
Eagle Machine Drawer Locks

Regularly made for right-hand doors, but can be made left-hand to order.

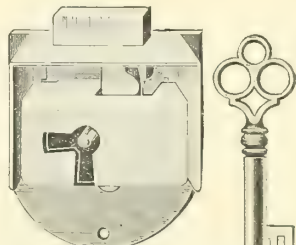


No. 1600

Style of Nos. 1601 and 1603



No. 1602



No. 1606

Style of Nos. 1608 to 1620, inclusive

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Router Used Number	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
1600	2 x 1 5/8	5/8	Iron	1	72 1/2	\$.40	.43	.50	.66
1601	2 x 1 5/8	5/8	Brass plate	1	72 1/2	.82	.86	.94	1.10
1602	2 x 1 7/8	7/8	Iron	1 1/2	423	.46	.49	.55	.72
1603	2 x 1 7/8	7/8	Brass plate	1 1/2	423	.85	.89	.97	1.13
1606	2 1/4 x 2 5/16	1	Iron	2	161	.85	.90	.95	1.15
1608	2 1/4 x 2 5/16	1	Iron, sq. brass selvedge	2	161	1.20	1.24	1.30	1.50
1610	2 1/4 x 2 1/2	1 1/4	Iron	2	161	1.10	1.14	1.20	1.40
1611	2 1/4 x 2 1/2	1 1/4	Brass plate	2	161	1.80	1.84	1.90	2.10
1612	2 1/4 x 2 3/16	1 1/2	Iron	2	161	1.14	1.18	1.24	1.44
1614	2 1/4 x 3	1 3/4	Iron	2	161	1.20	1.24	1.30	1.50
1616	2 1/4 x 3	1 3/4	Iron, sq. brass selvedge	2	161	1.50	1.54	1.60	1.80
1618	2 1/4 x 3 5/16	2	Iron	2	161	1.20	1.24	1.30	1.50
1620	2 1/4 x 3 9/16	2 1/4	Iron	2	161	1.50	1.54	1.60	1.80

Nos. 1600 to 1603 packed 300 dozen in a case.

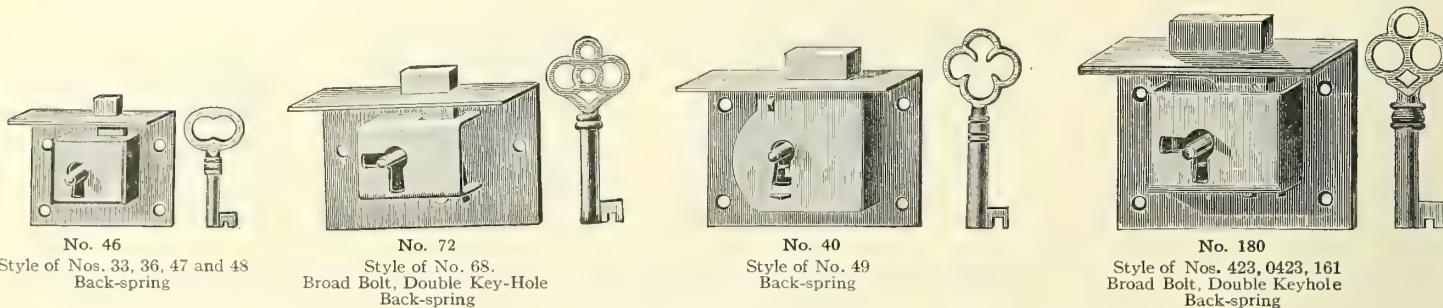
Nos. 1606 to 1610 packed 150 dozen in a case.

Nos. 1611 to 1620 packed 125 dozen in a case.

For extras and special features, see pages 914 and 915

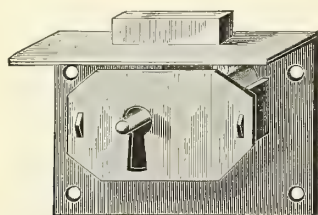
Eagle Drawer Locks

One-Half Size Cuts



Number	Size Inches	Selvage to Key-Pin Inches	Material	Ward	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
46	1½x1½	9/16	Brass plate	..	1495	....	....	....	\$ .75
33	1¾x1¼	9/16	Brass plate	..	34	....	....	....	.95
36	2 x1½	5/8	Brass plate	1	1493	....	....	....	1.00
40	2¼x1½	11/16	Brass plate and bolt	1	667	....	....	....	1.88
72	2¼x1½	5/8	Iron	..	72½	\$.40	.43	.50	.66
68	2¼x1½	5/8	Brass plate	..	72½	.82	.86	.94	1.10
423	2¼x1½	13/16	Iron	..	423	.46	.49	.55	.72
0423	2¼x1½	13/16	Brass plate	..	423	.85	.89	.97	1.13
161	2½x2	7/8	Iron	..	161	.85	.90	.95	1.15
180	2½x2	7/8	Iron, square brass selvage	1	161	1.20	1.24	1.30	1.50
47	2¾x2	7/8	Brass plate	1	10	1.60	1.64	1.72	1.87
48	2¾x2	7/8	Iron	1	48½	.84	.87	.92	1.12
49	3 x2	7/8	Iron	1	14	.90	.94	1.00	1.20

No. 40 has warded keyhole. No. 47 is screwed and has fancy keyhole. Nos. 72, 68, 423, 0423, 161 and 180 can be made for left-hand doors.

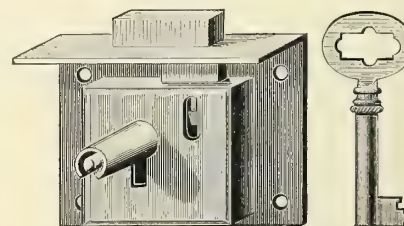


No. 1001Q

Style of Nos. 1001 and 01001 Q to A

Square selvage. Broad heavy bolt, tumbler and ward. Nos. 1001Q to 1001A have iron back and brass selvage. Nos. 01001Q to 01001A have brass plate and selvage. Furnished regularly without key. When ordered with iron keys No. 1001 key blank used, add 50 cents to list. If ordered with tubes, add 30 cents to list. Can be made all different in a dozen, with tumbler and patent wards, at an advance of \$1.00 on the list price. No. 1005 gilt keys will fit these locks.

Style	Size Inches	Selvage to Key-Pin Inches	No. 1001 Dozen	No. 01001 Dozen
Q	2¾x1½	¾	\$1.50	\$2.50
P	2¾x1½	7/8	1.50	2.50
O	2¾x1½	1	1.50	2.50
N	2½x2	1¼	1.50	2.50
M	2½x2	1½	1.60	2.60
L	2½x2¾	1¾	1.70	2.70
K	2½x2¾	2	1.80	2.80
I	2½x3¼	2¼	2.00	3.00
H	2½x3¼	2½	2.20	3.20
G	2½x3¾	2¾	2.40	3.40
F	2½x3¾	3	2.60	3.60
E	2½x4¼	3¼	2.80	3.80
D	2½x4¼	3½	3.00	4.00
C	2½x4¾	3¾	3.20	4.20
B	2½x4¾	4	3.40	4.40
A	2½x5¼	4¼	3.60	4.60



No. 1015L

Style of Nos. 1015 N to A

Brass plate, square selvage, solid square box. Broad heavy bolt, high pin and tube. Fine flat bow keys, 3 secure levers 12-keyed. All different in a dozen. Nos. 1015 L, K, I and G locks, with iron keys, can also be furnished all alike without extra charge. Locks with iron keys—all different in a dozen—will be sent unless otherwise specified.

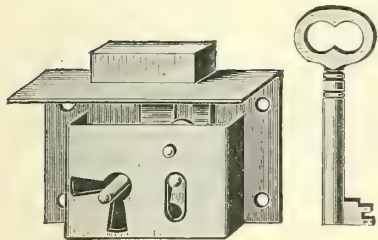
Can be made with 252 key changes.

Number	Size Inches	Selvage to Key-Pin Inches	With Iron Key Dozen	With No. 1005 Gilt Key Dozen
1015N	2½x1¾	¾	\$4.75	\$5.75
1015M	2½x1½	7/8	4.75	5.75
1015L	2½x2	1	5.00	6.00
1015K	2½x2¼	1¼	5.25	6.25
1015I	2½x2½	1½	5.50	6.50
1015H	2½x2¾	1¾	5.75	6.75
1015G	2½x3	2	6.00	7.00
1015F	2½x3¼	2¼	6.25	7.25
1015E	2½x3½	2½	6.50	7.50
1015D	2½x3¾	2¾	6.75	7.75
1015C	2½x4	3	7.00	8.00
1015B	2½x4¼	3¼	7.25	8.25
1015A	2½x4½	3½	7.50	8.50

For extras and special features, see pages 914 and 915

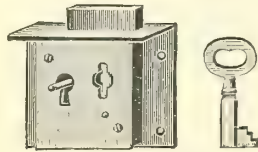
Eagle Drawer Locks

One-Half Size Cuts



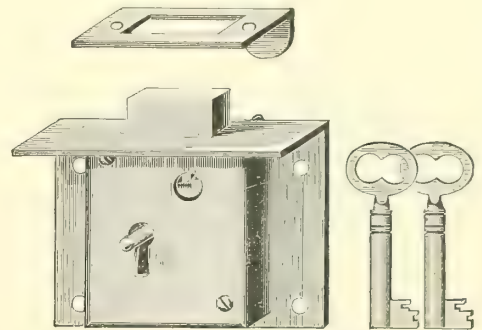
No. 2121A

Style of Nos. 2121B and 2122B.
Square selvedge, broad heavy bolt. Fine flat bow key.



No. 563

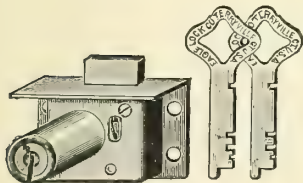
Style of Nos. 562, 454, 455, 237, 238, 674, 198, 456 and 648.
Square selvedge, solid square box, screwed. Heavy bolt. Fine flat bow key.



No. 6027

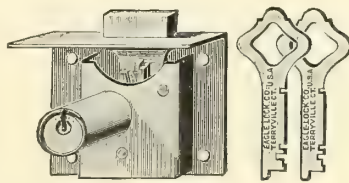
Self-locking. Square selvedge, solid square box, screwed. Broad heavy bolt. Two fine flat bow keys to each lock. Bolt is thrown by pin in back of lock striking lip of plate.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Regular	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
2121A	2½x1½	1	Iron	3	12	60	...	408	\$3.00
2121B	2½x1¾	1¼	Iron	3	12	60	...	408	3.50
2122B	2¾x2¾	1½	Iron	3	12	60	...	408	4.50
563	1½x1¾	½	Iron	2	12	60	...	562	3.00
562	1½x1¾	½	Brass plate	2	12	60	...	562	4.00
454	2 x1¾	⅝	Iron	2	12	....	...	429	3.00
455	2 x1¾	⅝	Brass plate	2	12	....	...	429	4.00
237	2½x1½	⅞	Iron	2	12	....	...	266	3.25
238	2½x1½	⅞	Brass plate	2	12	....	...	266	4.00
674	2½x1¾	1	Brass plate	2	12	252	...	0228	4.25
198	2¾x1½	⅞	Iron	2	12	....	...	266	3.50
456	2¾x1½	⅞	All brass	3	12	3120	620	6000	6.00
648	3 x2½	1½	Iron	2	12	....	...	650	5.00
6027	2¾x2½	1	Brass plate and strike	2	12	....	...	427	8.00



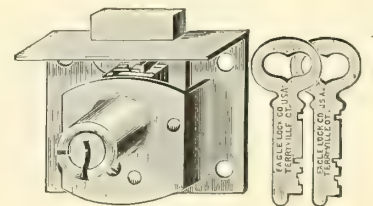
No. 01996

Solid square box. Screwed.



No. 6090

Style of Nos. 6080 and 6092, except No. 6092, which has square selvedge and screwed. Broad heavy bolt.



No. 01901

Broad heavy bolt. Screwed.

Above Locks have two nickel-plated flat-steel keys to each lock. Regularly made for ¾-inch wood, but can be made for any thickness desired. No. 01996 cannot be made for wood thinner than ⅜ inch when more than 120 changes are wanted or when made master keyed.

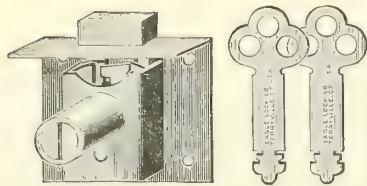
Carried in stock as stated below and in key changes as follows: No. 01996, all different in a dozen; No. 6090, all different in a dozen, also all alike; No. 6080, all different in a dozen; No. 6092, all alike; No. 01901 with 100 changes.

Number	Size Inches	Selvedge to Center of Cylinder Inches	Material	For Wood Inch	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01996	1½x1	½	All brass	⅞	3	3120	620	6080	\$5.50
6090	1¾x1¾	¾	Iron, brass cylinder	½ and ⅞	2	15600	3120	6080	4.50
6080	1¾x1¾	¾	All brass	⅞	2	15600	3120	6080	5.00
6092	2 x1½	⅞	All brass	⅞	2	15600	3120	6080	6.00
01901	2 x1½	⅞	Cast brass	⅞	3	15600	3120	1901	6.00

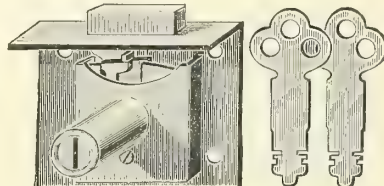
For extras and special features, see pages 914 and 915

Eagle Flat Key Drawer Locks

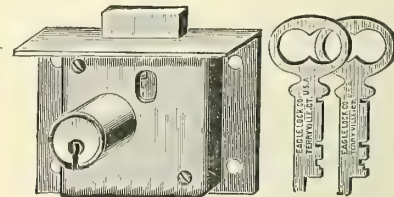
One-Half Size Cuts



No. 01877
Buffed and lacquered



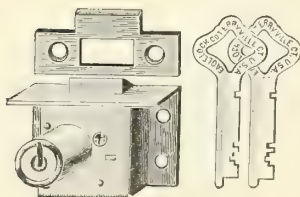
No. 01876
Style of Nos. 01929, 01930 and 01931



No. 6001
Style of Nos. 6003 and 6004. Solid Square Box

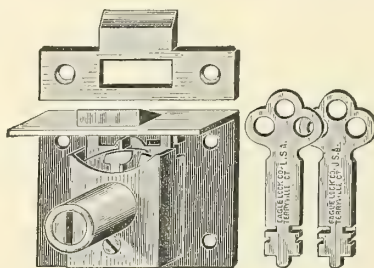
All square selvedge and screwed except No. 01877. Broad heavy bolt. Two nickel-plated flat steel keys to each lock. Made regularly for $\frac{7}{8}$ -inch wood but can be made for any thickness of wood desired. Carried in stock as specified below and in key changes as follows: No. 01877, all different in a dozen, also all alike; No. 01876 for $\frac{7}{8}$ -inch wood, all different in a dozen, also alike in six different changes; for $1\frac{1}{4}$ -inch wood, all different in a dozen; No. 01929, for $\frac{7}{8}$ and $1\frac{1}{4}$ -inch wood, all different in a dozen, also for $\frac{7}{8}$ -inch wood, all alike; No. 01930, all different in a dozen, also all alike; No. 01931, all different in a dozen; No. 6001, all different in a dozen, also all alike; Nos. 6003 and 6004, all different in a dozen.

Number	Size Inches	Selvedge to Center of Cylinder Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01877	$1\frac{3}{4} \times 1\frac{1}{2}$	$\frac{3}{4}$	All brass	$\frac{1}{2}$ and $\frac{3}{4}$	2	4080	1020	1876	\$5.00
01876	2 x $1\frac{5}{8}$	$\frac{7}{8}$	All brass	$\frac{7}{8}$ and $1\frac{1}{4}$	2	15600	3120	1876	6.00
01929	2 x 2	$1\frac{1}{4}$	All brass	$\frac{7}{8}$ and $1\frac{1}{4}$	2	15600	3120	1876	7.25
01930	$2\frac{1}{4} \times 2\frac{1}{4}$	$1\frac{1}{2}$	All brass	$\frac{7}{8}$	2	15600	3120	1876	8.00
01931	$2\frac{1}{4} \times 2\frac{3}{4}$	2	All brass	$\frac{7}{8}$	2	15600	3120	1876	9.25
6001	$2\frac{1}{4} \times 1\frac{3}{4}$	$\frac{7}{8}$	All brass	$\frac{7}{8}$	3	15600	3120	6001	7.50
6003	$2\frac{1}{2} \times 2$	1	All brass	$\frac{7}{8}$	3	15600	3120	6001	9.00
6004	$2\frac{1}{2} \times 2\frac{1}{4}$	$1\frac{1}{4}$	All brass	$\frac{7}{8}$	3	15600	3120	6001	9.75



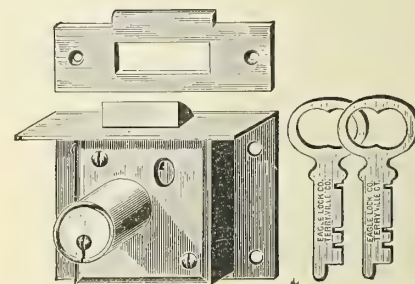
No. 01996 $\frac{1}{2}$

Square selvedge. Solid square box. Cast brass latch bolt. Screwed.



No. 01876 $\frac{1}{2}$

Square selvedge. Brass striker, cast brass latch bolt. Screwed.



No. 6001 $\frac{1}{2}$

Square selvedge. Solid square box, screwed. Brass striker, cast bronze heavy latch bolt.

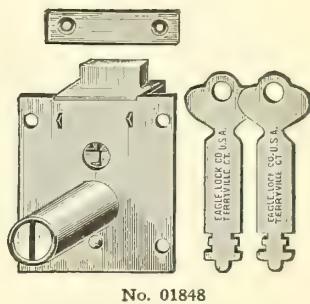
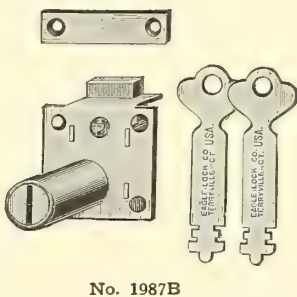
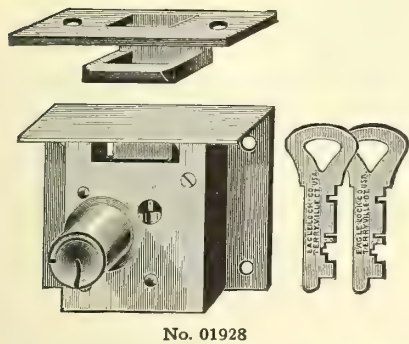
Two nickel-plated flat steel keys to each of the above locks. Made regularly for $\frac{7}{8}$ -inch wood but can be made for any thickness of wood required. Carried in stock as specified below and in key changes as follows: Nos. 01996 $\frac{1}{2}$, 01876 $\frac{1}{2}$, 6001 $\frac{1}{2}$ all different in a dozen; No. 6001 $\frac{1}{2}$ for $\frac{7}{8}$ -inch wood also carried in stock alike.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Material	For Wood Inch	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01996 $\frac{1}{2}$	$1\frac{1}{2} \times 1$	$\frac{1}{2}$	All brass	$\frac{1}{2}$	2	620	120	6080	\$6.00
01876 $\frac{1}{2}$	2 x $1\frac{5}{8}$	$\frac{7}{8}$	All brass	$\frac{3}{8}$	2	3120	620	1876	8.00
6001 $\frac{1}{2}$	$2\frac{1}{4} \times 1\frac{3}{4}$	$\frac{7}{8}$	All brass	$\frac{7}{8}$	3	15600	3120	6001	9.00

For extras and special features, see pages 914 and 915

Eagle Flat Key Drawer Locks

One-Half Size Cuts



Self-locking. Square seldedge. Heavy cast bronze strike and latch bolt. Screwed.

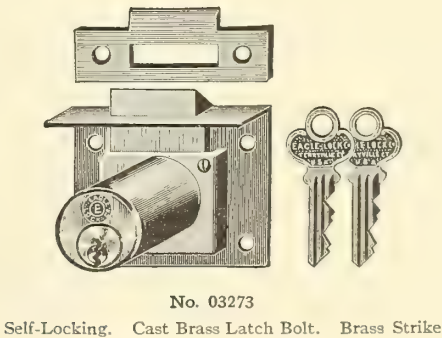
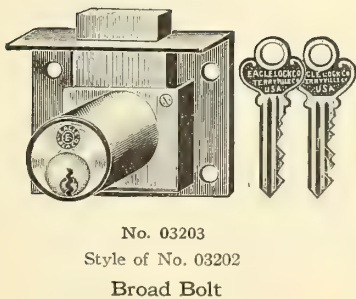
Lock Nos. 1987B and 01848 are applied without cutting the wood, by simply boring hole for cylinder.

Two nickel-plated flat steel keys to each of the above locks. Nos. 01928 and 01848 made regularly for 7⁄8-inch wood; No. 1987B for 1-inch wood but can be made for any thickness of wood desired. Carried in stock as specified below and in key changes as follows: Nos. 01928 and 1987B, all different in a dozen; No. 01848, all different in a dozen, and in 7⁄8-inch wood all alike.

Number	Size Inches	Seldedge to Center of Cylinder Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01928	2¼x1 13⁄16	1	Cast bronze	7⁄8	3	620	120	1928	\$9.00
1987B	1 3⁄16x1 3⁄16	¾	Iron	7⁄8	2	....	....	1814	4.50
01848	1 3⁄4x1 7⁄8	1 1⁄8	All brass	½, 7⁄8 and 1 1⁄8	2	4080	1020	1814	5.00

Pin Tumbler Drawer Locks

One-Half Size



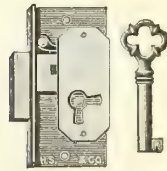
Square seldedge. Screwed. Two embossed gold plated German silver keys to each lock. No two locks alike. Made for wood ¾, 7⁄8, 1, 1 1⁄8, 1 1⁄4, and 1 1⁄2 inches thick. Carried in stock as specified below.

Number	Size Inches	Seldedge to Center of Cylinder Inch	Diameter of Cylinder Inch	Material	For Wood Inch	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
03202	2x1 11⁄16	7⁄8	7⁄8	All brass	7⁄8	Unlimited	Unlimited	5040	\$14.25
03203	2x1 13⁄16	1	7⁄8	All brass	7⁄8	Unlimited	Unlimited	5040	14.50
Self-Locking									
03273	2x1 13⁄16	1	7⁄8	All brass	7⁄8	Unlimited	Unlimited	5040	\$17.00

For extras and special features, see pages 914 and 915

Cupboard Locks

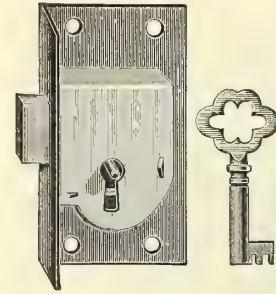
One-Half Size Cuts



No. 312M

Style of 314M.

Back spring, double cut, iron bolt. Gothic key. Right-hand only.

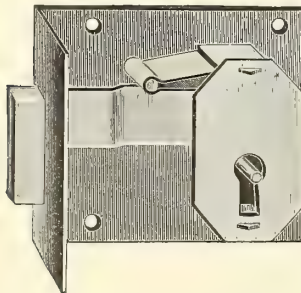


No. 144

Style of Nos. 501, 56, 58, 44, 116.

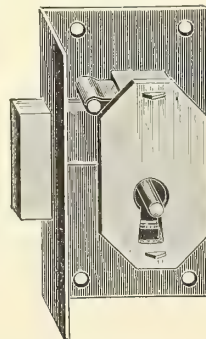
Back Spring. Fine flat bow keys. Can be made either right or left-hand. Illustration shown right-hand.

Number	Size Inches	Selvage to Key-Pin Inch	Material	Ward	Key Blank Used Number	Dozen
314M	1 1/4 x 1 1/8	5/16	Brass plate	..	4102	\$1.50
312M	1 5/8 x 7/8	1/2	Brass plate	..	4102	1.50
501	2 x 1 5/16	7/16	Brass plate	..	501	1.00
56	2 1/4 x 1 1/4	9/16	Brass plate	..	36	1.00
58	2 1/2 x 1 3/8	9/16	Iron	..	36	.87
144	2 3/4 x 1 1/2	9/16	Brass plate, broad bolt	1	26	1.50
44	3 x 1 5/8	11/16	Brass plate, broad bolt	1	5	1.62
116	3 x 1 5/8	11/16	Iron, broad bolt	1	5	1.25



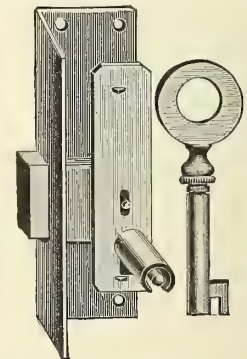
No. 1001X

Style of Nos. 1001 R to Y, inclusive.



No. 1017D

Style of Nos. 1017 G to A, inclusive.



No. 1016C

Style of Nos. A and B.

Broad Heavy Bolt

These locks are listed without keys or tubes. For tubes add 30 cents and for keys add 50 cents to list. Can be made either right or left-hand. (Illustration shows right-hand.)
Can be made all different in a dozen, with tumbler and patent wards at an advance of \$1.00 on list. No. 1005 gilt keys will fit these locks.

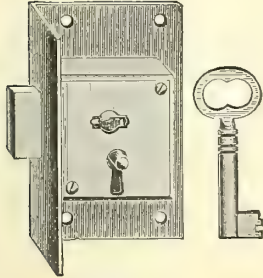
Square selvage, fine gilt keys. Made regularly for 1-inch wood, but can be made for any thickness desired. Can be made either right or left-hand. (Illustration shows right-hand). Keys all alike.

Number	Size Inches	Selvage to Key-Pin Inches	Material	Tumbler	Secure Levers	Ward	Key Blank Used Number	Dozen
1001R	2 3/4 x 1 7/8	3/4	Iron, brass selvage	1	..	1	1001	\$1.50
1001S	2 3/4 x 1 7/8	7/8	Iron, brass selvage	1	..	1	1001	1.50
1001T	2 3/4 x 1 7/8	1	Iron, brass selvage	1	..	1	1001	1.50
1001U	2 1/2 x 2 1/4	1 1/4	Iron, brass selvage	1	..	1	1001	1.50
1001V	2 1/2 x 2 1/4	1 1/2	Iron, brass selvage	1	..	1	1001	1.60
1001W	2 1/2 x 2 3/4	1 3/4	Iron, brass selvage	1	..	1	1001	1.70
1001X	2 1/2 x 2 3/4	2	Iron, brass selvage	1	..	1	1001	1.80
1001Y	2 1/2 x 3 1/4	2 1/4	Iron, brass selvage	1	..	1	1001	2.00
1017G	3 x 1 1/2	5/8	Brass plate, square selvage	1	..	1	1000	2.00
1017F	3 x 1 1/2	3/4	Brass plate, square selvage	1	..	1	1000	2.00
1017E	3 x 1 5/8	7/8	Brass plate, square selvage	1	..	1	1000	2.10
1017D	3 x 1 11/16	1	Brass plate, square selvage	1	..	1	1000	2.20
1017C	3 x 1 7/8	1 1/8	Brass plate, square selvage	1	..	1	1000	2.30
1017B	3 x 2	1 1/4	Brass plate, square selvage	1	..	1	1000	2.40
1017A	3 x 2 3/16	1 1/2	Brass plate, square selvage	1	..	1	1000	2.60
1016A	3 1/4 x 3/4	1/2	All brass	..	1	..	1016	6.00
1016B	3 1/4 x 1	5/8	All brass	..	1	..	1016	6.50
1016C	3 1/4 x 1 1/8	3/4	All brass	..	1	..	1016	7.00

For extras and special features, see pages 914 and 915

Eagle Cupboard Locks

One-Half Size Cuts



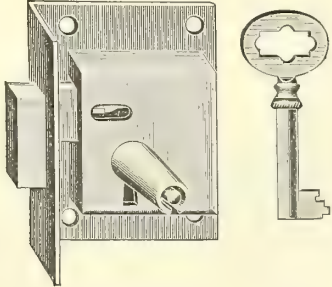
No. 6062

Style of No. 503.

Square selvedge, solid square box.

Screwed.

Fine flat bow keys.



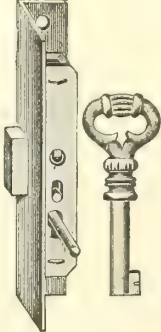
No. 1015Q

Style of Nos. 1015 O to U.

Square selvedge, solid square box. Broad heavy bolt.

High pin and tube.

Fine flat bow keys.



No. 01925

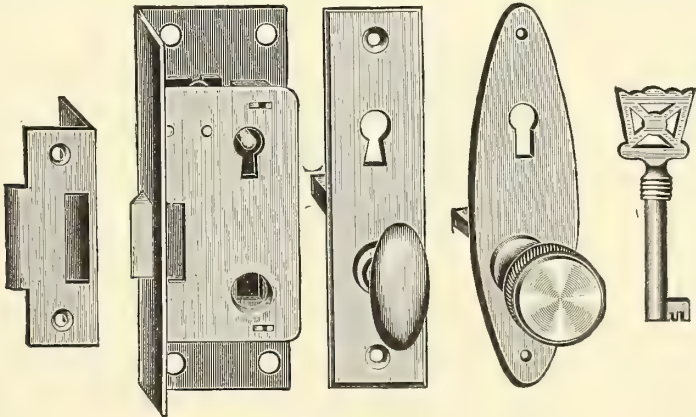
Square selvedge, solid bolt. Tumbler.

One buffed brass key to each lock.

These locks can be made either right or left-hand. Illustration shows right-hand.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
503	2 x 7/8	3/8	Brass	1	4	...	510	\$4.00
6062	2 1/2 x 1 9/16	3/4	Brass plate	2	12	...	370	3.00
1015O	2 1/2 x 1 3/4	3/4	Brass plate	3	12	252	1001	4.75
1015P	2 1/2 x 1 7/8	7/8	Brass plate	3	12	252	1001	4.75
1015Q	2 1/2 x 2	1	Brass plate	3	12	252	1001	5.00
1015R	2 1/2 x 2 1/4	1 1/4	Brass plate	3	12	252	1001	5.25
1015S	2 1/2 x 2 1/2	1 1/2	Brass plate	3	12	252	1001	5.50
1015T	2 1/2 x 2 3/4	1 3/4	Brass plate	3	12	252	1001	5.75
1015U	2 1/2 x 3	2	Brass plate	3	12	252	1001	6.00
01925	3 x 1 1/2	9/32	Brass	..	12	...	01925	6.00

Cupboard Latch Bolt Knob Locks



No. 02303D

Style of Nos. 02303C, E, F and G

Cast brass latch bolt. Right-angle strike, No. 5632. Knob and escutcheon buffed and lacquered. Fine gilt key. Can be used either right or left-hand. Adjustable to wood from 1/2 to 1 1/4 inches thick, but can be made for any thickness desired. Packed regularly with square escutcheon and oval knob, but can be furnished with oval escutcheon and round knob when specified. No. 02303D carried regularly in stock only; other numbers to order. Packed with screws.

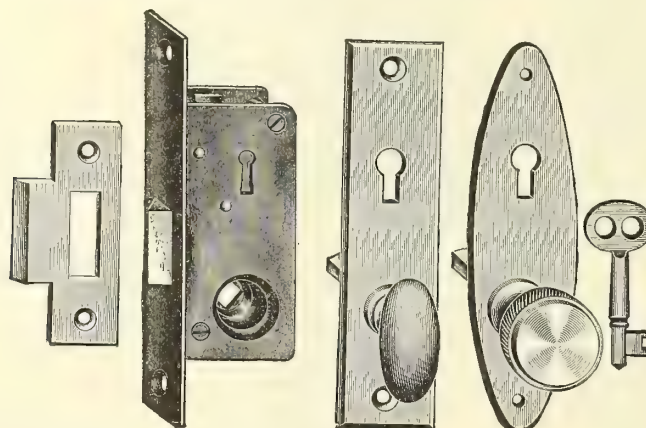
Number	Size Inches	Selvedge to Key-Pin Inches	Material	Tumbler	Key Blank Used	Dozen
02303C	4x1 5/16	3/4	Brass lock, strike, escutcheon and knob	1	1102	\$29.00
02303D	4x1 7/16	7/8	Brass lock, strike, escutcheon and knob	1	1102	30.00
02303E	4x1 9/16	1	Brass lock, strike, escutcheon and knob	1	1102	31.00
02303F	4x1 1 1/16	1 1/4	Brass lock, strike, escutcheon and knob	1	1102	32.00
02303G	4x2 1/16	1 1/2	Brass lock, strike, escutcheon and knob	1	1102	33.00

For extras and special features, see pages 914 and 915

Eagle Locks

One-Half Size Cuts

Mortise Cupboard Latch Bolt Knob Lock



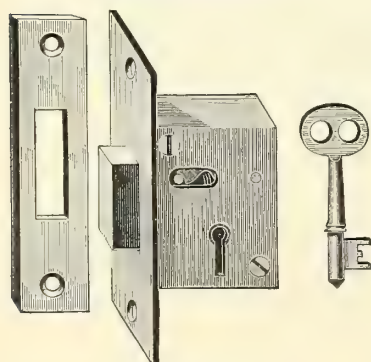
No. 2302C

Style of No. 2302D

Self-locking. Mortise. Tumbler. Cast brass latch bolt. Knob and escutcheon buffed and lacquered. Fine gilt key. Adjustable to wood from $\frac{5}{8}$ to $1\frac{3}{4}$ inches thick, but can be made for any thickness desired. Can be used either right or left-hand. Carried in stock alike. Packed regularly with the square escutcheon and oval knob, but can be furnished with oval escutcheon and round knob if desired. Also packed with screws.
No. 2302D carried in stock only; other number to order.

Number	Size Inches	Selvage to Key-Pin Inch	Material	Key Blank Used Number	Dozen
2302C	4x1 $\frac{1}{4}$	$\frac{3}{4}$	Brass selvage, strike, escutcheon and knob	1106	\$29.00
2302D	4x1 $\frac{3}{8}$	$\frac{7}{8}$	Brass selvage, strike, escutcheon and knob	1106	30.00

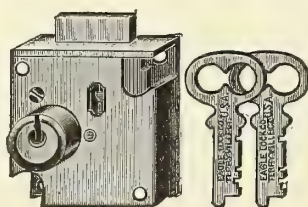
Cupboard Locks



No. 01891A

Style of Nos. 01891B to F, inclusive. Mortise. Screwed. Fine gilt keys. All different in a dozen. For doors of either hand. Key enters either side.

Sub-Treasury Lock

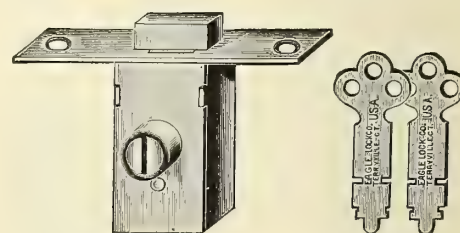


No. 1048 $\frac{1}{2}$ D

Broad bolt, square selvage polished, solid square box, screwed, buffed bronze cylinder. Two nickel-plated flat steel keys to each lock.

All different in a dozen. Cylinder projects $\frac{1}{8}$ inch. Can be made with 620 key and 120 master-key changes.

Mortise Drawer Lock



No. 2137

Brass selvage, broad heavy brass bolt. Two nickel-plated flat steel keys to each lock.

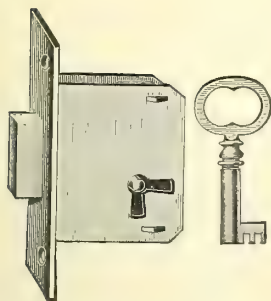
All different in a dozen. Removable cylinder. To remove: Push in as far as possible the brass piece that shows next the bolt on selvage of lock, when cylinder can be detached.

Number	Size Selvage Inches	Size Case Inches	Selvage to Keyhole or Cylinder Inches	Material	For Wood	Secure Levers	Key Blank Used Numbers	Dozen
01891A	3	1 $\frac{5}{8}$ x1 $\frac{3}{8}$	$\frac{3}{4}$	Cast bronze	..	3	01891	\$10.00
01891B	3	1 $\frac{5}{8}$ x1 $\frac{1}{2}$	1	Cast bronze	..	3	01891	10.50
01891C	3	1 $\frac{5}{8}$ x1 $\frac{3}{4}$	1 $\frac{1}{4}$	Cast bronze	..	3	01891	11.00
01891D	3	1 $\frac{5}{8}$ x2	1 $\frac{1}{2}$	Cast bronze	..	3	01891	11.50
01891E	3	1 $\frac{5}{8}$ x2 $\frac{1}{4}$	1 $\frac{3}{4}$	Cast bronze	..	3	01891	12.00
01891F	3	1 $\frac{5}{8}$ x2 $\frac{1}{2}$	2	Cast bronze	..	3	01891	12.50
1048 $\frac{1}{2}$ D	..	1 $\frac{1}{2}$ x1 $\frac{5}{8}$	$\frac{1}{8}$	Brass plate	..	2	6001	5.50
2137	..	3. x1 $\frac{3}{4}$	$\frac{7}{8}$	Iron	$\frac{7}{8}$	2	1876	6.00

For extras and special features, see pages 914 and 915

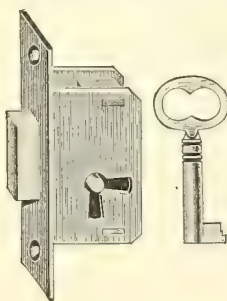
Eagle Mortise Cupboard and Drawer Locks

One-Half Size Cuts



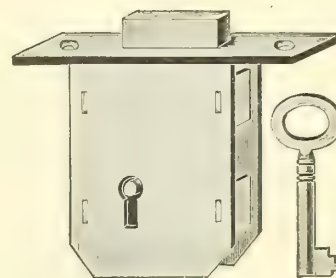
No. 474

Style of Nos. 473 to 478, inclusive.
All alike in a dozen.



No. 1829

Style of Nos. 1831 and 1833.
All different in a dozen.

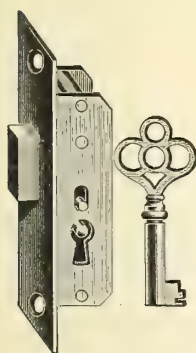


No. 565

Style of Nos. 564 and 565½.
All different in a dozen.

Mortise, broad heavy bolt, fine flat bow keys. Nos. 476, 476½, 477, 564, 565 and 1833, right-hand carried in stock; other numbers for either right and left-hand doors. In ordering the latter state hand required; illustrations show right hand.

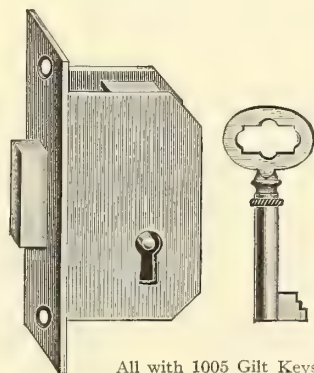
Number	Size Inches	Selvage to Key-Pin Inches	Material	Tumblers	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
478	2¾x1	½	Brass selvage	1	..	..	...	303	\$1.50
473	2¾x1½	⅝	Brass selvage	1	..	..	...	303	1.50
473½	2¾x1⅜	¾	Brass selvage	1	..	..	...	303	1.50
474	2¾x1⅜	⅞	Brass selvage	1	..	..	...	303	1.50
475	2¾x1½	1	Brass selvage	1	..	..	...	303	1.50
476	2¾x1⅝	1⅛	Brass selvage	1	..	..	...	303	1.50
476½	2¾x1¾	1¼	Brass selvage	1	..	..	...	303	2.50
477	2¾x1⅞	1⅜	Brass selvage	1	..	..	...	303	2.75
1829	2¾x1⅜	⅝	Brass selvage	..	2	12	252	014	2.25
1831	2¾x1⅜	⅞	Brass selvage	..	2	12	252	014	2.25
1833	2¾x1⅝	1⅛	Brass selvage	..	2	12	252	014	2.25
565½	3 x 1½	1	Brass selvage	..	2	12	252	650	4.00
565	3 x 2⅞	1⅜	Brass selvage	..	2	12	252	650	3.75
564	3 x 2½	1⅞	Brass selvage	..	2	12	252	650	4.00



No. 1888

Style of No. 1890.

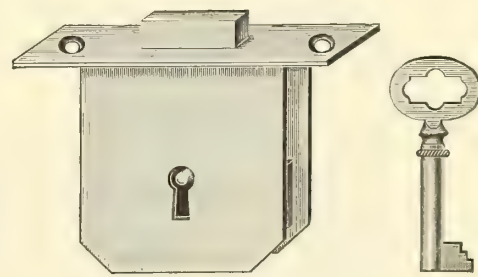
Broad heavy bolt. Fine flat bow keys.
alike only. Lock 1888 has gold-plated key.



All with 1005 Gilt Keys
No. 1883

Style of Nos. 1881, 1881½ and 1882.

Can be made either right or left-hand. Nos. 1881, 1881½, 1882 and 1883 for drawers also. Illustrations show right-hand.



No. 1885

Style of Nos. 1885¼, 1886 and 1887.

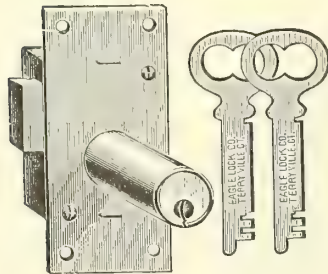
Number	Size Inches	Selvage to Key-Pin Inches	Material	Tumblers	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
1888	3 x 1½	⅜	Brass selvage and bolt	1	..	..	...	1888	\$6.50
*1881	3½x 1½	½	Heavy brass selvage	1	..	..	...	1001	4.00
*1881½	3½x1 1/16	⅝	Heavy brass selvage	1	..	..	...	1001	4.50
*1882	3½x1 3/16	¾	Heavy brass selvage	1	..	..	...	1001	4.50
1890	3 x 1 3/16	⅞	Brass selvage and bolt	1	..	..	...	1888	6.50
*1883	3¼x1½	1	Heavy brass selvage	1	..	..	...	1001	5.00
1885¼	3¼x2¼	1¼	Heavy brass selvage	..	2	12	252	1001	6.00
1885	3¼x2⅜	1⅜	Heavy brass selvage	..	2	12	252	1001	6.00
1886	3¼x2⅝	1⅝	Heavy brass selvage	..	2	12	252	1001	6.50
1887	3¼x2⅞	1⅞	Heavy brass selvage	..	2	12	252	1001	7.00

*These locks are also carried with brass keys. Any of the locks on this page can be furnished with double cut key.hole if desired

For extras and special features, see pages 914 and 915

Eagle Wardrobe Locks

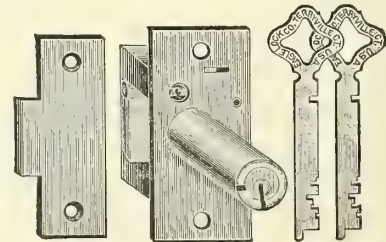
One-Half Size Cuts



No. 6098

Style of Nos. 1056, 7098, 6074 and 6073

Solid square box, all screwed except No. 1056. Bolt shoots right and left. Two nickel-plated flat steel keys to each lock. Can be made for any thickness of wood desired. Carried regularly in stock for wood as specified below, and in key changes as follows: Nos. 6073, 7098, 6074, 6098, 1056, all different in a dozen; Nos. 7098 and 6074 also carried in stock, all alike.

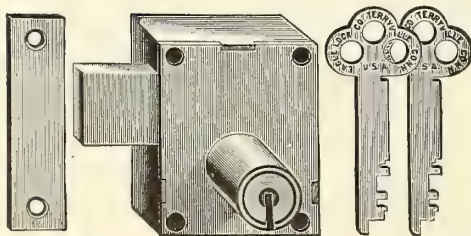


No. 1098

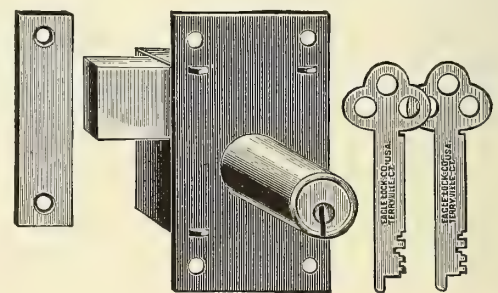
Self-locking, solid square box. Cast bronze latch bolt. Two nickel-plated flat steel keys to each lock, all different. Regularly made for $\frac{7}{8}$ -inch wood, but can be made for any thickness desired. Regularly made with 3120 changes of keys. For right-hand doors only.

Number	Size Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
1056	$1\frac{3}{4} \times \frac{7}{8}$	All brass	$\frac{1}{4}$ & $\frac{3}{4}$	2	3120	620	6080	\$6.50
7098	$2\frac{3}{4} \times 1\frac{1}{4}$	Iron, brass bolt	$\frac{7}{8}$ & $1\frac{1}{8}$	2	15620	3120	6075	6.00
6098	$2\frac{3}{4} \times 1\frac{1}{4}$	All brass	$\frac{7}{8}$ & $1\frac{1}{8}$	2	15620	3120	6075	8.00
6074	$3 \times 1\frac{3}{4}$	All brass	$\frac{7}{8}$ & $1\frac{1}{8}$	2	15620	3120	6069	9.00
6073	$3\frac{1}{2} \times 2$	All brass	$\frac{7}{8}$ & $1\frac{1}{8}$	2	4080	1020	6068	10.00
1098	$2\frac{1}{8} \times 1$	All brass	$\frac{7}{8}$	5	3120	3120	6080	8.00

Eagle Locker Locks



No. 01986



No. 1934

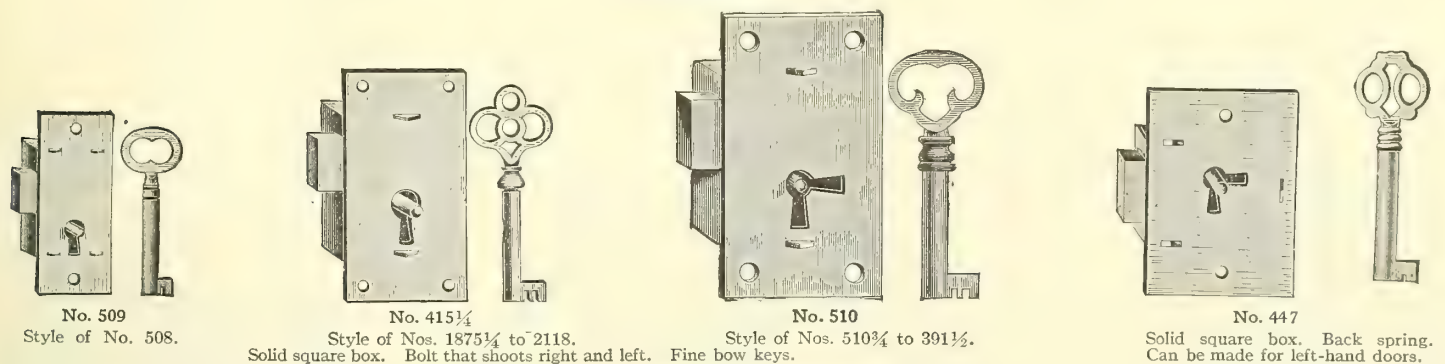
Solid square box. Brass strike, heavy bolt that shoots right and left. Two nickel-plated flat steel keys to each lock. Made regularly for $\frac{7}{8}$ -inch wood, but can be made for any thickness desired. Carried in stock as specified below. All different in a dozen. Master keyed. Additional charge of 35 cents net for each master key.

Number	Size Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master keyed Changes	Key Blank Used Number	Dozen
01986	$2 \times 1\frac{3}{4}$	All brass	$\frac{7}{8}$	5	3120	3120	1934	\$15.00
1934	$3 \times 1\frac{3}{4}$	Iron, brass bolt and cylinder	$\frac{7}{8}$ & $1\frac{1}{8}$	5	3120	3120	1934	15.00

For extras and special features, see pages 914 and 915

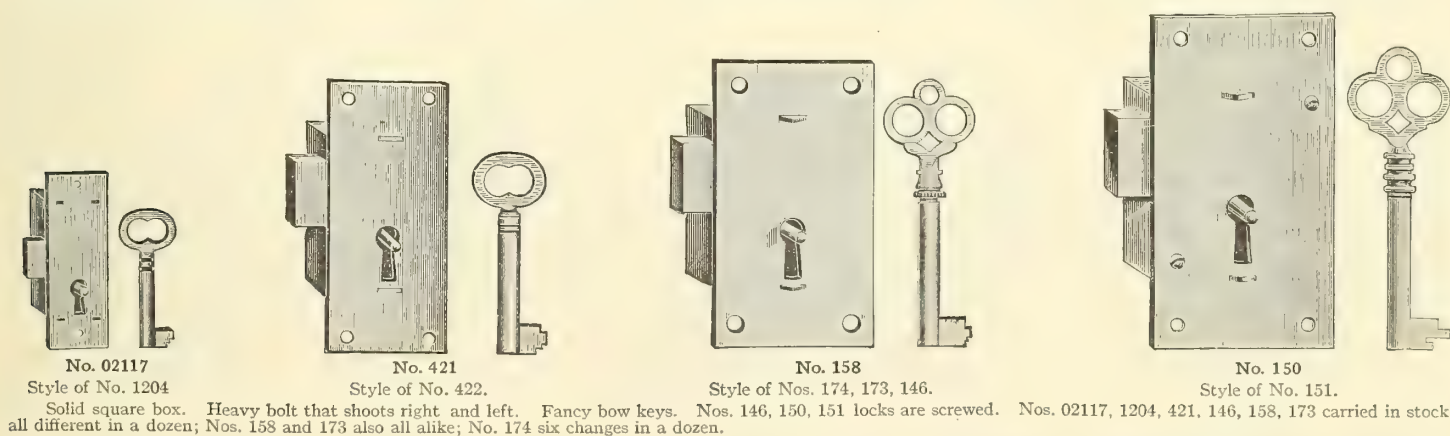
Eagle Wardrobe Locks

One-Half Size Cuts



Number	Size Inches	Material and Finish	Tumbler	Key Blank Used Number	Dozen
509	1 7/8 x 3/4	Iron	1	501	\$1.50
508	1 7/8 x 3/4	Brass plate and box	1	501	2.00
1875 1/4	2 x 1	Iron, unpolished	1	76 1/2	1.00
1875 1/4 A	2 x 1	Iron, unpolished, all brass plated	1	76 1/2	1.50
1805	2 1/2 x 1	Iron	1	76 1/2	1.50
01805	2 1/2 x 1	Brass plate and box	1	76 1/2	2.00
415 1/4	2 1/2 x 1 1/4	Iron, unpolished	1	76 1/2	1.00
415 1/4 A	2 1/2 x 1 1/4	Iron, unpolished, all brass plated	1	76 1/2	1.50
417	2 3/4 x 1 1/4	Iron	1	76 1/2	1.60
418	2 3/4 x 1 1/4	Brass plate and box	1	76 1/2	2.25
2118	3 x 2 1/2	Iron, unpolished	1	510	1.75
510	3 x 1 3/4	Iron, unpolished	1	510	1.00
510 3/4	3 x 1 3/4	Iron, unpolished, all coppered	1	510	1.50
500	3 1/2 x 2	Iron	1 and ward	500	1.87
391 1/2	4 x 2	Iron, unpolished, coppered, bronze keys	1 and ward	1461	2.75

Number	Size Inches	Selvage to Key-Pin or Center Inch	Material	Key Blank Used Number	3-Keved Dozen	4-Keved Dozen	6-Keved Dozen	12-Keved Dozen
447	2 1/4 x 1 9/16	3/4	Iron	4470	\$.40	.43	.50	.66

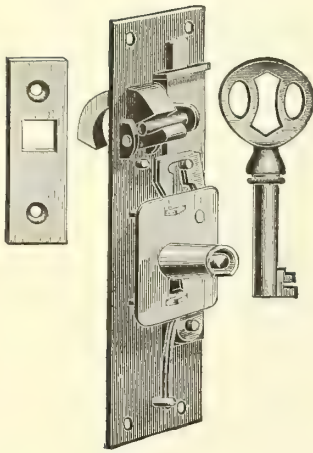


Number	Size Inches	Material	Secure Levers	Possible Changes	Master-Keyed Changes	Key Blank Used Number	Dozen
02117	1 7/8 x 5/8	All brass	2	.....	....	0299	\$4.50
1204	2 x 7/8	All brass	2	.....	....	01473	4.50
421	2 3/4 x 1 1/4	Iron, brass bolt	2	.....	....	410	3.50
422	2 3/4 x 1 1/4	All brass	2	.....	....	6000	5.00
158	3 x 1 3/4	Iron	2	15600	3120	1480	3.25
174	3 1/2 x 2	Iron	2	15600	3120	1470	2.25
173	4 x 2 1/4	Iron	2	....	....	1490	2.50
146	4 x 2 1/2	Iron, brass bolt	2	3120	620	1123	6.00
151	3 x 1 3/4	All brass	2	15600	3120	1459	5.50
150	3 1/2 x 2	All brass	2	15600	3120	1461	6.50

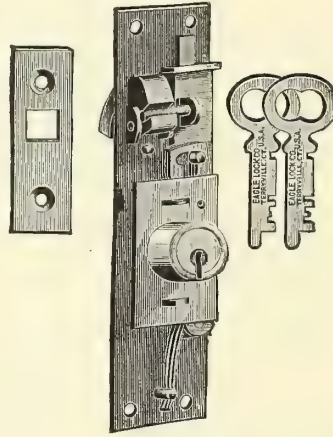
For extras and special features, see pages 914 and 915

Show Case or Sliding-Door Locks

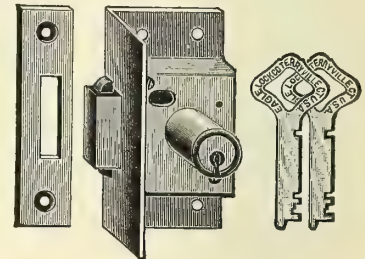
One-Half Size Cut



No. 01935
One Gilt Key.
Cast Brass Hook Bolt.



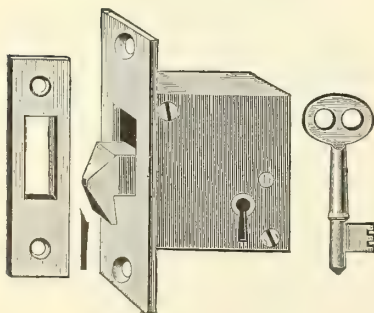
No. 01935 1/2
Two nickel-plated flat steel keys.
Brass striker.



No. 6179
Two nickel-plated flat steel keys. Square selvedge. Solid square box. Screwed. Double hook bolt. Can be locked without using the key by pressing on plate in end of tube.

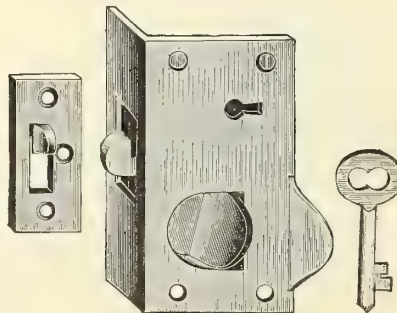
Above locks can be made either right or left-hand and for any thickness of wood desired. Carried in stock right-hand only, for wood as specified below and in key changes as follows: No. 01935, all different in a dozen, also all alike; Nos. 01935 1/2 and 6179, all different in a dozen. Illustrations show right-hand.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Material	For Wood Inch	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01935	4 1/2 x 1	..	Brass	1	2	252	60	1005	\$12.00
01935 1/2	4 1/2 x 1	..	Brass	7/8	3	252	60	6075	17.00
6179	2 1/4 x 1 3/16	1 1/16	Brass	7/8	4	120	20	6080	8.00



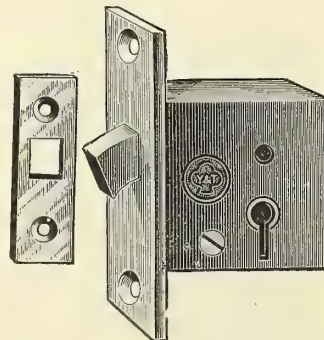
No. 01954

Style of No. 02123.
Mortise. Screwed. Latch bolt, fine buffed key. Key enters from either side. Can be used for either right or left-hand doors.



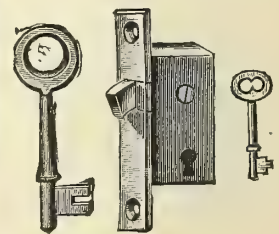
No. 01952

Latch bolt. Tumbler. Solid flat bow key. All buffed and lacquered. Packed with screws.



No. 1712

Bronze bolt, strike and key. One lever tumbler. Key enters from either side. Can be used for either right or left-hand doors.



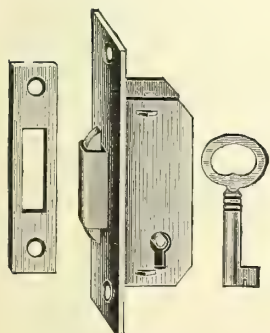
No. 9585

Number	Size Selvedge Inches	Size Case Inches	Selvedge to Key-Hole Inches	Material	Regular Changes	Key Blank Used Number	Dozen
01954	2 7/8 x 5/8	1 1/2 x 1 5/8	1	Cast bronze	.....	01891	\$9.00
02123	2 3/8 x 9/16	1 3/16 x 1 5/16	3/4	Cast bronze	.....	02123	8.00
01952	2 7/8 x 1/2	2 7/8 x 1 5/8	1	Cast bronze	.....	01952	12.00
1712	3 1/4 x 1 7/8	1 3/4 x 1 7/8	1 1/8	Bronze, front, iron case	alike	200	16.65
9585	2 1/4 x 1 1/2	1 1/2 x 1	5/8	Cast bronze throughout	.....	.....	6.60

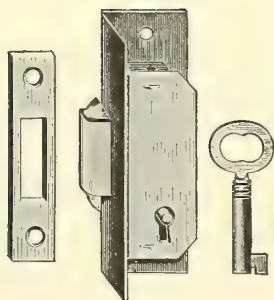
For extras and special features, see pages 914 and 915

Eagle Locks

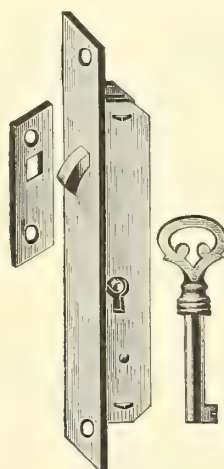
One-Half Size Cuts



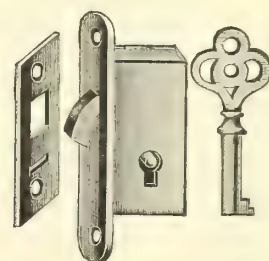
No. 1958
Double-hook bolt. Mortise. Fine flat bow keys.



No. 01959
Square selvedge, double-hook bolt. Fine flat bow key.
This lock can be furnished with double cut key-hole if desired.



No. 1926
Mortise. Hook bolt. Fine buffed bronze key.

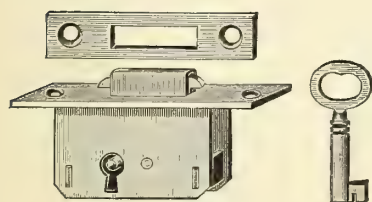


No. 1974
Mortise. Hook bolt. Fine gold-plated key.

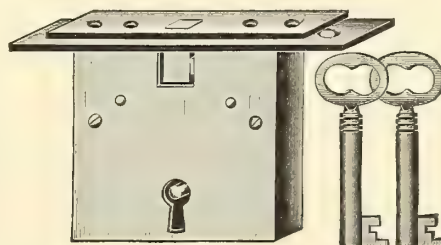
When ordering state hand required. Illustrations show right hand.

Number	Size Inches	Selvedge to Key-Pin Inch	Material	Tumblers	Key Blank Used Numbers	Dozen
1958	3 x 7/8	1/2	Brass selvedge and strike	1	015	\$3.25
01959	2 3/4 x 7/8	1/2	Brass plate and strike	1	015	3.50
1926	4 1/2 x 5/8	5/16	Brass selvedge and strike	1	01926	8.00
1974	2 1/2 x 7/8	1/2	Brass selvedge and strike	1	423	7.00

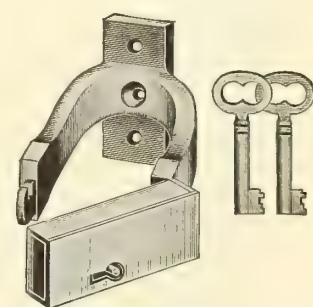
Billiard Cue Lock



No. 197
Style of Nos. 193 and 194. Mortise. Iron box. Double-hook bolts. Fine flat bow key.
This lock can be furnished with double cut key-hole if desired.



No. 1239
Mortise. Self-locking. Solid iron box, screwed. Two flat bow keys to each lock.



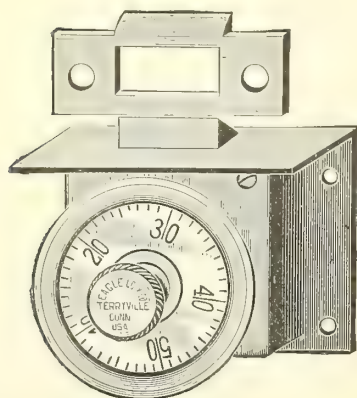
No. 207
Self-locking. Two flat bow keys to each lock. For securing billiard cues. Can be made with 60 master-key changes.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
197	2 1/2 x 1	5/8	Brass selvedge and strike	..	alike	...	1167	\$3.00
193	3 x 1 3/8	7/8	Brass selvedge and strike	..	alike	...	303	3.00
194	3 x 1 3/8	7/8	Brass selvedge and strike	2	12	252	014	3.75
1239	3 1/2 x 2	1 1/2	Brass selvedge and link	3	12	60	258	10.00
207	1 3/4 x 1 3/16	...	All brass	3	12	252	299	11.50

For extras and special features, see pages 914 and 915

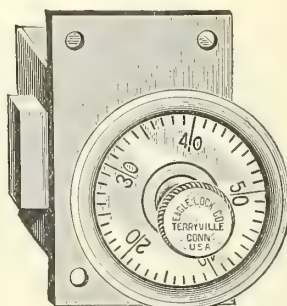
Eagle Combination Locks

One-Half Size Cuts



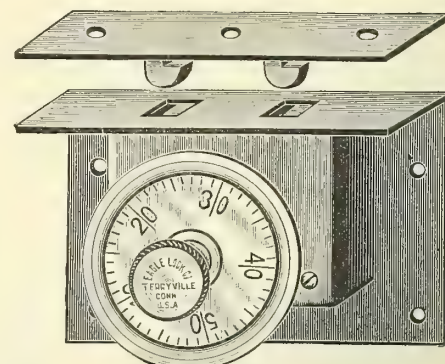
No. 2011

Self-locking. Square selvedge, heavy cast bronze latch bolt. Brass strike. Solid square box. Screwed.



No. 2029

Solid square box. Screwed. Broad heavy bolt.

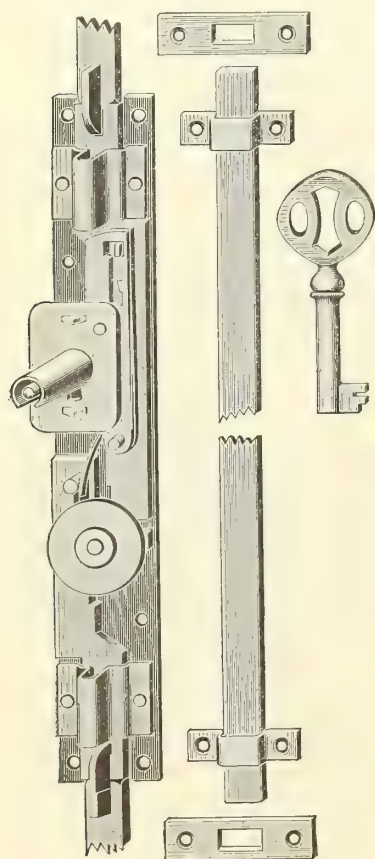


No. 2001

Self-locking. Square selvedge, solid square box. Screwed.

These locks are adjustable to different thicknesses of wood as stated below. The combinations can be changed without removing lock.

Number	Size Inches	Selvedge to Center of Knob Inches	Material	Knob and Dial	For Wood Inches	Possible Changes	Dozen
2011	3x2 $\frac{5}{16}$	1 $\frac{1}{4}$	All brass	Nickel-plated	$\frac{7}{8}$ to 1 $\frac{1}{2}$	1000	\$17.00
2029	3x2	1 $\frac{1}{4}$	All brass	Nickel-plated	$\frac{1}{2}$ to 1 $\frac{1}{2}$	1000	20.00
2001	4x2 $\frac{9}{16}$	1 $\frac{3}{8}$	All brass	Nickel-plated	1 to 1 $\frac{3}{4}$	1000	32.00

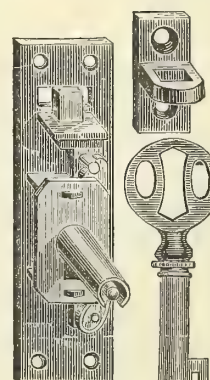


No. 02140A
Style of Nos. 02140, 02140B.

Double Bolt Locks

Brass plate. Brass strikes. Fine gilt key. Two brass plated bolts locking both top and bottom of door. Made for any length of door desired. Made regularly for 1-inch wood. In ordering give exact length of door. Packed with guides and strikes complete. No. 02140A carried in stock, for 6 foot doors only; other sizes and numbers to order. All different in a dozen, but can be made with 252 key changes. Prices in accordance with length of bolts and quantity desired.

Chiffonier Locks



No. 6089

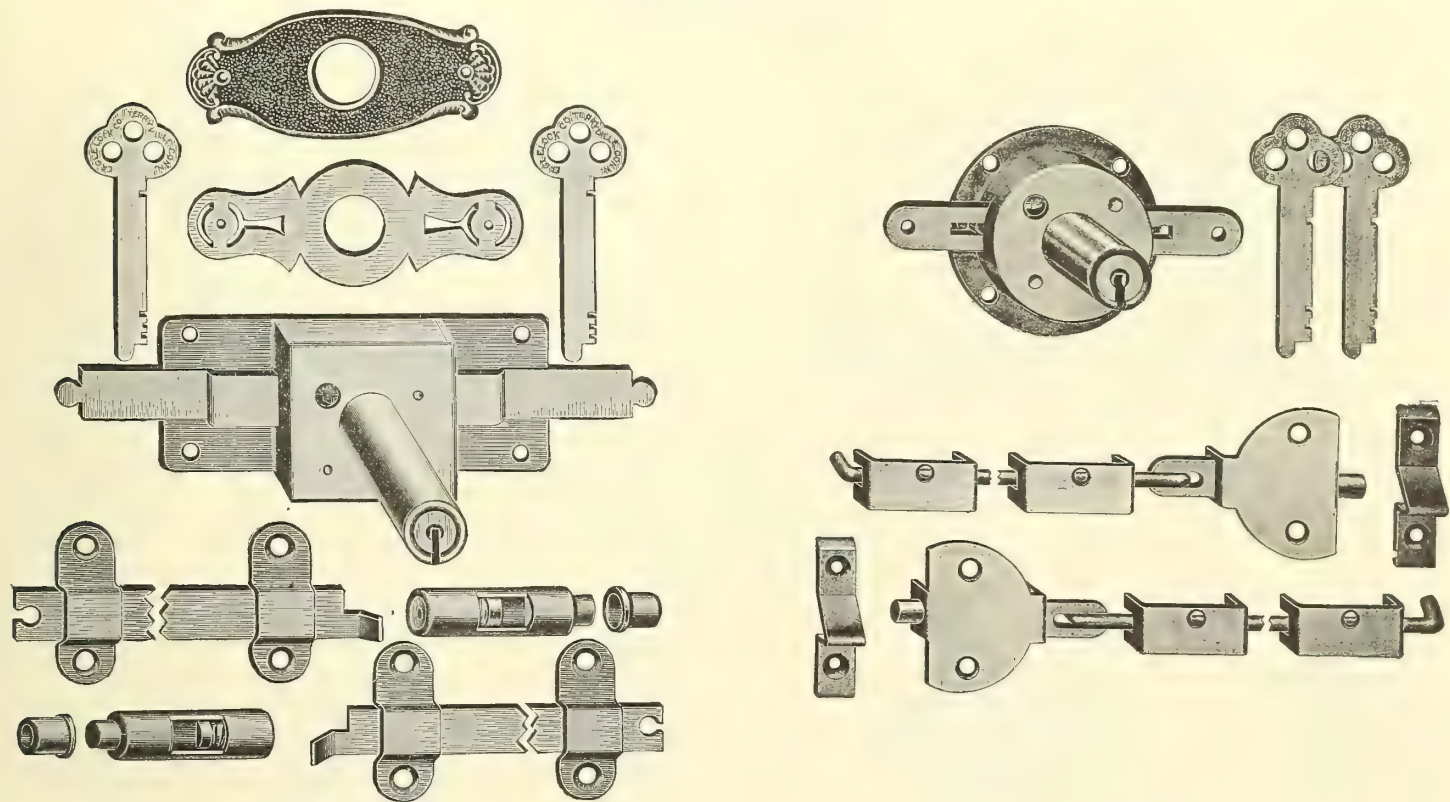
Brass pin and tube. One gilt key to each lock. Suitable for $\frac{7}{8}$ to 1 $\frac{1}{4}$ -inch wood, but can be made for any thickness desired. Can be made either right or left hand. Illustration shows right hand as carried in stock.

Number	Size Inches	Material	Secure Levers	Key Blank Used Number	Dozen
02140	7 $\frac{1}{8}$ x1	All brass. Long bolts to be set in wood, flush with plate	2	1005	\$12.00
02140A	7 $\frac{1}{8}$ x1	All brass } Long bolts are offset from plate and require no	2	1005	6 foot, 12.00
02140B	7 $\frac{1}{8}$ x1 $\frac{1}{4}$	All brass } mortise of wood	2	1005	12.00
6089	3 $\frac{1}{2}$ x1	Brass	1	1112	5.50

For extras and special features, see pages 914 and 915

"Pasquil" Desk Locks

One-Half Size Cuts



No. 2241C

Style of No. 2241E

No. 2147C

Style of No. 2147E

Self-locking, two brass strikes, escutcheon and cylinder gold plated, two nickel-plated flat steel keys to each lock, 2 bolts locking into each end of desk. Made regularly for 1½-inch rail, but can be made for any thickness. In ordering give exact length and thickness of rail. All different in a dozen. Can be made with 60 key changes. Packed with screws.

Number	Size Inches	Material	Strikes	Escutcheon	Secure Levers	Key Blank Used Number
2241C	4x1 5⁄8	Iron, brass-plated	Brass, self-locking	Wrought brass	3	2151
2241E	4x1 5⁄8	Iron, brass-plated	Brass, self-locking	Cast bronze	3	2151
2147C	2 1⁄8	Iron, brass-plated	Brass, self-locking	Wrought brass	3	2151
2147E	2 1⁄8	Iron, brass-plated	Brass, self-locking	Cast bronze	3	2151

Prices on application. State quantity required and length of bolts.
 Locks furnished alike, alike in sets or with more than the regular number of changes at extra price. Also with any lettering on escutcheon.

Eagle Desk Locks

Camp Desk Locks



No. 01896

No. 296

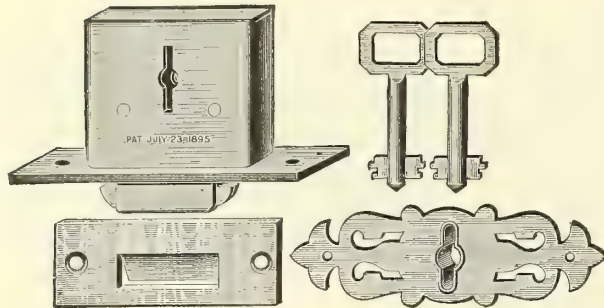
Square selvedge, hook bolt, screwed, two nickel-plated flat steel keys to each lock. Made regularly for ½ and ¾-inch wood, all different in a dozen and for ¾-inch wood all alike.
 Mortise. Brass selvedge, bolt and strike. Tumbler. One flat bow key to each lock.

Number	Size Inches	Selvedge to Center of		Material	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
		Cylinder Inch	Key Pin Inch						
01896	2 x1 5⁄8	7⁄8		All brass	2	15600	3120	1876	\$6.50
296	2 1⁄2x1	..	3⁄4	Iron	..	...	...	562	2.00

For extras and special features, see pages 914 and 915

Eagle Roll-Top Desk Locks

One-Half Size Cuts

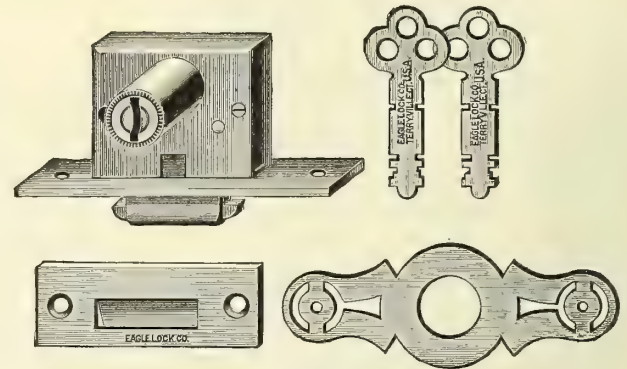


No. 1984C

Style of Nos. 1984 A, B, D, E and F, also 1810 A, B, C, D, E and F.

Self-locking. Mortise, solid square iron box, screwed, two nickel-plated solid steel keys to each lock. All different in a dozen. Packed with screws.

Nos. 2128 A to F have removable cylinders. To remove: Push in as far as possible the brass piece that shows next the bolt on selvedge of lock when the cylinder can be detached. Packed with screws.



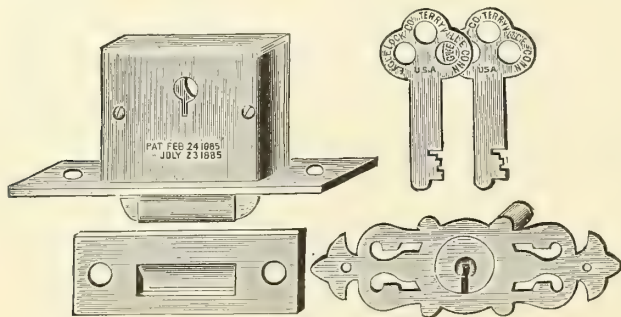
No. 2128C

Style of Nos. 2128 A, B, D, E and F.

Self-locking. Mortise, solid square iron box, screwed, two nickel-plated flat steel keys to each lock. All different in a dozen. Made regularly for 1½-inch desk rail, but can be made for any thickness of rail desired.

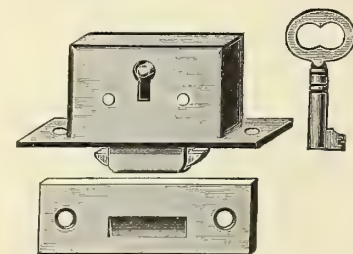
Nos. 2128 A to F have removable cylinders. To remove: Push in as far as possible the brass piece that shows next the bolt on selvedge of lock when the cylinder can be detached. Packed with screws.

Number	Width Selvedge Inches	Selvedge to Center of Hole Inch	Selvedge and Strike	Escutcheon	Secure Hook Tumblers	Ward	Key Blank Used Number	Dozen
1984A	3 x 1½	1	Brass, plain	Brass, gilt	4	1	1984	\$7.00
1984B	3 x 1½	1	Nickel-plated, plain	Nickeled	4	1	1984	8.00
1984C	3 x 1½	1	Brass, self-closing	Brass, gilt	4	1	1984	8.00
1984D	3 x 1½	1	Nickel-plated, self closing	Nickeled	4	1	1984	9.00
1984E	3 x 1½	1	Brass, self-closing	Cast bronze	4	1	1984	8.50
1984F	3 x 1½	1	Nickel-plated, self-closing	Cast bronze, nickeled	4	1	1984	9.50
1810A	3¼x1½	1	Brass, plain	Brass, plain	6	..	1948	10.50
1810B	3¼x1½	1	Nickel-plated	Nickeled	6	..	1948	12.30
1810C	3¼x1½	1	Brass, self-closing	Brass, plain	6	..	1948	11.85
1810D	3¼x1½	1	Nickel-plated, self-closing	Nickeled	6	..	1948	13.60
1810E	3¼x1½	1	Brass, self-closing	Cast bronze, gilt	6	..	1948	12.72
1810F	3¼x1½	1	Nickel-plated, self-closing	Cast bronze, nickeled	6	..	1948	14.50
2128A	3¼x1½	1	Brass, plain	Brass, gilt	6	..	2128	14.00
2128B	3¼x1½	1	Nickel-plated, plain	Nickeled	6	..	2128	15.00
2128C	3¼x1½	1	Brass, self-closing	Brass, gilt	6	..	2128	15.00
2128D	3¼x1½	1	Nickel plated, self-closing	Nickeled	6	..	2128	16.00
2128E	3¼x1½	1	Brass, self-closing	Cast bronze, gilt	6	..	2128	15.50
2128F	3¼x1½	1	Nickel plated, self-closing	Cast bronze, nickeled	6	..	2128	16.50



No. 1968C

Self-locking. Mortise, solid square iron box, screwed, two nickel-plated flat steel keys to each lock. All different in a dozen. Patent selvedge, adjustable to any bevel. Key guides adjustable to wood from 1 to 1¼ inches thick. Can be made for any thickness of wood desired. Packed with screws.



No. 1971C

Self-locking. Mortise, solid square iron box. Flat bow keys. Six changes in a dozen.

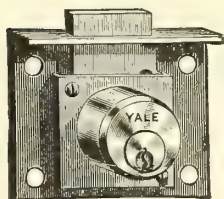
Number	Size Inches	Selvedge to Center of Key Guide	Selvedge and Strike	Escutcheon	Secure Hook Tumblers	Ward	Key Blank Used Number	Dozen
1968C	3¼x1¼	1	Brass, self-closing	Brass, gilt	6	..	1968	\$14.00
1971C	2½x1	¾	Brass, self-closing		4	1	276	8.00

For extras and special features, see pages 914 and 915

Yale Locks

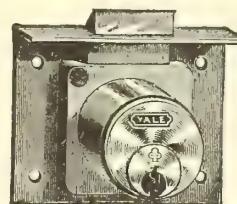
Drawer Locks

One-Half Size Cuts



No. 5563

Style of 5563S



No. 563S Self-Locking

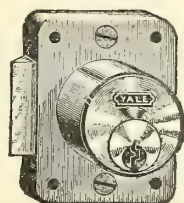
Style of 563



Solid box, screwed, broad heavy bolt. Square selvedge. Two paracentric keys to each lock. Buffed nose. Changes practically unlimited. No. 5563 carried in stock alike and all different; other numbers all different only.

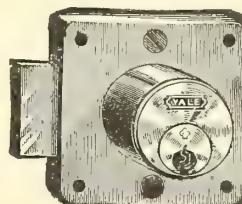
Number	Size Inches	Selvedge to Center of Cylinder Inch	Diameter of Cylinder Inches	Material	For Wood Inch	Key Blank Used Number	Dozen
5563	1 3/4x2	1	3/8	All brass	7/8	10	\$12.90
5563S	1 3/4x2	1	7/8	All brass, spring bolt and strike	7/8	10	14.60
563	1 7/8x2 1/4	1	1 1/8	All brass	7/8	9	14.65
563S	1 7/8x2 1/4	1	1 1/8	All brass, spring bolt and strike	7/8	9	16.85

Cupboard Locks



No. 513S

Carried in stock right hand only. Solid box, screwed, broad heavy bolt. Two paracentric keys right and left. Buffed nose. Changes practically unlimited.



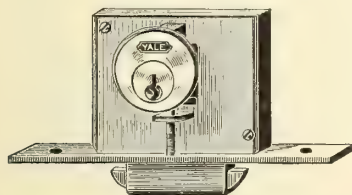
No. 501



Style of No. 513. Bolt shoots right and left.

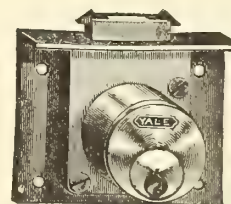
Number	Size Inches	Selvedge to Center of Key Cylinder Inch	Diameter of Cylinder Inches	Material	For Wood Inch	Key Blank Used Number	Per Dozen
513	2x1 1/2	1	1 1/8	All brass	7/8	8	\$17.75
513S	2x1 1/2	1	1 1/8	All brass, brass spring bolt and strike	7/8	8	20.00
501	2x2	1	1 1/8	All brass	7/8	8	18.65

Desk Locks



No. S236

Solid square iron box, screwed. Heavy brass bolt with solid brass hooks. Cast bronze cylinder. Tumbler. Self-locking and guarded against tampering. Two paracentric keys, nickel-bronze, gold-plated bows. Changes practically unlimited. For any thickness of desk rail which must always be specified in ordering. Carried in stock as below. Cast-bronze escutcheon. Packed with screws.



No. 543

Solid box, screwed. Square selvedge. Double-hook bolt with brass strike. Cylinder 1 1/4 inches diameter, buffed nose. Paracentric keys, nickel bronze, gold-plated bows. Changes practically unlimited.



Number	Size Inches	Selvedge to Center of Cylinder Inch	Material	For Wood Inches	Key Blank Used Number	Dozen
S236	1 1/2x3 1/2	1	Brass selvedge, self-closing strike	1 1/4 to 2 1/2	10	\$19.75
543	1 7/8x2 1/4	1	All brass	7/8	8	16.95

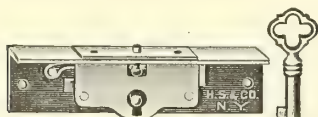
For extras and special features, see pages 914 and 915

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Jewel Case and Box Locks

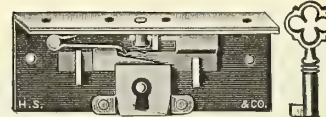
One-Half Size Cuts



No. 30

Style of No. 4102

One Gothic key to each lock.



No. 4100

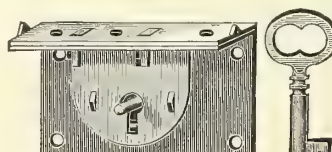
Style of No. 4100N.

Number	Size Inches	Selvage to Key-Pin Inch	Length Link-Plate Inches	Material	Key Used Number	Dozen
30	2 $\frac{5}{8}$ x $\frac{7}{8}$	$\frac{7}{16}$	1 $\frac{1}{8}$	Brass, nickel-plated	4102	\$1.80
4102	2 $\frac{5}{8}$ x $\frac{7}{8}$	$\frac{5}{8}$	1 $\frac{3}{8}$	Iron, brass selvage	4102	.96
4100	2 $\frac{5}{8}$ x $\frac{7}{8}$	$\frac{5}{8}$	2 $\frac{5}{8}$	Iron, brass selvage	4102	1.44
4100N	2 $\frac{5}{8}$ x $\frac{7}{8}$	$\frac{5}{8}$	2 $\frac{5}{8}$	Iron, brass selvage, nickel-plated	4102	1.68



No. 34

Style of Nos. 42, 55 and 142. Single link.



No. 105

Style of Nos. 37 and 181. Double link.



No. 164

Style of Nos. 83 and 28. Double link.

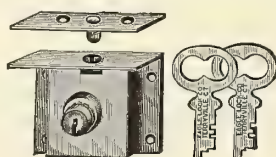
Number	Size Inches	Selvage to Key-Pin Inches	Material	Key	Wards	Changes Regular	Key-Blank Used Number	Dozen
42	1 $\frac{1}{4}$ x $\frac{13}{16}$	$\frac{7}{16}$	Brass plate	Plain	..	..	593	\$.75
55	1 $\frac{1}{2}$ x $\frac{13}{16}$	$\frac{7}{16}$	Iron	Plain	..	..	42	.68
34	2 x1 $\frac{1}{16}$	$\frac{7}{16}$	Iron	Plain	..	..	34	.75
142	3 $\frac{1}{2}$ x2	$\frac{15}{16}$	Iron	Paper	1	..	142	1.50
181	1 $\frac{1}{2}$ x $\frac{15}{16}$	$\frac{1}{2}$	Brass plate	Plain	..	..	181	2.25
37	2 x1 $\frac{1}{4}$	$\frac{3}{4}$	Brass plate	Plain	1	..	1494	2.25
105	2 $\frac{1}{4}$ x1 $\frac{3}{8}$	$\frac{3}{4}$	Brass plate	Plain	1	..	1494	2.50
164	2 $\frac{1}{2}$ x1 $\frac{9}{16}$	$\frac{13}{16}$	Brass plate	Fancy	1	4	164	2.62
28	2 $\frac{3}{4}$ x1 $\frac{9}{16}$	$\frac{7}{8}$	Brass plate	Fancy	1	3	28	3.00
83	3 $\frac{1}{2}$ x2 $\frac{1}{16}$	1 $\frac{1}{4}$	Iron	Fancy	1	3	10	2.75



No. 02314

For $\frac{1}{16}$ -inch wood.

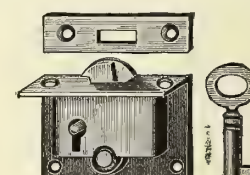
Self-locking. Two nickel-plated flat steel keys to each lock. When unlocked may be used as a catch and unlatched by pressing end of cylinder.



No. 01817

For $\frac{1}{16}$ -inch wood.

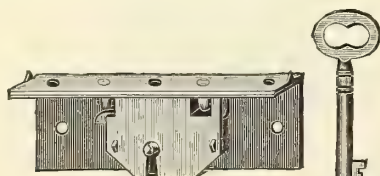
Self-locking. All nickel-plated. Flat bow keys.



No. 1099

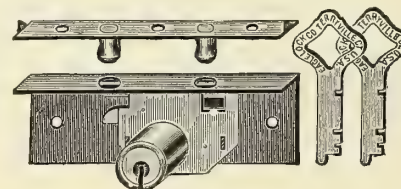
Self-locking. All nickel-plated. Flat bow keys.

Number	Sizes Inches	Selvage to Center of Cylinder Inch	Key-Pin Inch	Material	Key-Blank Used Number	Dozen
02314	2 $\frac{3}{4}$ x $\frac{15}{16}$	$\frac{9}{16}$	..	All brass, nickel-plated, double link	2314	\$8.00
01817	1 $\frac{1}{4}$ x1	$\frac{9}{16}$	..	All brass, solid square box, single link	1817	3.50
1099	1 $\frac{1}{2}$ x1 $\frac{1}{8}$	..	$\frac{1}{2}$	Brass, nickel-plated	586	3.00



No. 01867

Fine flat bow key.



No. 01867 $\frac{1}{2}$

Two nickel-plated flat steel keys to each lock. One secure lever. Made for $\frac{1}{2}$ -inch wood.

Number	Size Inches	Selvage to Center of Cylinder Inch	Key-Pin Inch	Material	Key-Blank Used Number	Dozen
01867	2 $\frac{3}{4}$ x $\frac{15}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	All brass, buffed selvage and link plate	01489	\$3.75
01867 $\frac{1}{2}$	2 $\frac{3}{4}$ x $\frac{15}{16}$	..	..	All brass, buffed selvage and link plate	6080	8.25
01867N	..	..	..	All brass, nickel-plated	01489	10.00

For extras and special features, see pages 914 and 915

Eagle Chest Locks

One-Half Size Cuts



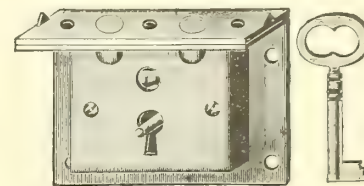
No. 585

Style of No. 585N



No. 470

Style of No. 471

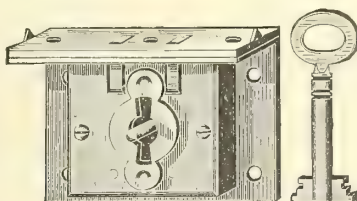


No. 428

Style of Nos. 467, 410, 0427, 411, 408 and 409

Square self-serve. Solid square box. Double link. Fine flat bow keys.

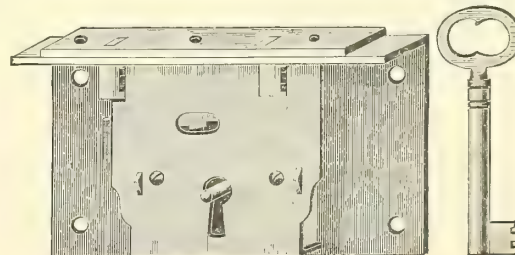
Number	Size Inches	Selvage to Key-Pin Inches	Material	Secure Levers	Regular Changes	Possible Changes	Key-Blank Used Number	Dozen
585	2 x 1 1/8	1 1/16	All brass	1	4	....	584	\$3.00
585N	2 x 1 1/8	1 1/16	All brass, nickel-plated	1	4	....	584	3.45
470	1 3/4 x 1 1/8	1 1/16	Brass plate	2	12	....	469	3.62
471	1 1/2 x 1 1/8	1 1/16	Iron	2	12	....	469	3.00
467	2 x 1 1/16	1 1/16	Iron	2	12	60	293	3.25
428	2 1/2 x 1 1/16	1 1/16	Brass plate	2	12	252	014	4.00
0427	2 1/2 x 1 1/16	1 1/16	All brass	2	12	262	01497	5.00
410	3 x 1 1/16	1	Iron	2	12	252	411	4.00
411	3 x 1 1/16	1	Brass plate	2	12	252	411	4.50
408	3 1/2 x 2 1/4	1 1/8	Iron	2	12	1020	408	4.50
409	3 1/2 x 2 1/4	1 1/8	All brass	2	12	1020	409	6.50



No. 582

Style of No. 218

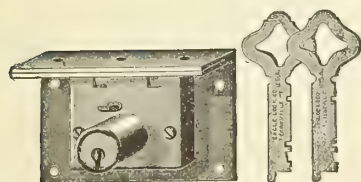
Self-locking square self-serve. Screwed. Double link. Double fitted keys. Brass escutcheon. All different in a dozen.



No. 203

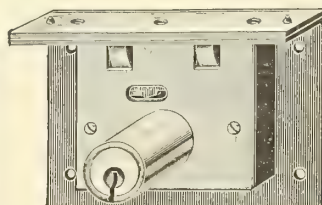
Square self-serve. Screwed. Double link. Fine flat bow keys. All different in a dozen; also all alike.

Number	Size Inches	Selvage to Key-Pin Inches	Material	Secure Levers	Tumblers	Wards	Key-Blank Used Numbers	Dozen
582	2 1/2 x 1 1/16	7/8	Brass plate	..	4 hook	2	582	\$6.25
218	4 x 2 1/16	1 3/8	Iron	..	4 hook	2	218	8.00
203	4 x 2 1/4	1 1/2	Iron	2	.....	..	425	4.50



No. 6087

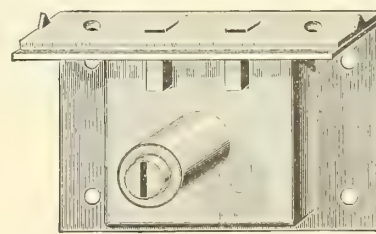
Style of Nos. 6087 1/2, 6088 and 7088 1/2.



No. 6070

Style of Nos. 6068, 6071, 1058 and 1059.

Square self-serve, solid square box, screwed, double link. (Two nickel-plated flat steel keys to each lock.) All different in a dozen, except Nos. 1058 and 1059 which are carried in stock. Can be made any thickness of wood desired. Carried in stock as specified below.



No. 01961

Style of No. 01962.

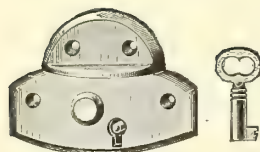
Number	Size Inches	Selvage to Center		Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key-Blank Used Number	Dozen
		Of Tube Inches	Of Cylinder Inches							
6088	1 3/4 x 1 1/16	3/4	...	All brass	1 1/2	3	1440	288	6080	\$7.50
7088 1/2*	1 3/4 x 1 1/16	3/4	...	Iron, brass cylinder	1 1/2 and 3/4	3	...	...	6080	7.50
6087	2 x 1 1/16	3/4	...	All brass	1 1/2 and 7/8	3	1440	288	6080	9.00
6087 1/2*	2 x 1 1/16	3/4	...	All brass	1 1/2 and 7/8	3	...	...	6080	10.00
1058	2 1/4 x 1 9/16	7/8	...	Iron	5/8	3	620	120	6080	9.00
1059	2 1/4 x 1 1/16	7/8	...	All brass	3/4	3	620	120	6080	10.50
6077†	2 1/2 x 1 1/16	1	...	All brass	3/4 and 1	4	620	120	6075	12.00
6071†	3 x 2	1 1/8	...	All brass	1	4	1020	252	6069	14.00
6068†	4 x 2 9/16	1 3/8	...	All brass	1 and 1 1/4	4	1020	252	6068	18.00
01961*	3 1/2 x 2 3/16	...	1 1/8	All brass	1	..	....	...	1961	12.00
01962*	4 x 2 5/16	...	1 1/4	All brass	1	..	....	...	1962	14.00

* Nos. 7088 1/2, 6087 1/2, 01961 and 01962 are self-locking. † Nos. 01961 and 01962 have 2 wards and 4 hook tumblers

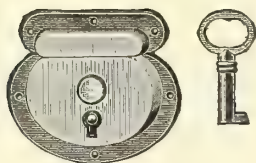
For extras and special features, see pages 914 and 915

Sample and Suitcase Locks

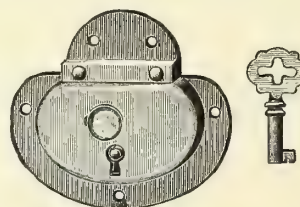
One-Half Size Cuts



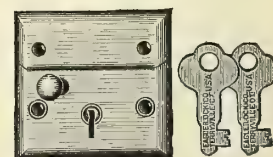
No. 08336
Self-locking. Spring thumb push.
Flat bow key.



No. 08296
Self-locking. Spring thumb push.
Flat bow key.

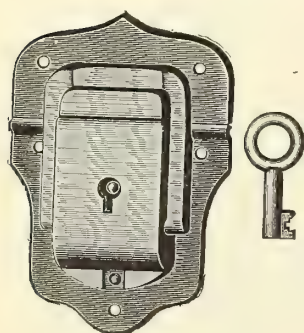


No. 0897
Self-locking. Spring thumb push.
Flat bow key.

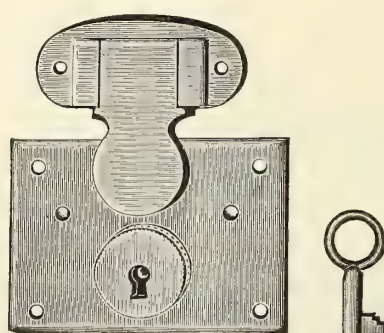


No. 08331
Self-locking. Spring thumb push.
Two nickel plated flat steel keys to
each lock.

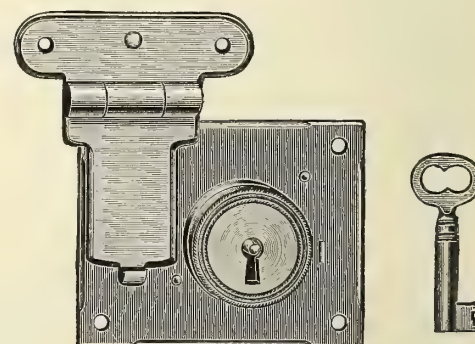
Number	Size Lock Without Hasp Inches	Material	Finish	Hasp	Key Blank Used Number	Dozen
08336	2 x 7/8	Cast brass	Nickel-plated	Flush	679	\$5.00
08336 1/4	2 x 7/8	Cast brass	Buffed and lacquered	Flush	679	4.50
08296	1 3/4 x 1 1/16	Brass	Nickel-plated	Flush	1179	3.00
08297	2 1/4 x 1 3/8	Brass	Nickel-plated	.....	1405	4.00
08331	1 5/8 x 1	Brass	Nickel-plated	Flush	331	5.00



No. 08368
Secure lever. Brass-plated key.



No. 08341
Spring-stop hasp. Self-locking. Nickel-plated
key. When unlocked may be used as a catch and un-
latched by pressing the escutcheon.



No. 08377
Solid cast brass spring hasp. 3 secure levers.
High sliding escutcheon. Fine flat bow keys. Can
be made with 60 changes of keys.* When unlocked
may be used as a catch and unlatched by pressing the
escutcheon.

Number	Size Plate Inches	Material	Finish	Hasp	Key Blank Used Number	Dozen
08368	2 1/4 x 3 3/8	Brass	Buffed and lacquered	.....	368	\$7.00
08341	3 x 2	Brass	Buffed and lacquered	Cast, straight	8341	8.00
†08377	3 x 2 5/16	Brass	Buffed and lacquered	.....	1607	13.00

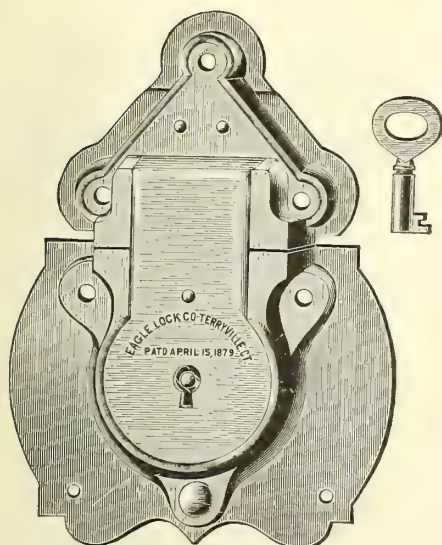
* For making with more than 12 changes add 50 cents per dozen net.

† No. 08377 lock can be made left hand.

For extras and special features, see pages 914 and 915

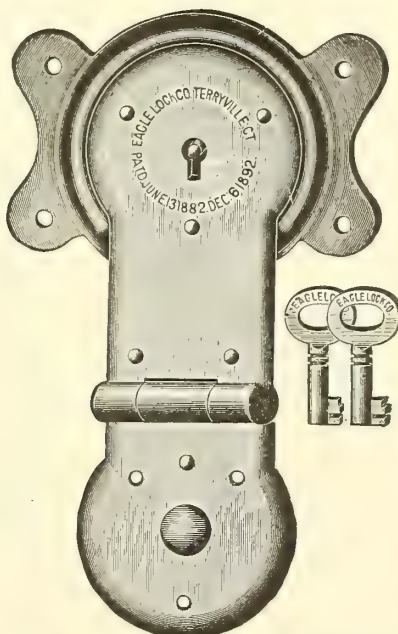
Eagle Trunk Locks

Half Size Cuts



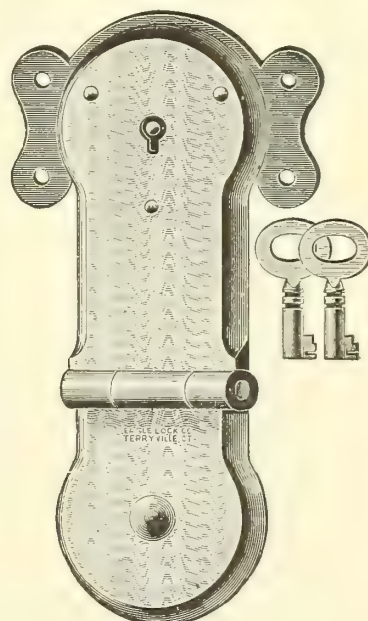
No. 8199

Guard cup. Flat bow keys.
No top back plate.



No. 8355½

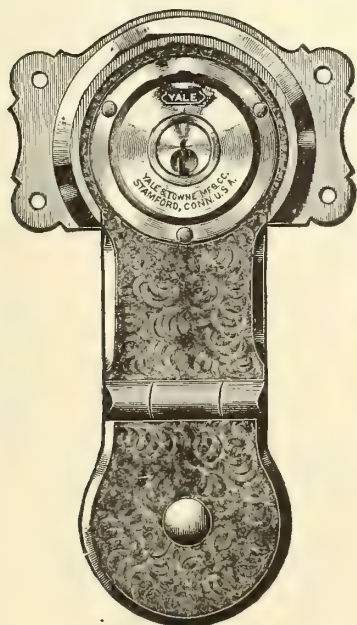
Guard cup. Two nickel-plated wrought-steel
keys to each lock.



No. 8186

Style of No. 08818.
"Jiggered" surface, buffed edges. Two nickel-
plated wrought-steel keys to each lock. Furnished
with bolts, nuts and washer to attach hasp to trunk.

Number	Size Inches	Material and Finish	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
8199	5¼x4	Iron, all brass plated, unpolished	2	4	4	178	\$4.25
8355½	6½x3¾	Wrought iron, brass plated	2	4	4	5007	6.00
8186	6¼x3⅛	Cast bronze, wrought-bronze cup, riveted case	2	4	4	5007	11.00
08818	6⅛x3⅛	Cast bronze, wrought-bronze cup, cast case	3	3	36	5006	15.00



No. TB-600

Self-locking, buffed edges, cap and guard cup. Two paracentric nickel-bronze keys
to each lock. Changes unlimited. Furnished with bolt, nut and washer to attach
hasp to trunk.

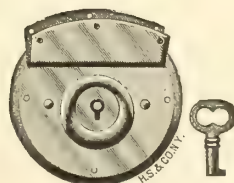
Number	Size Inches	Material	Key Blank Used Number	Dozen
TB-600	6½x3½	Cast bronze	TB-600	\$30.00

Yale

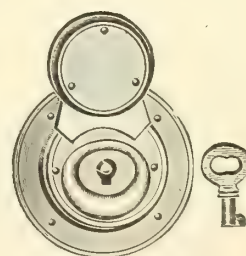
Trunk Lock



Portfolio Locks



No. 4199



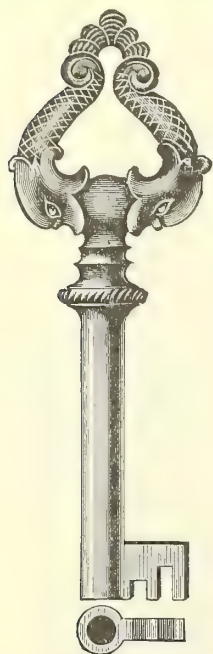
No. 08723

Self-locking. When unlocked may be used as a catch and unlatched by pressing
the ring down.

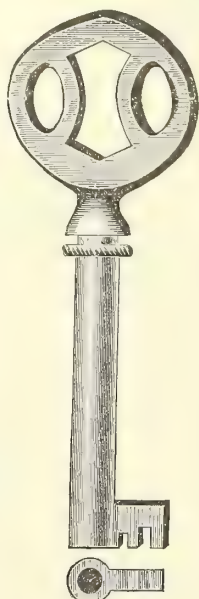
Number	Size Inches	Material and Finish	Key Blank Used Number	Dozen
4199	1¾x1¾	Nickel-plated	8918	\$3.00
08723	2½x1⅞	Brass, nickel-plated	8918	10.00

Eagle Cabinet Keys

Full Size Cuts



No. 1010, 1 1/4 inches
Gilt



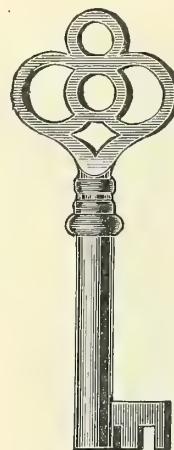
No. 1005, 1 1/4 inches
Gilt 1 1/4 inches



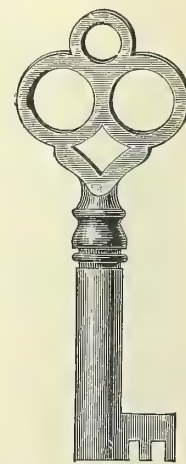
No. 10301
3/4 and 1 1/2 inches



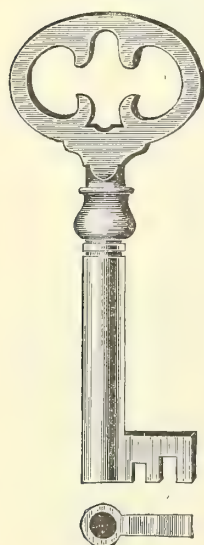
No. 5003
Iron



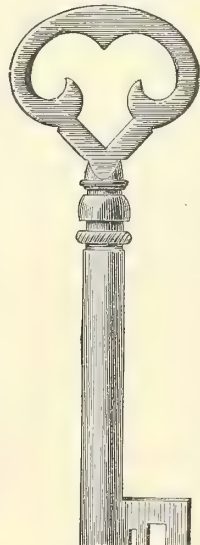
No. 76 1/2 Iron
No. 1129 Gilt



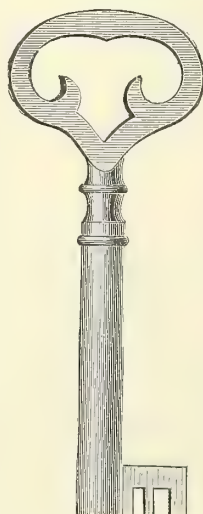
No. 0161 Gilt
No. 161 Iron



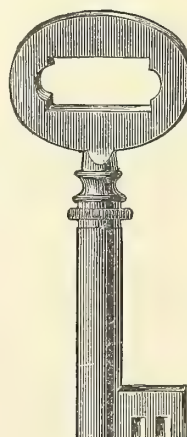
No. 500
Iron



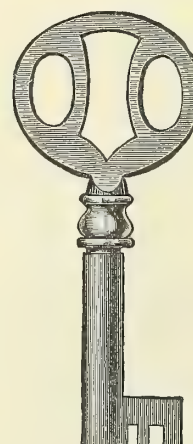
No. 3920
Iron



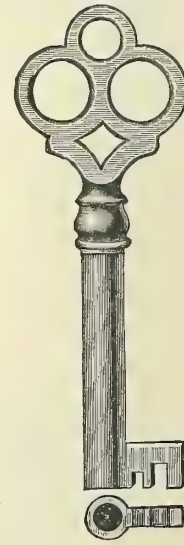
No. 510
Iron



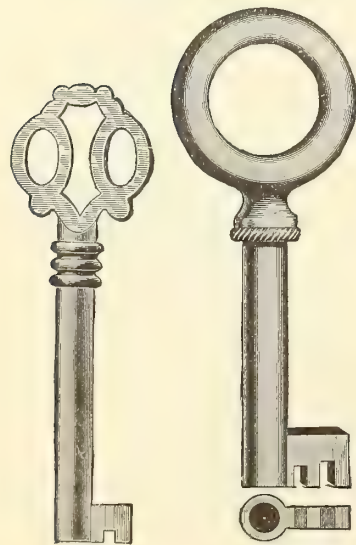
No. 1001, 1 1/4 inches
Iron 1 1/2 inches



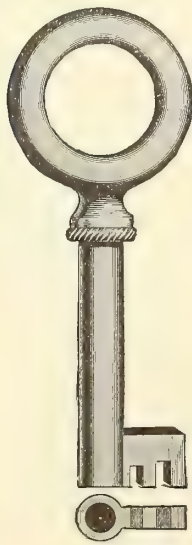
No. 48 1/2
Iron



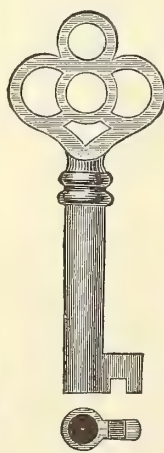
No. 5061
Iron



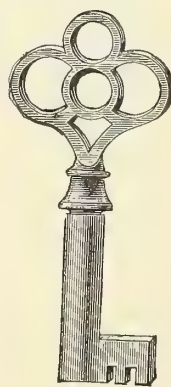
No. 447
Iron



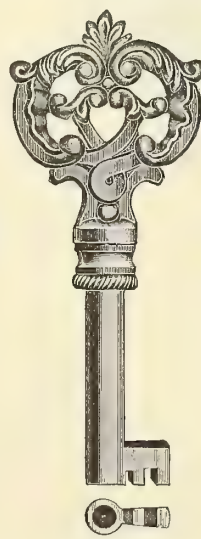
No. 5083
1 1/4 inches
Iron



No. 72 1/2
Iron



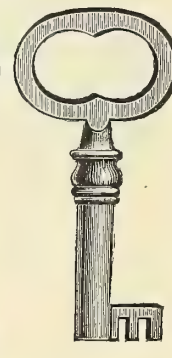
No. 423 Iron
No. 1130 Gilt



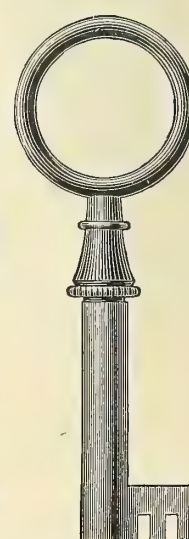
No. 5201, 1 inch
Dull Brass



No. 501
Iron



No. 475
Iron



No. O, 1 1/4 inches
Gilt

For description and list prices see page 939

Eagle Cabinet Keys

Illustrations on Preceding Page

Number	Barrel Inches	Material	Suitable for Locks	Dozen
0	1¼	Gilt	No. 161	\$1.20
48½	1	Iron	Nos. 47, 48 and 49	.30
72½	1	Iron	Nos. 72, 1296 and 1600	.20
76½	1¼	Iron	Nos. 415, 416, 417, 418, 423, 1602, 1805 and 01805	.25
161	1	Iron	Nos. 48, 161, 180, 423, 1602 and 1606	.25
0161	1	Gilt	Nos. same locks as No. 161	1.00
423	⅞	Iron	Nos. 423 and 1602	.20
447	1¼	Iron	Nos. same locks as No. 72½	.20
475	¾	Iron	Nos. 56, 58, 193, 473, 473½, 474, 475, 476, 476½, 477 and 478	.25
500	1¼	Iron	No. 500	.35
501	1	Iron	Nos. 501, 508 and 509	.25
510	1⅜	Iron	Nos. 510, 510½ and 2118	.30
1001	1¼ & 1½	Iron	Nos. 47, 49, 1001, 01001 and 1017	.35
1005	1¼, 1½ & 2	Gilt	Nos. 44, 47, 48, 49, 161, 180, 193, 423, 473, 473½, 474, 475, 476, 476½, 477, 478, 510, 510½, 1001, 01001, 1017 and 1606	1.20
1010	1¼	Gilt	Nos. same locks as No. 1005	1.50
1010	1½	Gilt	Nos. 1001	1.50
1106	⅞	Gilt	Nos. 40, 56, 58, 193, 473, 473½, 474, 475, 476, 476½, 477, 478, 501, 508 and 509	1.20
1129	1⅞	Gilt	Nos. 415, 416, 417, 418, 423, 501, 508, 509, 1805 and 01805	1.20
1130	1	Gilt	No. 423	1.20
3920	1½	Iron	Nos. same locks as No. 161	.25
5003	1⅜	Iron	Nos. same locks as No. 72½	.25
5061	1⅞	Iron	Nos. same locks as No. 161	.25
5083	1¼	Iron	Nos. 161 and 1001	.60
5084	1	Gilt	Nos. same locks as No. 475	1.50
5084	1¼	Gilt	Nos. 161 and 1001	1.50
5201	⅞	Dull brass	Nos. same as lock No. 475	1.50
10301	¾	Dull brass	Nos. same as lock No. 475	1.50
10301	1½	Dull brass	Nos. same as lock No. 475	1.50

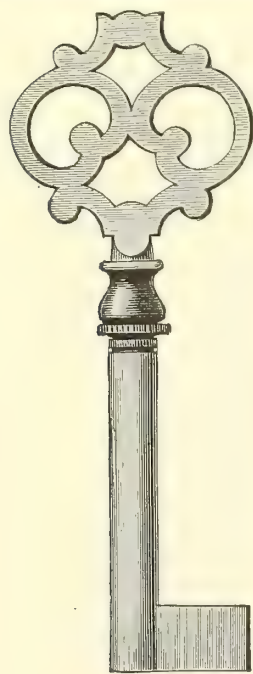
Extra keys can be furnished for the following number of Eagle Locks.

In ordering be sure to specify what lock the key is intended to fit.

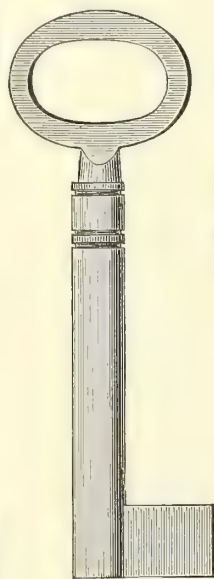
For Lock Number	Keys Per Dozen	For Lock Number	Keys Per Dozen	For Lock Number	Keys Per Dozen	For Lock Number	Keys Per Dozen
28	\$.25	42	\$.20	83	\$.35	181	\$.25
34	.18	44	.30	141	.25	197	.28
36	.20	55	.15	142	.25	296	.25
37	.20	58	.20	164	.25	01867	1.00

Eagle Cabinet Blanks

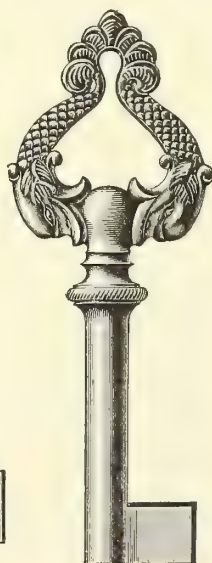
Full Size Cuts



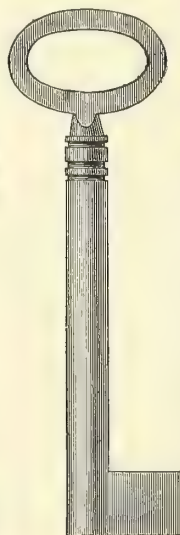
No. 1124
Bronze



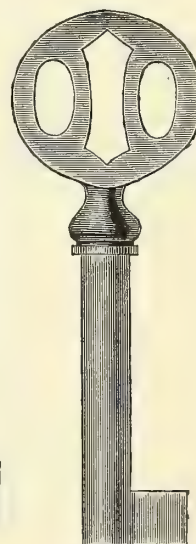
No. 574
Iron



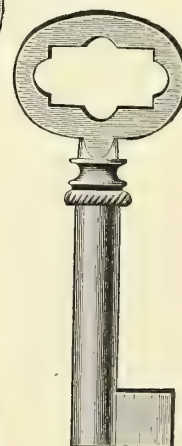
No. 1010, 1 1/4 inches
Gilt



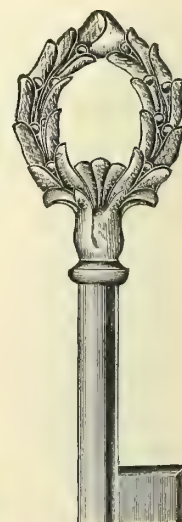
No. 251
Iron



No. 1005
1 1/4, 1 1/2, 2 inches
Gilt



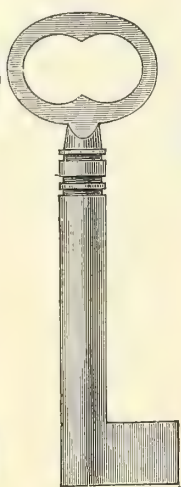
No. 1001, 1 1/4 inches
No. 1001, 1 1/2 inches
Iron



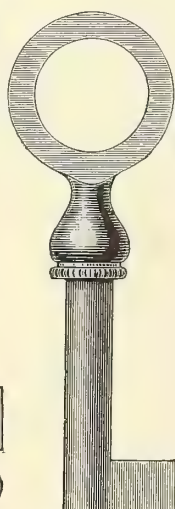
No. 5084, 1 1/4 inches
Gilt



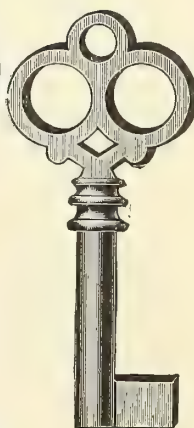
No. 500
Iron



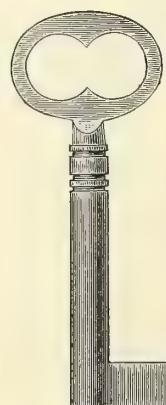
No. 0254 Bronze
No. 254 Iron



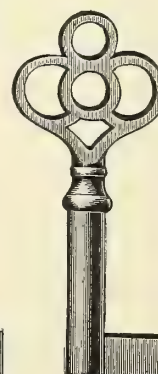
No. 1100 Gilt
No. 10301 Dull Brass



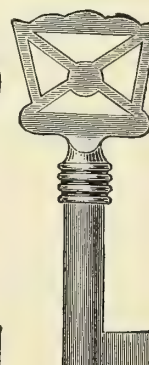
No. 0161
Gilt



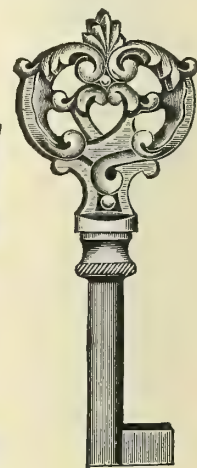
No. 410 Iron
No. 6000 Bronze



No. 1130
Bronze



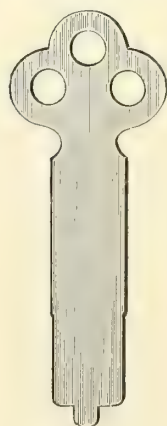
No. 1106
Gilt



No. 5201, 7/8 inch
Gilt



No. 6001, 7/8 inch
Steel



No. 01876, 1, 1 1/4 inches
Steel



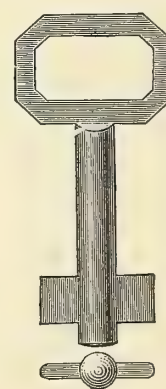
No. 501
Iron



No. 299
Iron



No. 01168
Bronze



No. 1318
Bronze N. P.



No. 369 Iron
No. 1146 Gilt

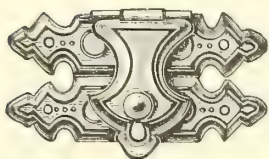


No. 584
Bronze

For description and list prices, see following page

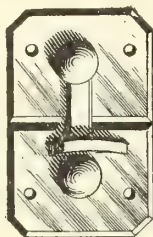
Box Catches

Full Size Cuts

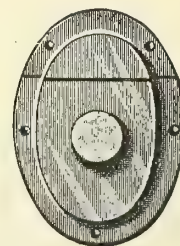


No. 52 Brass, dipped, gross..... \$1.75

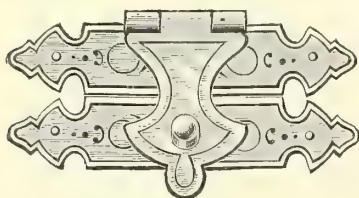
No. 52N Brass, nickel-plated, gross... 3.60



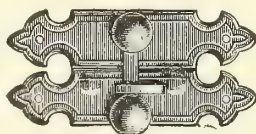
No. 771 Brass, nickel-plated, gross... \$10.60



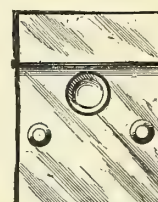
No. 789 Brass, nickel-plated, gross... \$16.00



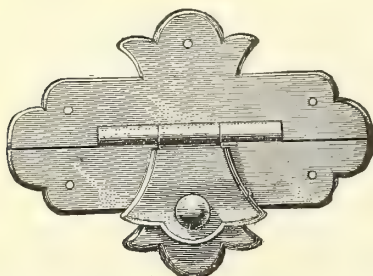
No. 102 Brass, nickel-plated, gross.... \$4.70



No. 89 Brass, nickel-plated, gross.... \$6.00

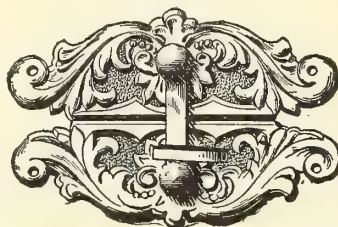


No. 790 Brass, nickel-plated, gross... \$13.30



No. 786 Brass, polished, gross..... \$8.80

No. 786N Brass, nickel-plated, gross. 8.80



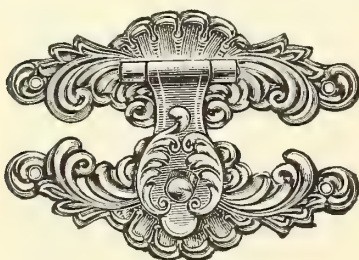
No. 767 Brass, nickel-plated, gross.. \$7.90



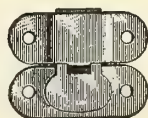
Brass, Nickel-plated

No. 1025 Size $\frac{5}{8} \times 1\frac{1}{2}$ inches, gross... \$6.90

No. 1026 Size $\frac{9}{16} \times 1\frac{3}{8}$ inches, gross... 6.75



No. 1043 Brass, silver dipped, gross.. \$4.50



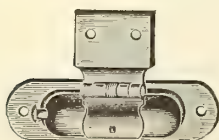
No. 425 Brass, dipped, gross..... \$.80



No. 856 Brass, dipped, gross..... \$.40

Violin Box Catch

Half Size Cut



No. 1 Steel, nickel-plated, gross.... \$15.00

Desk Buttons

Full Size Cuts



No. 1075



No. 1078



No. 1460



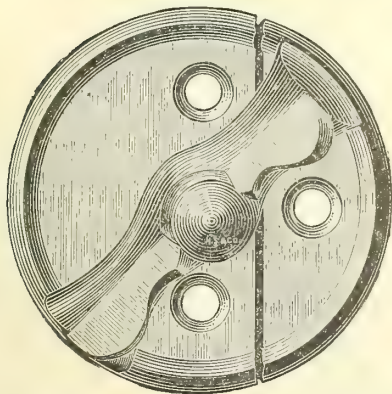
No. 1077



No. 2422

No. 1075	Brass, dipped, gross.....	\$.60
No. 1078	Brass, dipped, gross.....	.80
No. 1460	Brass, dipped, gross.....	1.60
No. 1077	Brass, dipped, gross.....	1.00
No. 2422	Brass, dipped, gross.....	2.50

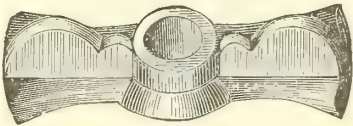
Turn Buttons



No. 20

Cast Iron, Japanned

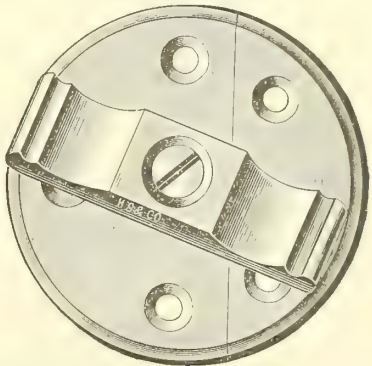
Diameter, inches..... 2 2½
Gross..... \$4.30 6.10



No. 10

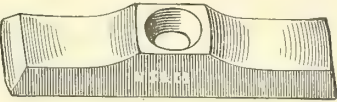
Cast Iron, Japanned

Length, inches... 1¼ 1½ 2 2½
Gross..... \$.52 .60 .80 1.60



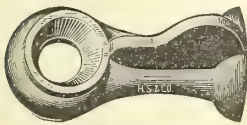
No. 187

No. 187 Cast brass, polished, 2 inches diameter, dozen..... \$2.60



No. 110

Cast iron, coppered, 1½ inches long, gross..... \$.60



No. 48 Cast iron, japanned, 1¼ inches long, gross..... \$.45



No. 1883 Cast brass, polished, ¾ inch long, gross..... \$5.28

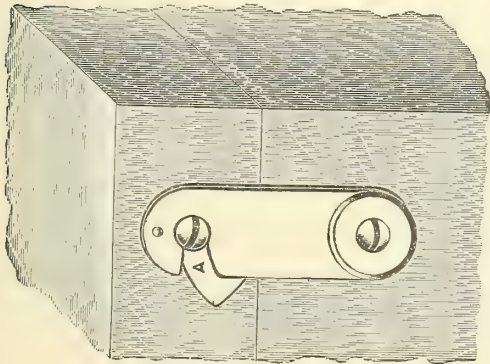
No. 196

Wrought Brass, Polished

Length, inches..... 1¼ 1½ 2
Gross..... \$5.83 6.41 9.72

Box Hooks

Full Size Cuts

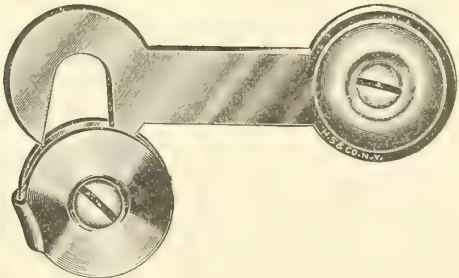


No. 7 Fancy Embossed

Packed with screws

Made of wrought brass. Quickly attached and easily operated. The part "A" is hinged and is released by thumb pressure. It springs back over screw head at slight pressure and cannot unlock.

Dipped, gross..... \$9.50 Brass, nickel-plated, gross..... \$10.50
Nickel-plated, gross..... 9.50 Brass, polished, gross..... 10.50



No. 6

Half Size Cuts



No. 840 Wrought brass, polished, 2¾ inches long. Made right or left hand. State which wanted. Illustration shows right hand. Gross. \$16.00



No. 1780 Wrought brass, nickel-plated, 2¾ inches long. Made right or left hand. State which wanted. Illustration shows right hand. Gross..... \$10.80

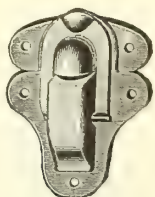


No. 846 Wrought brass, nickel-plated, 2¾ inches long. Made right or left hand. State which wanted. Illustration shows right hand. Gross..... \$9.00

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Suit Case Bolts



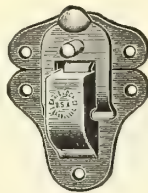
1½ x 1⅞ Inches

No. 01778 Brass, polished, gross . . . \$19.00

No. 01778N Brass, nickel-plated, gross . . . 22.75

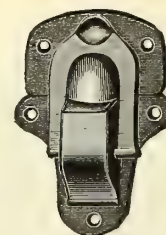
No. 3120N Iron, nickel-plated, gross . . . 6.60

No. 3120 Iron, brass-plated, gross . . . 6.60



1½ x 1⅞ Inches

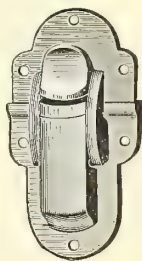
No. 1778D Iron, nickel-dipped, gross . . \$6.60



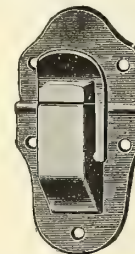
1½ x 2⅜ Inches

No. 3100N Iron, nickel-plated, gross . . \$6.25

No. 3100B Iron, brass-plated, gross . . 5.20



No. 3392 1⅜ x 2⅞ inches, cast brass, polished, gross . . . \$40.00



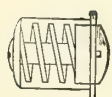
1¼ x 2⅝ Inches

No. 05523 Brass, polished, gross . . . \$20.00

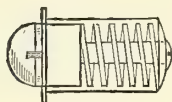
No. 05523N Brass, nickel-plated, gross . . . 23.00

Door Catches

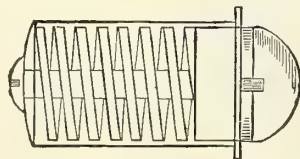
Full Size Cuts



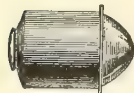
No. 10½



No. 11



No. 13



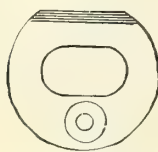
No. 85



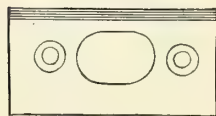
No. 86



No. 87



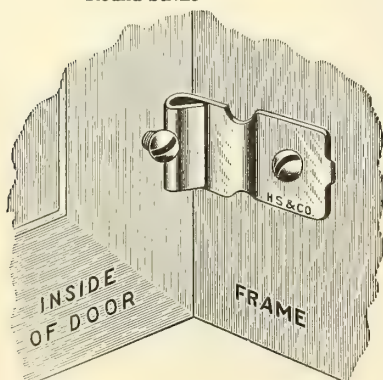
Round Strike



Square Strike

Number	Material	Strike	Gross
10½R	Brass	Round	\$8.25
10½S	Brass	Square	8.25
11 R	Brass	Round	9.00
11 S	Brass	Square	9.00
13	Brass, Iron Strike	Square	18.00
85 R	Iron, Iron Strike	Round	2.40
85 S	Iron, Brass Strike	Square	3.10
86 R	Iron, Brass Strike	Round	2.95
86 S	Iron, Brass Strike	Square	2.95
86 NS	Iron, Brass Strike nickel-plated	Square	5.50
87 R	Iron, Brass Strike	Round	2.75
87 S	Iron, Brass Strike	Square	2.75

Cabinet Catches



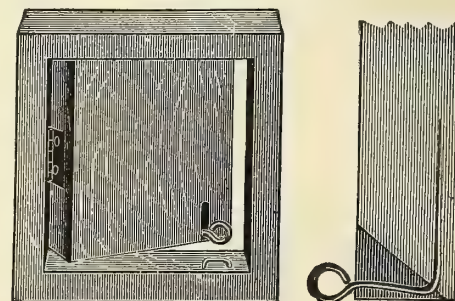
Screw is attached inside of door; catch is fastened to jamb or bottom like a stop.
No. 90 Brass, dipped. Packed with round head brass-plated screws.
Gross . . . \$1.80



No. 05593 2⅜ x ⅝ inch, wrought brass, polished, spring bolt.
Gross . . . \$12.00



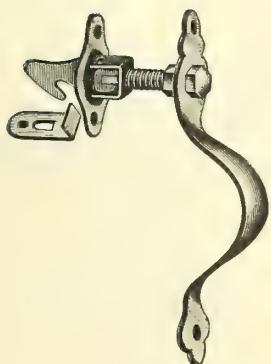
Champion



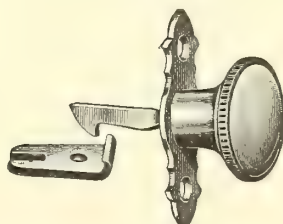
Loop and staple. Best spring steel wire. Gross . . . \$1.20

Cabinet Catches

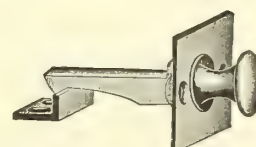
Half Size Cuts



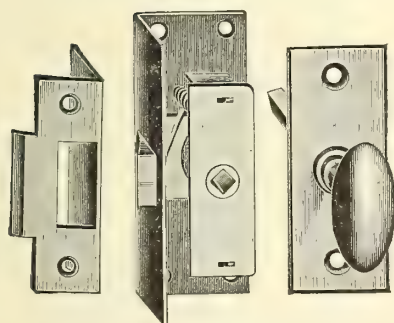
No. 2288E Sheet brass, push-button style. Packed with screws. Dozen \$1.50



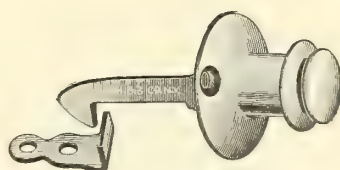
No. 21 Wrought brass, polished. Packed with screws. Dozen . . . \$2.00



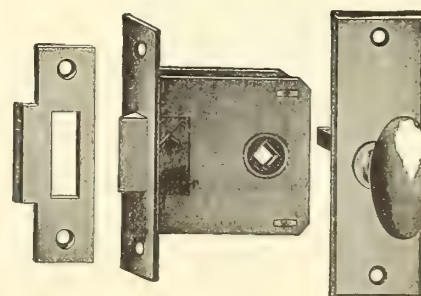
No. 329 Cast bronze, polished. Packed with screws. Dozen \$6.00



No. 05549E Cast bronze, latch bolt, for either right or left hand, adjustable for wood 1 to 1¼ inches thick, seldge to center of hub ⅞ inch. Packed with screws. Dozen \$15.75



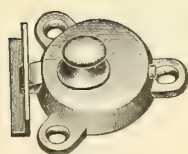
No. 121 Cast brass, polished. Packed with screws. Dozen \$3.40



No. 5590 Brass knob and plate, cast brass latch bolt, adjustable to wood ⅝ to 1¼ inches thick, seldge to center of hub 1⅞ inches. Packed with screws. Dozen \$9.00

Table Catches

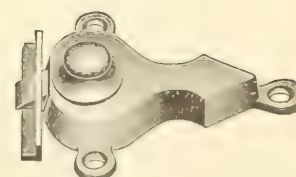
Half Size Cuts



No. 350

Cast Brass, Polished. Packed with screws

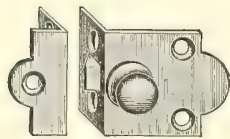
No. 350	Dozen	\$4.08
No. 351	Dozen	4.80



No. 351

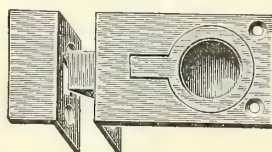
Cupboard Catches

Dimensions Given are Exclusive of Strikes



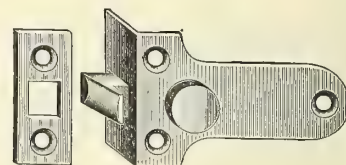
Half Size Cut
Packed with screws

No. 303	Size 1 x 1 5/8 inches, wrought brass, polished, dozen.....	\$1.65
No. 311	Size 1 x 1 7/8 inches, cast brass, polished, dozen.....	3.00
No. 311 1/2	Size 1 1/16 x 1 1/4 inches, cast brass, polished, dozen.....	2.80
No. 312	Size 1 1/8 x 2 inches, cast brass, polished, dozen.....	3.15



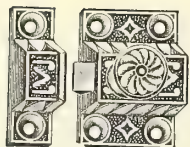
Cast Brass, Polished
Packed with screws

No. 25	Size 1 7/8 inches, dozen.....	\$5.50
No. 27	Size 2 9/16 inches, dozen.....	7.40
No. 5947	Size 1 1/2 inches, dozen.....	4.95

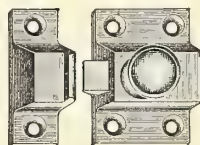


Cast Brass, Polished
Packed with screws

No. 363	2 1/2 inches, dozen.....	\$3.12
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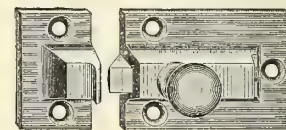


No. 3270 Packed with screws.
1 1/2 x 1 inch, cast iron, amber bronzed,
gross..... \$11.88



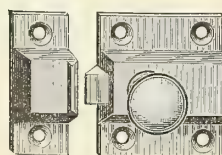
Packed with screws
1 1/2 x 1 Inch

No. 2270 1/2	Cast bronze, polished, dozen.....	\$3.75
No. N13270	Cast iron, bronze-plated, gross.....	27.72



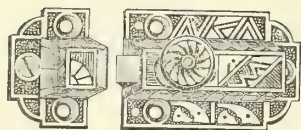
Packed with screws

No. N13029	Size 1 1/4 x 1 3/4 inches, cast iron, bronze plated, gross.....	\$27.72
No. N13030	Size 1 1/2 x 2 inches, cast iron, bronze-plated, gross.....	29.70
No. E13030	Size 1 1/2 x 2 inches, cast iron, nickel-plated, gross.....	36.83
No. 2031 1/2	Size 1 1/2 x 2 1/4 inches, cast bronze, polished, dozen.....	4.80



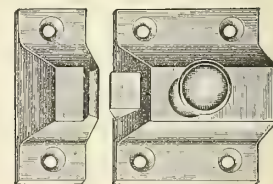
Packed with screws
1 1/2 x 1 3/8 Inches

No. 2271 1/2	Cast bronze, polished, dozen.....	\$4.15
No. L.B. 2271 1/2	Cast bronze, statu- ary bronze finish, dozen.....	4.75
No. A. 2271 1/2	Cast brass, polished, dozen.....	4.15
No. E. 2271 1/2	Cast bronze, nickel- plated, dozen.....	4.75
No. N. 13271	Cast iron, bronze-plated, gross.....	29.70



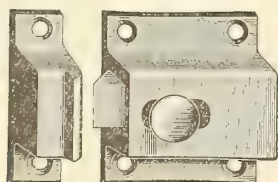
Cast Iron, Amber Bronzed
Packed with screws

No. 3029	Size 1 1/4 x 1 3/4 inches, gross..	\$11.88
No. 3030	Size 1 1/2 x 2 1/4 inches, gross..	12.87



No. N. 13272 Packed with screws.
1 7/8 x 1 1/2 inches, cast iron, bronze-
plated, gross..... \$33.66

This Catch can be furnished with
reverse bevel, if so ordered.



No. O.B. 3502 Packed with screws. 1 3/4 x 1 1/2 inches, cast
brass, old brass finish, dozen..... \$5.25

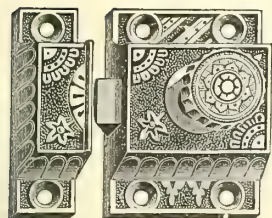
Cupboard Turns

Half Size Cuts

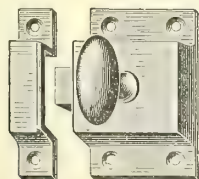
Dimensions Given are Exclusive of Strikes

Cast Iron, Amber Bronzed

Packed with screws



No. 3041

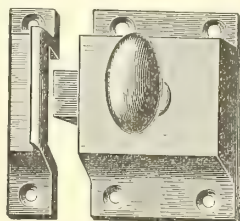


Packed with screws

1 7/8 x 1 3/8 Inches

No. Y. 4455	Cast iron, bronze-plated, dozen.....	\$3.40
No. A.B. 4425	Cast iron, antique copper finish, dozen.....	3.65
No. O.B. 4855	Cast brass, old brass finish, dozen.....	7.30
No. 4855 P.	Cast bronze, polished, dozen.....	6.20

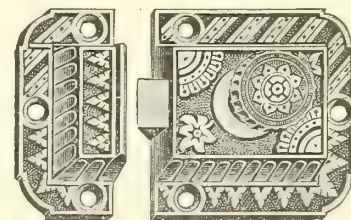
No. 3041	Size 2 1/8 x 1 1/2 inches, dozen.....	\$1.80
No. 3042	Size 2 1/8 x 2 1/8 inches, dozen.....	2.52



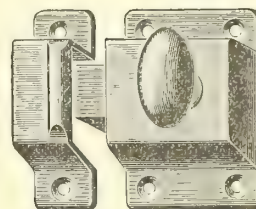
Packed with screws

2 1/4 x 1 9/16 Inches

No. Y. 4405	Cast iron, bronze-plated, dozen.....	\$3.40
No. O.B. 4505	Cast brass, old brass finish, dozen.....	8.80
No. 4505 P.	Cast bronze, polished, dozen.....	7.70
No. A 3 B 4505 P.	Cast bronze, statuary bronze finish, dozen.....	8.80



No. 3042



Packed with screws

2 1/8 x 1 7/8 Inches

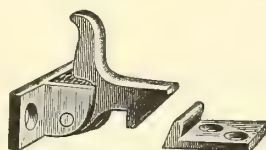
No. Y. 4425	Wrought steel, bronze-plated, dozen.....	\$3.45
No. A.B. 4425	Wrought steel, antique copper finish, dozen.....	3.65
No. O.B. 4825	Wrought brass, old brass finish, dozen.....	8.20
No. 4825 P.	Wrought bronze, polished, dozen.....	7.05

Elbow Catches

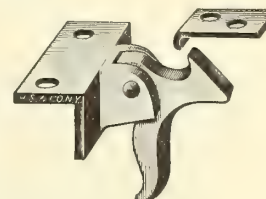
Half Size Cuts



No. 6500 Packed with screws. Cast brass, gross..... \$27.20



No. 6301 Cast iron, coppered, gross.. \$6.25
No. 6301 B.T. Cast iron, brass-plated, gross..... 7.00



No. B.T. 6301 1/2 Cast iron, brass-plated, gross..... \$14.00

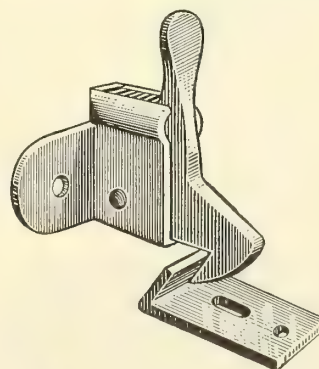


With No. 1 Strike Plate

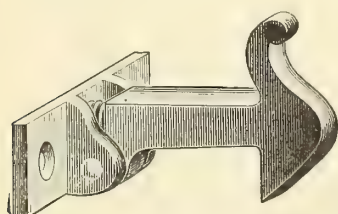
No. 520 Brass, dipped, projects only 3/4 inch, with either No. 1 or No. 2 Strike Plate, gross..... \$10.50



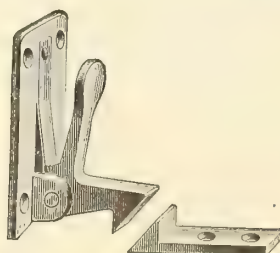
With No. 2 Strike Plate



No. 57 Made from wrought steel, brass-plated, gross, \$4.00



No. 6303 Extra heavy. Holds entire edge of door. Strikes are fastened on each edge. Cast iron, japanned, with two strike plates as shown. Gross..... \$20.40



Packed with screws

Plate 1 x 2 1/8 Inches

No. 6502 P.	Cast bronze, polished, gross.....	\$56.00
No. O.B. 6502	Cast brass, old brass finish, gross.....	67.00

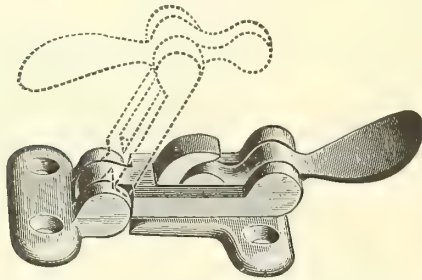
SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Door Fasteners

Half Size Cut

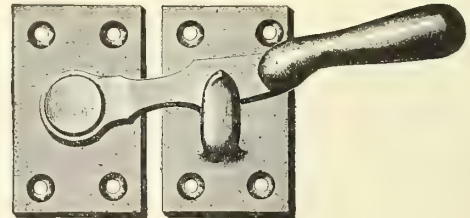


No. 48 Size of base 2 x 3 inches. Packed with screws. Cast brass, polished. An excellent fastener for doors or for box covers. Has lever action which holds the door or cover tightly closed.

Dozen..... \$13.30

Lever Fastener

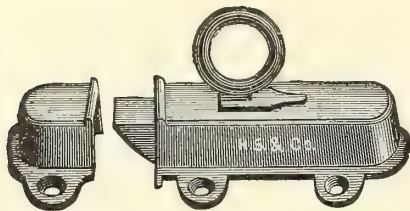
Half Size Cut



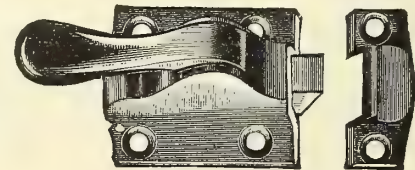
No. 830 2 1/4 x 3 inches. Cast brass, polished, dozen..... \$8.00

Refrigerator Catches and Levers

Half Size Cuts

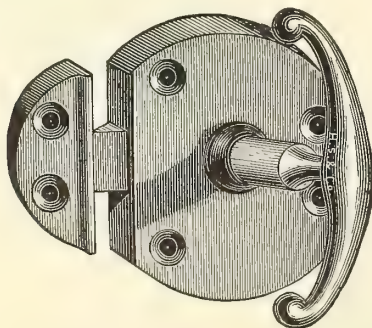


No. 1 2 5/8 inches long. Packed with screws. Cast brass, polished, dozen..... \$4.70



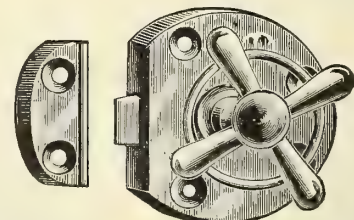
Cast Brass, Polished

No. 192 Length 1 3/4 inches, dozen..... \$6.00
No. 198 Length 2 1/4 inches, dozen..... 9.40

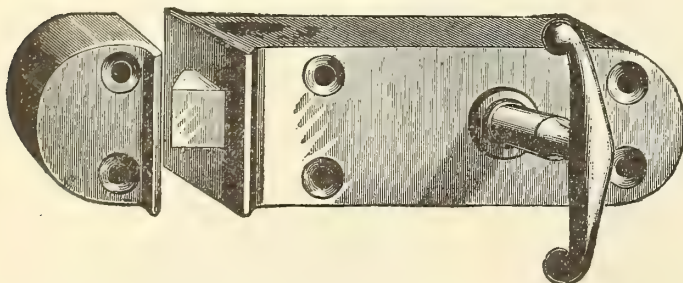


Cast Brass, Polished

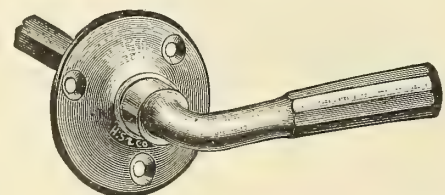
No. 5 2 1/4 inches diameter, dozen..... \$6.70
No. 6 2 3/4 inches diameter, dozen..... 8.70



No. 9 2 1/4 inches diameter, cast brass, polished. Packed with screws. Dozen..... \$9.00



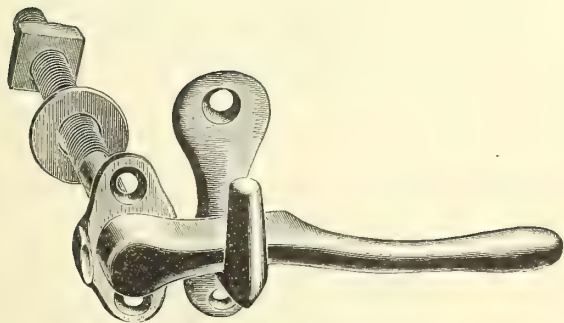
No. 8 Can be used with a crank lever (listed and illustrated opposite), on inside of door, thereby operating from both sides. 5 inches long. Made of cast brass, polished. Packed with screws. Dozen..... \$16.00



Crank lever for No. 8 Catch (listed opposite). Packed with screws. Made of cast brass, unpolished, dozen..... \$3.20

Refrigerator Lever Fasteners

Half Size Cuts

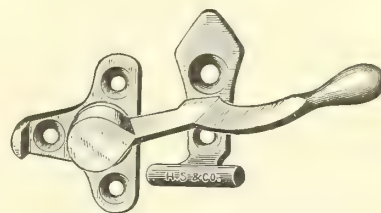


Number.....	2	3	4	5
Length of lever, inches.....	9	6½	5½	4½
Cast brass, polished, dozen.....	\$19.80	11.00	7.90	5.80
Cast iron, japanned, dozen.....	8.30	4.80		
Cast iron, galvanized, dozen.....	11.00	7.00		

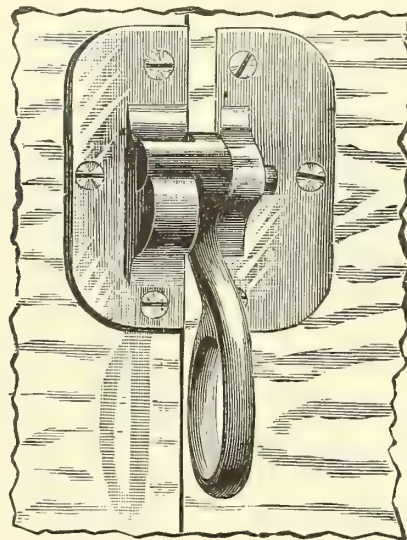
The No. 2 can also be furnished with bolts flattened to receive inside levers, which are listed and illustrated below.

No. 2 Inside levers for No. 2 fasteners listed above

Cast iron, japanned, dozen.....	\$5.20
Cast iron, galvanized, dozen.....	5.80



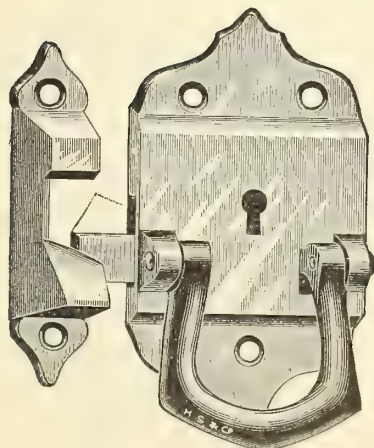
No. 8 Cast brass, polished, 3½-inch lever, dozen..... \$5.20



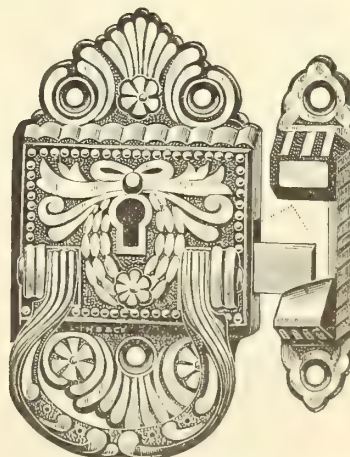
Cast brass, polished, 3½-inch lever. Made both left and right hand. State which wanted. Illustration shows left hand.

No. 4 Flush, dozen.....	\$7.00
No. 4¼ With ⅜-inch offset, dozen.....	7.00

Refrigerator Lock Latches



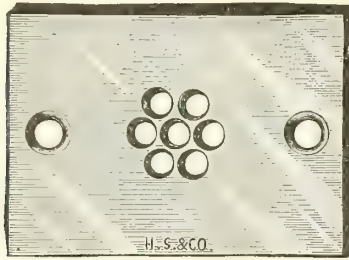
No. 38 Cast brass, polished, ⅜-inch offset, size 2½ x 4 inches. Made both left and right hand. State which wanted. Illustration shows left hand. Dozen..... \$10.50



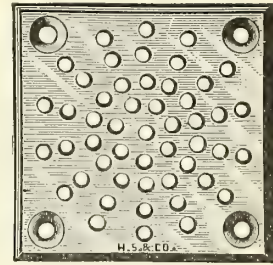
No. 41 Cast brass, ⅜-inch offset, size 2½ x 2 inches. Made both left and right hand. State which wanted. Illustration shows right hand. Dozen..... \$10.00

Refrigerator Ventilating Plates

Brass



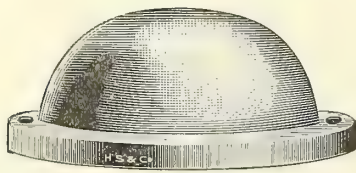
No. 1 $1\frac{3}{4} \times 1\frac{1}{4}$ inches, dozen..... \$1.70



No. 2 2 x 2 inches, dozen..... \$2.50

Refrigerator Bolt Covers

Full Size Cut

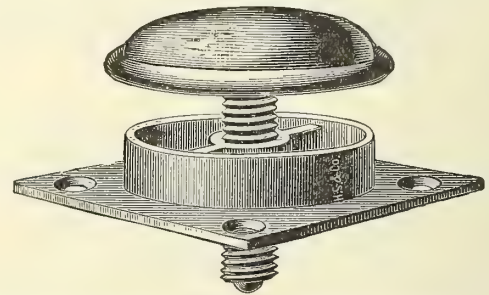


No. 9076 $1\frac{7}{8}$ inches diameter, cast brass, polished, dozen..... \$2.00

No. 9075 $1\frac{7}{8}$ inches diameter, wrought brass, polished, gross.. 6.00

Refrigerator Ventilators

Half Size Cut



No. 9109 $2\frac{1}{2} \times 2\frac{1}{2}$ inches, cast brass, polished, dozen..... \$6.70

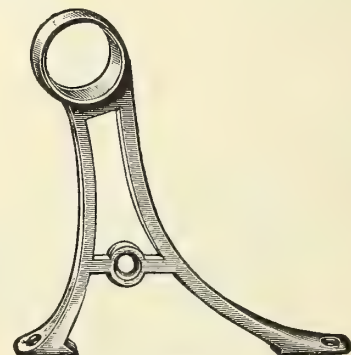
Foot Rail Brackets



Height, 7 inches overall

No. 5 For $1\frac{3}{8}$ -inch, outside diameter, tubing. Cast iron, galvanized, dozen..... \$5.00

No. 9 For $1\frac{1}{2}$ -inch, outside diameter, tubing. Cast brass, polished, dozen..... 14.40



Height, 7 inches overall

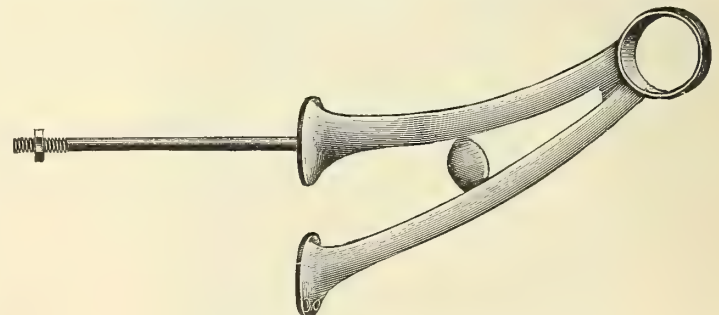
No. 10 For $1\frac{1}{2}$ -inch, outside diameter, tubing, cast brass, polished, dozen..... \$10.25



Height, 8 inches overall

No. 6 For $1\frac{3}{8}$ -inch, outside diameter, tubing. Cast iron, galvanized, dozen. \$6.00

No. 11 For $1\frac{1}{2}$ -inch, outside diameter, tubing. Cast brass, polished, dozen. 21.40



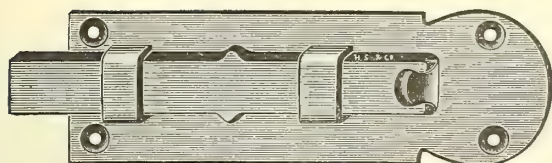
Length from base to end, 9 inches

No. 7 For $1\frac{3}{8}$ -inch, outside diameter, tubing. Cast iron, galvanized, dozen..... \$8.40

No. $4\frac{1}{2}$ For $1\frac{1}{2}$ -inch, outside diameter, tubing. Cast brass, polished, dozen..... 13.00

Spring Cabinet Bolts

Full Size Cuts

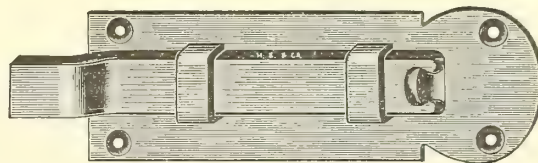


No. 2900 Wrought Iron

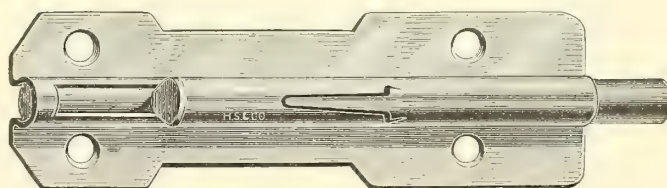
Size, inches.....	2	2½	3
Dozen.....	\$.38	.40	.45

No. 2902 Wrought Brass, Dipped

Size, inches.....	1½	2	2½	3	3½
Dozen.....	\$.90	1.00	1.10	1.80	2.40
Nosings for No. 2902, gross.....	\$3.40				
Strikes for No. 2902, gross.....	3.60				



No. 2903 Wrought brass, dipped, 2½ inches long, dozen..... \$1.10



Wrought Brass, Dipped, Iron Bolt

No. 38	Length 2 inches, dozen.....	\$.50
No. 39	Length 2½ inches, dozen.....	.70
No. 40	Length 3 inches, dozen.....	.95

Mosquito Bar Bolts

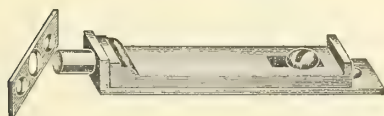
Full Size Cut



No. 1585 Wrought brass, polished, 2 inches long. Packed with screws. Dozen..... \$1.50

Cupboard Bolts

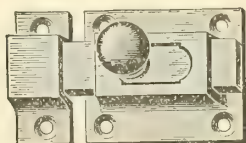
Half Size Cuts



No. 1581

Packed with screws

No. 1581 Cast brass, polished, length 2 inches, dozen..... \$3.24



No. 201 Cast brass, polished, 1½ x 1¾ inches. Packed with screws. Dozen..... \$5.60

Spring Bolts

Half Size Cut



No. 1551

Wrought Brass, Polished. Packed with screws

Size, inches.....	2	2½	3
Dozen.....	\$3.42	3.96	5.22

Gun Case Bolts

Half Size Cut

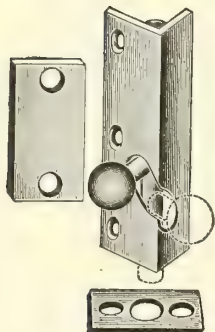


No. 139 Reversible. Cast brass, polished. Packed with screws. 2½ inches long, dozen..... \$3.12

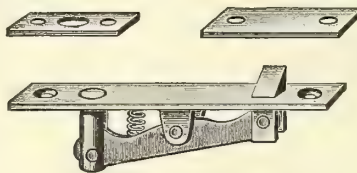
Book Case Bolts

Half Size Cuts

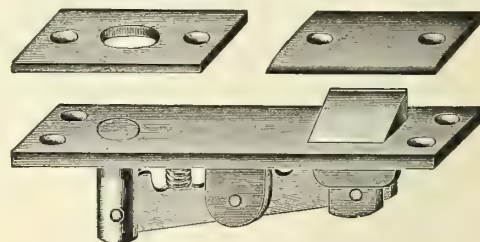
Made Right or Left Hand. State which wanted. Illustrations show Left Hand



No. 1406 Cast brass, polished, $2\frac{1}{2}$ inches long. Packed with screws.
Dozen..... \$7.20



No. 1407 Wrought brass, polished, $\frac{5}{8}$ x $3\frac{1}{4}$ inches. Packed with screws.
Dozen..... \$7.20



No. 1407 $\frac{1}{2}$ Cast bronze, polished, $\frac{7}{8}$ x $4\frac{3}{8}$ inches. Packed with screws.
Dozen..... \$18.00

Flush Cabinet Bolts



Wrought brass, polished. Packed with screws. For strikes, add \$0.25 dozen to list prices.

Length, inches.....	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
No. 30 $\frac{3}{8}$ inch wide, dozen.....	\$1.10	1.20	1.40	1.70	1.90		
No. 40 $\frac{1}{2}$ inch wide, dozen.....		1.40	1.60	....	2.20	2.70	3.10



No. 111 $\frac{3}{4}$ inch wide. Cast brass, polished. Packed with screws and strikes.

Length, inches.....	3	4	6	10	12
Dozen.....	\$4.80	6.00	8.34	13.80	15.78



Wrought Brass, Polished
Packed with screws and strikes

Length, inches.....	4	5	6	8	10	12
No. 50 $\frac{5}{8}$ inch wide, dozen..	\$3.50	3.90	4.50	6.50	7.30	
No. 60 $\frac{3}{4}$ inch wide, dozen..	3.90	4.30	5.10	7.10	9.60	11.20



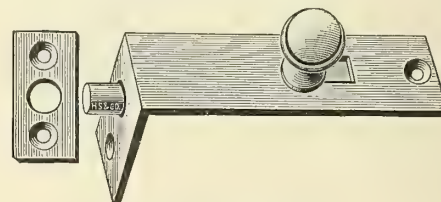
No. 55P Wrought bronze, polished, $\frac{5}{8}$ x 4 inches. Packed with screws and strikes. Dozen..... \$4.90



No. 16 P. $\frac{5}{8}$ inch wide, cast bronze, polished.
No. O.B. 16 $\frac{5}{8}$ inch wide, cast brass, old brass finish.

Packed with screws and strikes

Length, inches.....	$3\frac{1}{2}$	5	10	15	24
No. 16 P. Dozen.....	\$12.40	13.90	25.90	32.40	46.30
No. O.B. 16 Dozen.....	13.90	15.40	28.70	35.20	50.00

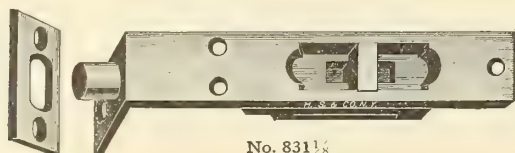


Cast Bronze, Polished
Packed with screws and strikes
No. 56 P. $\frac{5}{8}$ inch wide

Length, inches.....	2	3
Dozen.....	\$4.00	4.90

No. 66 P. $\frac{3}{4}$ inch wide

Length, inches.....	3	4	6	12
Dozen.....	\$4.90	6.20	7.40	13.90



No. 831 $\frac{1}{8}$

No. 831 $\frac{1}{8}$ Cast bronze, polished, $\frac{5}{8}$ inch wide.
Packed with screws and strikes.

Length, inches.....	3	4	5
Dozen.....	\$8.66	10.66	11.86

Secure Lever Locks

Yale Flat Key

For Tool Boxes

Half Size Illustrations



Showing Lock Closed



Keys: Two nickel-plated flat steel.
12 key changes.

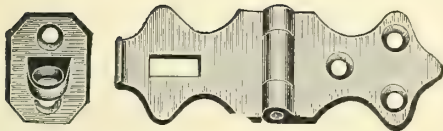
This Lock is designed especially for use on tool boxes where a permanently attached lock is desired. The lock and hasp are attached to the box with rivets or screws.

Lock is operated by a quarter turn of thumb-turn. The key operation securely deadlocks thumb-turn, making it impossible to operate same until released by key.

When hasp is in the locked position (as shown in illustration) all means of attachment are entirely concealed.

No. TA800 Made of cast brass, buffed, $3\frac{1}{2}$ inches long by $1\frac{1}{4}$ inches wide, dozen..... \$15.00

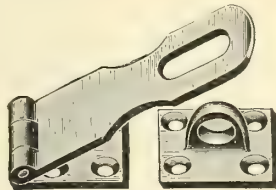
Hinge Box Hasps



No. 10 Cast brass, polished, $3\frac{1}{2}$ inches long, dozen..... \$3.50
Staples only, dozen..... 1.50



No. 03009 $\frac{1}{4}$ Wrought brass, polished, $4\frac{5}{8}$ inches long, dozen.. \$2.40
Staples only, dozen..... .90



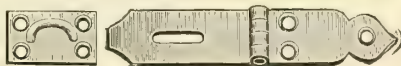
Safety Type

Cast Brass, Polished

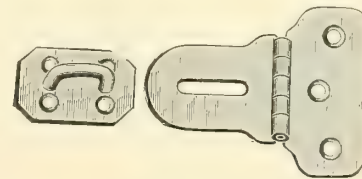
No. 100 Length $2\frac{7}{8}$ inches, dozen, \$4.20; staples only, dozen, \$1.80
No. 101 $\frac{1}{2}$ Length $3\frac{3}{4}$ inches, dozen, 5.40; staples only, dozen, 1.80

Wrought Brass, Polished

No. 1862C. Length $2\frac{3}{4}$ inches, dozen, \$2.40; staples only, dozen, .90



No. 803 Wrought brass, polished, 3 inches long, gross..... \$8.40
Staples only, dozen..... .55



No. 03025 $\frac{1}{4}$ Wrought brass, polished, $2\frac{3}{8}$ inches long, dozen.. \$1.70
Staples only, dozen..... .90

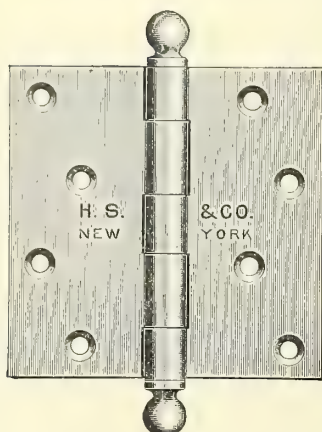


Wrought Brass, Polished

No. 804 Length $2\frac{3}{4}$ inches, gross.... \$9.30 Staples only, dozen.. \$.90
No. 806 Length $3\frac{5}{8}$ inches, gross.... 20.00 Staples only, dozen.. .90

Loose Pin Ball Tipped Butts

Cast Brass and Bronze



Per dozen pairs, packed with screws

Size Open Inches	No. 213 Cast Brass Polished	No. 2213 Cast Bronze Polished	No. O.B. 213 Cast Brass Old Brass Finish	No. S.B. 2213 Cast Bronze Statuary Bronze Finish
2 x 1½	\$9.45	\$9.45	\$10.80	
2 x 1¾	10.35	10.35	11.70	
2 x 2	11.25	11.25	12.60	\$12.60
2½ x 1¾	12.15	12.15	13.95	
2½ x 2	13.05	13.05	14.85	
2½ x 2½	13.95	13.95	15.75	15.75
3 x 2	15.21	15.21	17.01	17.01
3 x 2½	16.65	16.65	18.45	
3 x 3	20.25	20.25	22.05	22.05

Heavy Steel Bushed

Per pair, packed with screws

Size Open Inches	No. 2214 Cast Bronze Polished	No. A.C. 2214 Cast Bronze Antique Copper Polished	No. O.B. 214 Cast Brass Old Brass Finish	No. S.B. 2214 Cast Bronze Statuary Bronze Finish	No. N. 2214 Cast Bronze Nickel-plated
3½ x 3½	\$2.55	\$2.70	\$2.70	\$2.70	\$2.70
4 x 4	3.00	3.30	3.30	3.30	3.30
4½ x 4½	3.75	4.05	4.05	4.05	4.05
5 x 5	4.50	4.80	4.80	4.80	4.80
5½ x 5½	7.20	7.65	7.65	7.65	
5 x 6	9.00	9.45	9.45	9.45	
5 x 7	7.20	7.65	7.65	7.65	
6 x 6	9.00	9.45	9.45	9.45	

Extra Heavy Steel Bushed

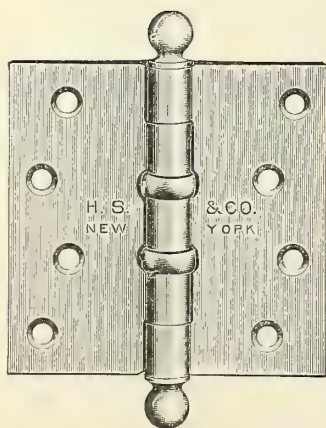
Per pair, packed with screws

Size Open Inches	No. 2215 Cast Bronze Polished	No. A.C. 2215 Cast Bronze Antique Copper Finish	No. O.B. 215 Cast Brass Old Brass Finish	No. S.B. 2215 Cast Bronze Statuary Bronze Finish
4 x 4	\$4.04	\$4.35	\$4.35	\$4.35
4½ x 4½	5.25	5.55	5.55	5.55
5 x 5	6.00	6.30	6.30	6.30
5½ x 5½	8.00	8.46	8.46	8.46
5 x 6	8.43	8.88	8.88	8.88
6 x 6	10.00	10.44	10.44	10.44
6 x 7	15.00	15.45	15.45	15.45
6 x 8	17.25	17.70	17.70	17.70

Ball Bearing

Wrought Bronze

Per pair, packed with screws



Size Open Inches	No. 2223 Polished Bronze	No. S.B. 2223 Statuary Bronze	No. A.C. 2223 Antique Copper	No. O.B. 223 Old Brass
4 x 4	\$3.55	\$3.85	\$3.85	\$3.85
5 x 5	5.05	5.35	5.35	5.35
6 x 6	9.50	10.00	10.00	10.00

Wrought Steel

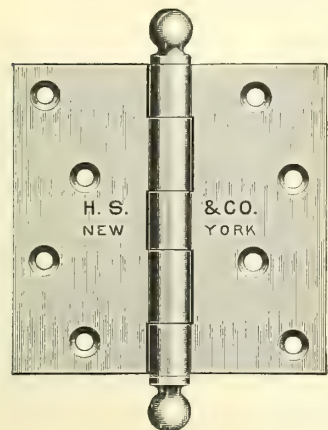
Per pair, packed with screws

Size Open Inches	No. B. 23 Bronze Plated Polished	No. S.B. 23 Statuary Bronze	No. A.C. 23 Antique Copper	No. O.B. 23 Old Brass
4 x 4	\$1.67	\$1.71	\$1.71	\$1.71
5 x 5	2.04	2.08	2.08	2.08
6 x 6	2.60	2.63	2.63	2.63

Loose Pin, Ball Tipped Butts

Wrought Steel, Polished

Per pair, packed with screws



Size, Open Inches	No. B. 24 Bronze Plated Polished	No. S.B. 24 Statuary Bronze	No. A.C. 24 Antique Copper	No. O.B. 24 Old Brass	No. B.B. 24 Bower-Barff	No. N. 24 Nickeled
2 x 2	\$.63	\$.67	\$.67	\$.67	\$.82	\$.78
2½ x 2	.68	.72	.72	.72	.90	.83
2½ x 2½	.70	.74	.74	.74	.93	.85
3 x 2½	.80	.84	.84	.84	1.05	.95
3 x 3	.82	.86	.86	.86	1.08	1.00
3½ x 3	.94	.98	.98	.98	1.30	1.12
3½ x 3½	.96	1.00	1.00	1.00	1.34	1.15
4 x 4	1.12	1.15	1.15	1.15	1.52	1.30
4½ x 4½	1.30	1.34	1.34	1.34	2.00	1.50
5 x 5	1.50	1.52	1.52	1.52	2.40	1.67
5½ x 5½	1.85	1.89	1.89	1.89	3.04	2.04
6 x 6	2.04	2.08	2.08	2.08	3.63	2.22

The 3½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 3½-inch have three knuckles

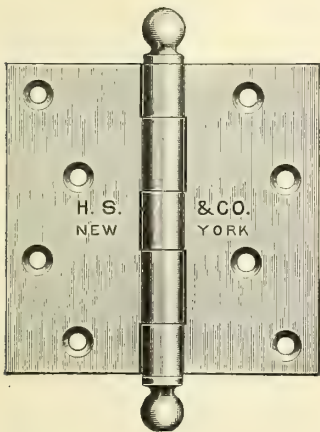


Wrought Steel, Planished

Per pair, packed with screws

Size Open Inches	No. B. 25 Bronze Plated	No. A.C. 25 Antique Copper	No. O.B. 24 Old Brass
2 x 2	\$.34	\$.34	\$.34
2½ x 2½	.35	.35	.35
3 x 3	.38	.38	.38
3½ x 3½	.40	.40	.40
4 x 4	.47	.47	.47
4½ x 4½	.74	.74	.74
5 x 5	.94	.94	.94
6 x 6	1.40	1.40	1.40

The 3½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 3½-inch have three knuckles

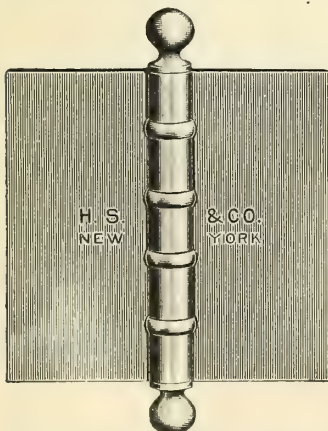


Wrought Steel, Heavy

Per pair, packed with screws

Size Open Inches	Screw Holes in Each Butt	Size of Screw No.	Per Dozen Pairs		Size Open Inches	No. G. 26 Galvanized with Brass Pins Galvanized Steel Tips
			No. 26 Bright Steel	No. J. 26 Japanned		
2½ x 2½	6	8	\$1.60	\$2.00	2½ x 2½	\$.40
3 x 3	6	9	1.85	2.15	3 x 3	.50
3½ x 3½	6	10	2.25	2.40	3½ x 3½	.65
4 x 4	8	10	2.75	2.90	4 x 4	.80
4½ x 4½	8	11	3.35	4.00	4½ x 4½	1.05
5 x 5	8	12	4.50	5.50	5 x 5	1.40
6 x 6	8	13	7.00	9.20	5½ x 5½	1.75
					6 x 6	2.10

The 3½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 3½-inch have three knuckles

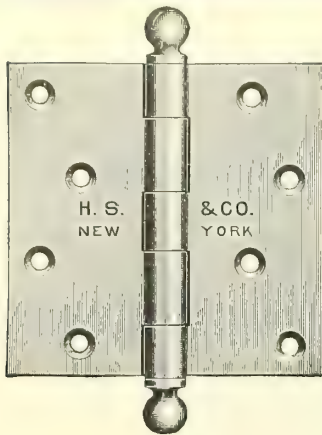


Wrought Steel Extra Heavy, Ball Bearing

These Butts are designed for heavy iron work and are furnished in plain steel without screw holes. They have four ball-bearing washers, and will not bear down under any weight. They can be cut down in width to suit special requirements.

No. 27

Size Open, Inches	Per Pair	Size Open, Inches	Per Pair
6 x 6	\$5.00	7 x 8	\$7.50
6 x 7	5.50	7 x 10	8.00
6 x 8	6.00	8 x 6	8.50
7 x 6	6.50	8 x 8	9.80
7 x 7	7.00	8 x 10	11.00



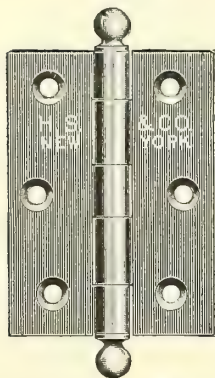
Loose Pin Ball Tipped Butts

Light, Wide Wrought Steel, Planished

Per dozen pairs, packed with screws

Size Open, Inches	No. B. 28 Planished Bronze	No. S.B. 28 Statuary Bronze	No. A.C. 28 Antique Copper	No. O.B. 28 Old Brass
2 x 2	\$4.00	\$4.45	\$4.45	\$4.45
2 x 2½	4.10	4.55	4.55	4.55
2 x 3	4.25	4.70	4.70	4.70
2½ x 2	4.15	4.60	4.60	4.60
2½ x 2½	4.25	4.70	4.70	4.70
2½ x 3	4.50	4.95	4.95	4.95
3 x 2½	4.85	5.30	5.30	5.30
3 x 3	5.00	5.45	5.45	5.45

The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.



Light, Narrow Wrought Steel, Planished

Per dozen pairs, packed with screws

Size Open, Inches	No. B. 29 Planished Bronze	No. S.B. 29 Statuary Bronze	No. A.C. 29 Antique Copper	No. O.B. 29 Old Brass
1½ x 1½	\$2.90	\$3.35	\$3.35	\$3.35
1½ x 1¾	3.20	3.65	3.65	3.65
2 x 1½	3.60	4.05	4.05	4.05
2½ x 1½	3.75	4.20	4.20	4.20
2½ x 1¾	3.90	4.35	4.35	4.35
3 x 2	4.60	5.05	5.05	5.05
3½ x 2½	5.50	6.00	6.00	6.00
4 x 2½	6.50	7.00	7.00	7.00

The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.



Ornamental Surface Door Butts

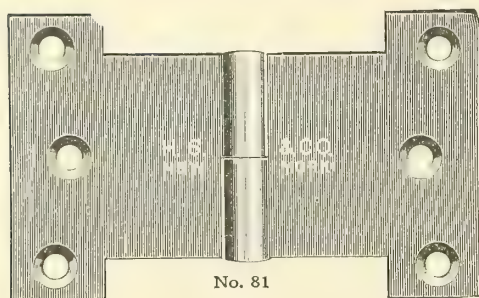
Beveled Edge. Wrought Steel, Planished

These Hinges are reversible, and can be made either right or left hand by unscrewing the ball tip, reversing the pin and screwing the tip in the opposite end. One tip is slotted so it may be easily taken out with a screwdriver. Time and labor are saved in hanging doors with these hinges as the casement only is mortised, the door put in place and the ornamental leaf screwed to the surface of the door.

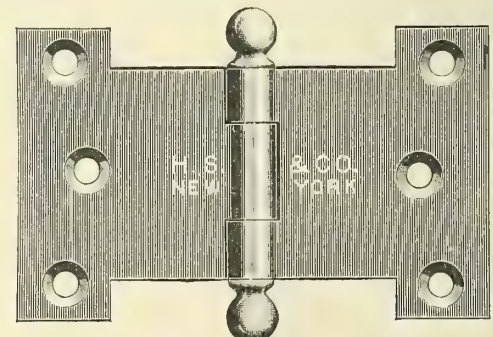
Per pair, packed with screws

Length of Joint Inches	No. B. 31 Bronze	No. O.B. 31 Old Brass	No. N. 31 Nickel
3	\$.63	\$.63	\$.78
3½	.69	.69	.86
4	.80	.80	.98
4½	1.04	1.04	1.22

Wrought Steel Parliament Butts



No. 81



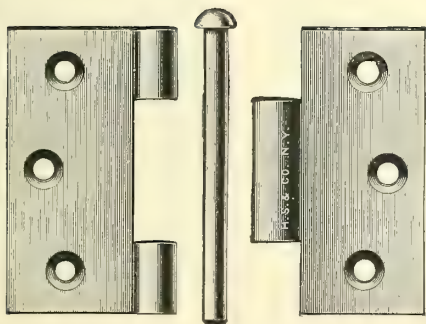
No. 82

Per dozen pairs, packed with screws

Width open, inches.....	3½	4	4½	5	6
Size of screw, number.....	9	9	9	9	10
Width between flanges, inches.....	2	2½	2¾	3¾	4¾
Length of joint, inches.....	1¾	1¾	1¾	1¾	2
Length of sides, inches.....	2½	2½	2½	2½	2½
No. B. 81, planished and bronzed.....	\$7.50	8.10	8.80	9.70	11.60
No. G.B. 81, galvanized, with brass pins.....	6.75	7.30	7.90	8.75	10.50
With ball tips and loose pins, No. B. 82, planished and bronzed.....	4.85	5.30	5.80	6.50	8.00

Loose Pin Butts

Wrought Steel. Reversible. Heavy



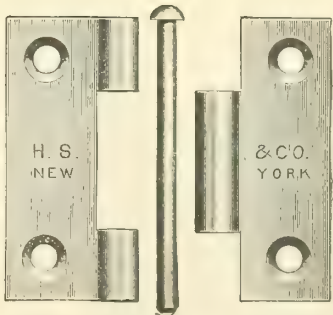
Size Open Inches	Screw Holes in Each Butt	Size of Screw Number	No. 32 Bright Steel Per Dozen Pair	No. B32 Planished Light Bronze Per Dozen Pair Packed with Screws
2 x 2	4	7	\$1.40	\$2.80
2 x 2½	4	7	1.50	3.00
2½ x 2	6	8	1.60	3.60
2½ x 2½	6	8	1.80	3.80
2½ x 3	6	8	2.20	3.95
3 x 2½	6	9	2.40	4.20
3 x 3	6	9	2.60	4.50
3 x 3½	6	9	3.00	4.90
3½ x 3	6	10	3.60	5.30
3½ x 3½	6	10	3.80	5.60
3½ x 4	6	10	4.30	5.90
4 x 3½	8	10	4.60	6.30
4 x 4	8	10	4.70	6.80
4 x 4½	8	10	4.80	7.15
4½ x 4	8	11	5.30	7.90
4½ x 4½	8	11	5.90	8.50
5 x 5	8	12	7.70	11.00
5½ x 5½	8	13	9.60	13.00
6 x 6	8	13	11.40	14.00

The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.

Wrought Steel. Reversible. Light

Size Length Inches	Width Open Inches	Screw Holes in Each Butt	Size of Screw Number	No. 33 Bright Steel Per Dozen Pair	No. B33 Planished Light Bronze Per Dozen Pair Packed With Plated Screws
1½	1⅞	4	5	\$.90	\$1.05
1¾	1⅞	4	5	1.00	1.16
2	1⅞	4	6	1.10	1.30
2¼	1⅞	6	6	1.25	1.44
2½	1⅞	6	6	1.45	1.57
2¾	1⅞	6	7	1.55	1.65
3	2	6	7	1.80	1.75
3¼	2⅞	6	8	2.25	2.10
3½	2¼	6	8	2.70	2.40
3¾	2½	6	8	3.30	3.00
4	2⅞	8	9	3.70	3.00
4½	3	8	10	4.45	
5	3⅞	8	10	5.50	
5½	3⅞	8	10	7.50	
6	3⅞	8	11	8.85	

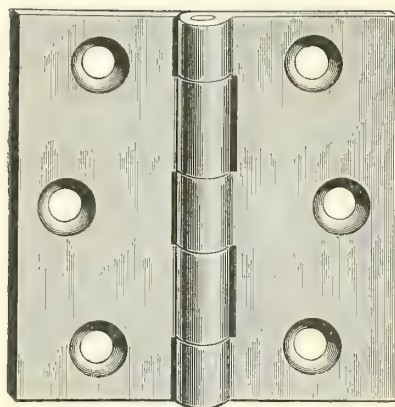
The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.



Fast Joint Butts

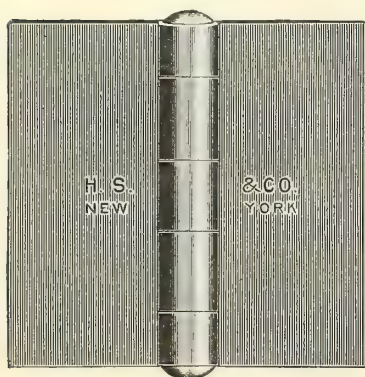
Cast Brass and Bronze. Brass Pin

Per Dozen Pairs



Size Inches	No. E. 242 Cast Brass Emery Finish Without Screws	No. 242 Cast Brass Polished With Screws	No. O.B. 242 Cast Brass Old Brass Finish With Screws	No. 2242 Cast Bronze Polished With Screws	No. S.B. 2242 Cast Bronze Statuary Bronze Finish, with Screws
1½ x 1¼	\$3.30	\$4.50	\$5.85	\$4.50	\$5.85
1½ x 1½	3.60	5.04	6.39	5.04	6.39
1¾ x 1½	3.99	5.40	6.75	5.40	6.75
1¾ x 1¾	4.20	5.58	6.93	5.58	6.93
2 x 1½	4.59	7.20	8.55	7.20	8.55
2 x 2	5.40	9.00	10.35	9.00	10.35
2¼ x 2	6.30	9.36	11.16	9.36	11.16
2½ x 1¾	6.66	9.90	11.70	9.90	11.70
2½ x 2	7.20	10.80	12.60	10.80	12.60
2½ x 2½	8.10	11.70	13.50	11.70	13.50
3 x 2	9.00	12.96	14.76	12.96	14.76
3 x 2½	10.26	14.40	16.20	14.40	16.20
3 x 3	12.00	18.00	19.80	18.00	19.80
3½ x 3	18.00	22.50	24.30	22.50	24.30
3½ x 3½	19.80	25.20	27.00	25.20	27.00
4 x 4	28.80	32.40	36.00	32.40	36.00

Wrought Steel. Extra Heavy. Without Screw Holes. For Iron Shutters, Gates, Jail Work, Etc.

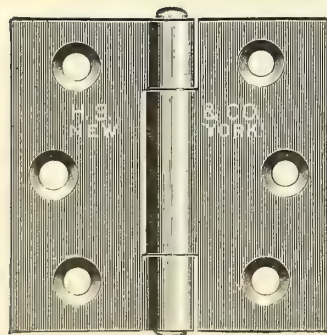


No. 43 Plain Steel

Size Open, Inches	Per Dozen Pairs	Size Open, Inches	Per Dozen Pairs
2 x 2	\$1.80	3½ x 5	\$7.00
2½ x 2½	3.00	4 x 3	7.00
3 x 3	4.00	4 x 3½	7.50
3 x 3½	4.50	4 x 4	8.00
3½ x 3	5.50	4 x 5	9.50
3½ x 3½	6.00	4½ x 4½	10.00
3½ x 4	6.50	5 x 5	15.00

Wrought Steel. Broad

No. 44 Plain Steel



Size Open, Inches	Screw Holes in Each Butt	Size of Screw Number	Per Dozen Pairs
3 x 3	6	9	\$2.40
3½ x 3½	6	10	3.50
4 x 4	8	10	4.30
4½ x 4½	8	11	5.60
5 x 5	8	12	6.90
6 x 6	8	13	10.20

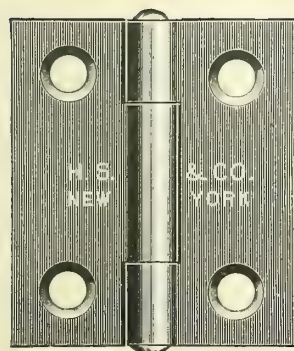
Plated. Per Dozen Pairs. Packed with Screws

Size Open, Inches	No. B. 44 Planished Bronze	No. O.B. 44 Planished Old Brass	No. A.C. 44 Planished Antique Copper	No. G.B. 44 Galvanized With Brass Pins
3 x 3	\$2.70	\$3.40	\$3.40	\$3.60
4 x 4	4.10	4.80	4.80	6.80
4½ x 4½	5.10	5.80	5.80	8.50
5 x 5	6.60	7.30	7.30	12.00
6 x 6	10.50	11.20	11.20	16.30

Fast Joint Butts

Wrought Steel. Narrow

No. 45 Bright Steel



Length Inches	Width, Open Inches	Screw Holes in Each Butt	Size of Screws Number	Dozen Pairs
1	1 ³ / ₁₆	4	5	\$.40
1 ¹ / ₄	1 ⁵ / ₁₆	4	6	.50
1 ¹ / ₂	1 ⁷ / ₁₆	4	6	.65
1 ³ / ₄	1 ⁹ / ₁₆	4	6	.80
2	1 ¹¹ / ₁₆	4	7	.90
2 ¹ / ₄	1 ³ / ₄	6	7	1.05
2 ¹ / ₂	1 ⁷ / ₈	6	7	1.10
2 ³ / ₄	2	6	8	1.30
3	2 ¹ / ₈	6	8	1.45
3 ¹ / ₄	2 ³ / ₁₆	6	8	1.70
3 ¹ / ₂	2 ¹ / ₂	6	9	2.00
3 ³ / ₄	2 ⁵ / ₈	6	9	2.70
4	2 ⁷ / ₈	8	9	2.85
4 ¹ / ₂	3	8	10	3.70
5	3 ¹ / ₄	8	11	4.60
5 ¹ / ₂	3 ³ / ₁₆	8	11	6.00
6	4 ¹ / ₁₆	8	12	7.10
7	4 ³ / ₈	8	13	11.50
8	4 ⁷ / ₈	8	14	19.00

Plated. Per Dozen Pairs. Packed with Screws

No. 45 Steel

No. 46 Steel

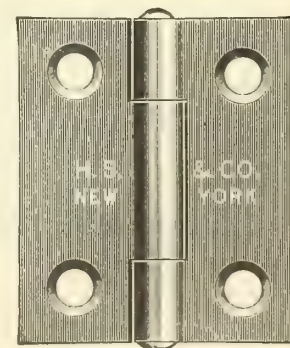
Length Inches	No. B. 45 Planished Bronze Plated	No. A.C. 45 Planished Antique Copper	No. S.B. 45 Planished Statuary Bronze	No. O.B. 45 Planished Old Brass	No. 1315 Galvanized With Brass Pins
1	\$.70	\$1.00	\$1.00	\$1.00	
1 ¹ / ₄	.75	1.07	1.07	1.07	
1 ¹ / ₂	.82	1.15	1.15	1.15	\$1.00
1 ³ / ₄	.90	1.22	1.22	1.22	1.25
2	1.05	1.37	1.37	1.37	1.40
2 ¹ / ₄	1.25	1.57	1.57	1.57	
2 ¹ / ₂	1.40	1.75	1.75	1.75	1.90
3	1.70	2.35	2.35	2.35	2.50
3 ¹ / ₂	2.20	2.85	2.85	2.85	3.70
4	3.00	3.65	3.65	3.65	5.00
4 ¹ / ₂	4.00	4.65	4.65	4.65	6.00
5	5.00	5.65	5.65	5.65	7.70

Length Inches	No. B. 46 Planished Bronze Plated	No. A.C. 46 Planished Antique Copper	Nos. B. 46 Planished Statuary Bronze	No. O.B. 46 Planished Old Brass	No. B.B. 46 Bower Barff	No. G. 46 Galvanized With Brass Pins
3 ³ / ₄	\$.50	\$.82	\$.82	\$.82		
1	.65	.97	.97	.97		
1 ¹ / ₄	.70	1.02	1.02	1.02		
1 ¹ / ₂	.75	1.07	1.07	1.07		\$.90
1 ³ / ₄	.83	1.15	1.15	1.15		
2	.92	1.25	1.25	1.25	2.70	1.30
2 ¹ / ₄	1.03	1.35	1.35	1.35	3.40	1.50
2 ¹ / ₂	1.13	1.45	1.45	1.45	3.95	1.70
2 ³ / ₄	1.20	1.55	1.55	1.55		
3	1.25	1.85	1.85	1.85	5.20	2.30
3 ¹ / ₄	1.60	2.25	2.25	2.25		
3 ¹ / ₂	1.90	2.55	2.55	2.55	7.00	3.50
3 ³ / ₄	2.25	2.90	2.90	2.90		
4	2.50	3.15	3.15	3.15		4.80
4 ¹ / ₂	3.35	4.00	4.00	4.00		
5	4.20	4.85	4.85	4.85		

Wrought Steel. Light Narrow

No. 46 Bright Steel

Length Inches	Width, Open Inches	Screw Holes in Each Butt	Size of Screws Number	Dozen Pairs
3 ³ / ₄	1 ¹¹ / ₁₆	4	2	\$.40
1	1	4	3	.40
1 ¹ / ₄	1 ¹ / ₁₆	4	4	.50
1 ¹ / ₂	1 ⁷ / ₁₆	4	5	.65
1 ³ / ₄	1 ⁹ / ₁₆	4	5	.80
2	1 ¹¹ / ₁₆	4	6	.90
2 ¹ / ₄	1 ¹¹ / ₁₆	6	6	1.05
2 ¹ / ₂	1 ¹¹ / ₁₆	6	6	1.10
2 ³ / ₄	1 ⁷ / ₈	6	7	1.30
3	2	6	7	1.45
3 ¹ / ₄	2 ¹ / ₈	6	8	1.70
3 ¹ / ₂	2 ¹ / ₄	6	8	2.00
3 ³ / ₄	2 ¹ / ₂	6	8	2.70
4	2 ⁷ / ₈	8	9	2.85
4 ¹ / ₂	3	8	10	3.70
5	3 ³ / ₁₆	8	10	4.60
5 ¹ / ₂	3 ¹¹ / ₁₆	8	10	6.00
6	3 ¹⁵ / ₁₆	8	11	7.10

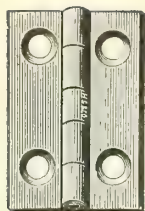


SINCE
1848

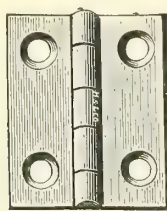
HAMMACHER SCHLEMMER & CO.

NEW
YORK

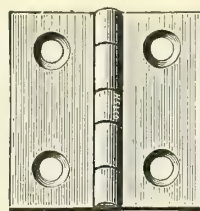
Wrought Brass Butts



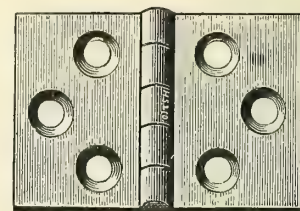
1-inch Narrow



1-inch Middle



1-inch Broad



1-inch Desk

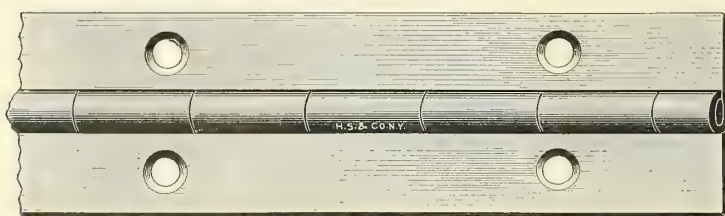
Narrow, Middle and Broad Butts up to and including 1½-inch have four screw holes. Larger sizes and all Desk Butts have six screw holes.

NARROW				MIDDLE				BROAD				DESK			
Length Inches	Width Open Inches	Size Screw Number	Dozen Pairs	Width Open Inches	Size Screw Number	Dozen Pairs		Width Open Inches	Size Screw Number	Dozen Pairs		Width Open Inches	Size Screw Number	Dozen Pairs	
1½	7/16	0	\$.24	9/16	0	\$.26		5/8	0	\$.28					
3/4	5/8	1	.28	11/16	2	.30		1	2	.32		1 5/16	2	\$.40	
7/8	5/8	1	.30	13/16	2	.34		2 3/32	2	.36		1 13/16	3	.50	
1	3/4	2	.32	15/16	3	.38		1 1/32	3	.40		1 1/2	4	.60	
1 1/8	11/16	2	.40	17/16	3	.44		1 1/8	3	.48		1 5/8	4	.72	
1 1/4	3/4	3	.46	19/16	3	.48		1 1/4	3	.54		1 7/8	4	.84	
1 3/8	7/8	4	.50	21/16	4	.56		1 3/8	4	.60		2	5	1.10	
1 1/2	7/8	3	.52	1	4	.60		1 1/2	4	.68		2	5	1.20	
1 5/8	29/32	4	.60	1 1/16	4	.68		1 5/8	4	.76		2 5/16	5	1.50	
1 3/4	31/32	4	.68	1 3/16	4	.76		1 3/4	4	.84		2 7/16	6	2.00	
1 7/8	1 1/16	5	.76	1 5/16	5	.84		1 7/8	5	.96		2 3/4	7	2.40	
2	1	5	.80	1 7/16	5	.92		2	5	1.04		3 1/16	7	2.80	
2 1/4	1 3/16	6	1.12	1 9/16	6	1.30		2 1/4	6	1.50					
2 1/2	1 1/2	7	1.40	1 11/16	7	1.70		2 1/2	7	2.00					
2 3/4	1 1/2	7	2.00	1 3/4	7	2.30		2 3/4	7	2.60					
3	1 5/8	7	2.50	1 7/8	8	3.00		3	8	3.50					

We can furnish these Butts in quantities in any finish. Prices quoted on receipt of specifications. They can be furnished polished on face only on face and back of joint, or on back of joint only.

Continuous Hinges

Full Size Cut



The following lengths are carried regularly in stock: 51, 52, 52½, 53, 53½, 54, 54½, 55, 55½, 56, 56½, 57, 58, 58½, 59, 60, 61, 61½, 62, 62½, 63, 63½ and 64 inches in nickel-plated; in brass polished we have 54 and 62 inches. We can supply any length to order up to 72 inches. Special facilities for supplying talking machine and humidior lengths.

We can also supply hinges of special design for automobile wind shields, etc.

Brass, Polished or Nickel-plated, Double Metal

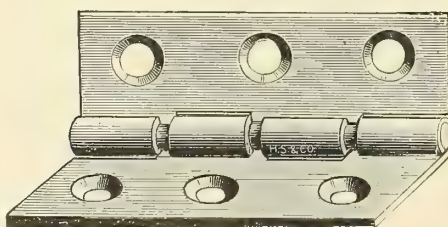
Case lots (50 hinges), per foot. \$.11
Less than case lots, per foot.12½

Stop Butts

Wrought Brass



No. 274N 1 inch long, for ¼-inch stock. Double thick brass, nicked. Suitable for jewelry cases, light boxes, etc. Gross pairs. \$9.00



Length Inches	Width of Flap from Center of Pin Inch	Size Screw Number	Holes in Each Butt	Dozen Pairs	
				Number 248D Brass	Number 248N Nickel- plated
1	3/8	2	4	\$.85	\$1.25
1 1/4	3/8	2	4	1.20	1.60
1 1/2	7/16	3	4	1.40	1.90
1 3/4	1/2	5	6	1.70	2.20
2	5/8	6	6	2.00	2.50

We also have the 2-inch size with one wide flap, measuring 7/8 inch from center of pin; other flap is 5/8 inch.
No. 249D Brass, dozen pairs. \$2.25
No. 249N Nickel-plated, dozen pairs. 2.75

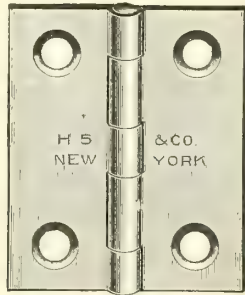
Wrought Steel Furniture Butts

Per 100 Dozen Pairs. Packed in Bulk, without Screws



Nos. 298 and 299

No. 298 1½-inch tight pin, ball tips.
No. 299 1½-inch loose pin, ball tips.



No. 300

1½-inch, tight pin, no tips



No. 308

1¼-inch, tight pins, flush riveted

These Butts are made from cold rolled steel, which gives them a bright smooth surface

Length Inches	Pattern	Width Open Inches	Screws		Dozen Pairs in a Case	No. 298C7 Brass- plated	No. 298D Dull, Copper- plated	No. 298N9 Nickel- plated	No. 299C7 Brass- plated	No. 299D Dull, Copper- plated	No. 299N7 Nickel- plated
			Length Inch	Number							
1	Regular	1	½	3	200	\$16.50	\$16.50	\$27.59	\$20.00	\$20.00	\$29.86
1¼	Regular	1	½	4	200	18.22	18.22	29.30	21.00	21.00	30.86
1½	Regular	1¼	½	4	200	19.89	19.89	30.57	22.50	22.50	33.07
1½	Special	1½	½	4	100	24.83	24.83	35.51	26.00	26.00	36.68
1¾	Regular	1¼	½	5	100	23.11	23.11	33.83	24.76	24.76	35.21
1¾	Special	1½	½	5	100	25.22	25.22	35.94	27.50	27.50	37.96
2	Regular	1½	½	5	100	25.44	25.44	37.00	27.78	27.78	39.33
2	Special	1¾	½	5	100	30.56	30.56	37.90	32.78	32.78	44.33
2½	Regular	1½	¾	6	50	29.72	29.72	37.07	32.70	32.70	44.25

In above table the 1¾, 2 and 2½-inch Butts have six screw holes; smaller sizes, four

Length Inches	Pattern	Width Open Inches	Screws		Dozen Pairs in a Case	No. 300 Bright Steel	No. 300C7 Brass-plated	No. 300D Dull Copper-plated	No. 300N7 Nickel-plated
			Length Inch	Number					
¾	Broad	1½	¾	3	300	\$6.90	\$7.67	\$7.67	\$16.63
1	Middle	1½	¾	3	300	7.00	7.78	7.78	17.63
1	Broad	1½	¾	3	300	7.30	8.11	8.11	17.97
1¼	Broad	1	½	4	200	9.60	10.67	10.67	20.52
1½	Broad	1¼	½	4	200	10.66	11.83	11.83	22.52
1½	Broad special	1½	½	4	100	12.90	14.33	14.33	25.01
1¾	Broad	1¼	½	5	100	12.86	14.28	14.28	24.88
1¾	Broad special	1½	½	5	100	15.26	16.94	16.94	27.54
2	Broad	1½	½	5	100	15.00	16.67	16.67	28.22
2	Broad special	1¾	½	5	100	19.50	21.67	21.67	33.22

In above table the 1¾ and 2-inch butts have six screw holes; smaller sizes, four

Length Inches	Width Open Inches	Screws		Dozen Pairs in a Case	No. 308 Bright Steel	No. 308C7 Brass-plated	No. 308D Dull Copper-plated	No. 308N7 Nickel-plated
		Length, Inch	Number					
1	1½	½	4	200	\$10.00	\$11.11	\$11.11	\$20.97
1¼	1½	½	5	100	12.00	13.33	13.33	22.44
1½	2	¾	5	100	14.00	15.56	15.56	26.23

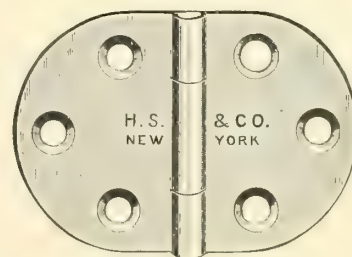
No. 310 Loose joint, ball tips, four screw holes.

1½ inches long; 1¼ inches wide, open. Takes No. 4 screw, ½ inch long. 100 dozen pairs in a case.

No. 310C7 Brass-plated \$27.78

No. 310D Dull copper-plated 27.78

No. 310N7 Nickel-plated 38.46



No. 309 Tight pins, flush riveted

1¼ inches long; 1½ inches wide, open. Takes No. 5 Screw, ½ inch long. 100 dozen pairs in a case.

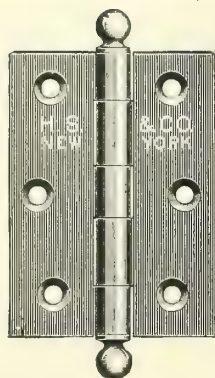
No. 309 Bright steel \$14.00

No. 309C7 Brass-plated 15.56

No. 309D Dull, copper-plated 15.56

No. 309N7 Nickel-plated 25.41

Wrought Brass Furniture Butts



No. 110 Polished on face and back of joint.
No. 110N Nickel-plated and polished on face and back of joint.
No. 111 Dipped.
Other finishes to order. Price on receipt of specifications and quantities.

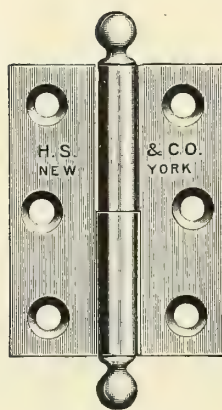
Size Inches	Size Screw No.	No. 110	No. 110NP	No. 111
1 1/4 x 1 1/8	3	....	....	\$1.00
1 1/2 x 1 1/4	4	\$2.10	....	1.20
1 3/4 x 1 1/4	4	....	....	1.40
2 x 1 3/8	5	3.30	\$3.30	1.80
2 x 1 3/4	6	3.50	....	1.90
2 1/2 x 1 3/4	7	4.30	4.30	2.60
3 x 2 1/8	8	6.60	....	5.00

Wardrobe Hinges

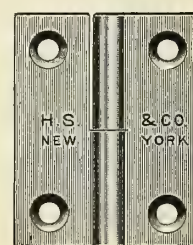
Wrought Steel



Loose Joint
German Pattern
Nos. 90 and K90



Loose Joint
American Pattern
Nos. 92 and K92



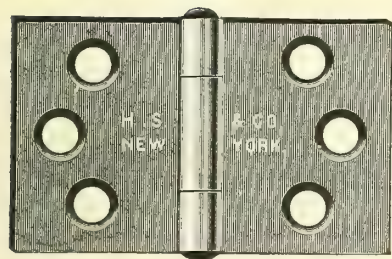
Loose Joint
American Pattern
Nos. 94 and K94

List Per Dozen Pairs

No.	Finish	Packed	Length 1 3/4 Inches	Length 2 Inches	Length 2 1/2 Inches
90	Bright Steel	Without Screws	....	....	\$2.45
K90	Brass-plated	Without Screws	....	....	3.15
92	Bright Steel	Without Screws	....	....	2.40
K92	Brass-plated	With Screws	....	....	3.50
94	Bright Steel	Without Screws	\$1.00	\$1.10	1.45
K94	Brass-plated	With Screws	1.50	1.90	2.30

Inside Blind Butts

Wrought Steel
Per Dozen Pairs



Size, Inches	Size Screw Number	No. 51 Bright Steel Without Screws	No. B51 Planished Bronze Packed with Screws to Match
7⁄8 x 1 9⁄16	4	\$.55	\$.70
1 x 1 5⁄8	4	.60	.75
1 1⁄8 x 1 3⁄4	5	.65	.80
1 1⁄4 x 1 7⁄8	5	.70	.84
1 3⁄8 x 2	5	.75	.90
1 1⁄2 x 2 1⁄8	5	.80	.95
1 3⁄4 x 2 3⁄8	5	.95	1.05
2 x 2 1⁄2	6	1.20	1.30
2 1⁄2 x 2 1⁄2	6	1.60	1.75
3 x 3	7	2.00	2.25

Cast Brass and Bronze
Per Dozen Pairs, Packed with Screws to Match

Size, Inches	No. 251 Cast Brass Polished	No. 2251 Cast Bronze Polished	Size, Inches	No. 251 Cast Brass Polished	No. 2251 Cast Bronze Polished
1 1⁄4 x 1 3⁄4	\$5.04	\$5.04	1 3⁄4 x 2	\$8.10	\$8.10
1 1⁄4 x 2	6.30	6.30	1 3⁄4 x 2 1⁄2	9.90	9.90
1 1⁄4 x 2 1⁄4	7.95	7.95	2 x 2 1⁄2	10.80	10.80
1 1⁄2 x 1 3⁄4	5.40	5.40	2 x 3	12.96	12.96
1 1⁄2 x 2	7.20	7.20			
1 1⁄2 x 2 1⁄2	9.54	9.54			
1 1⁄2 x 3	11.70	11.70			

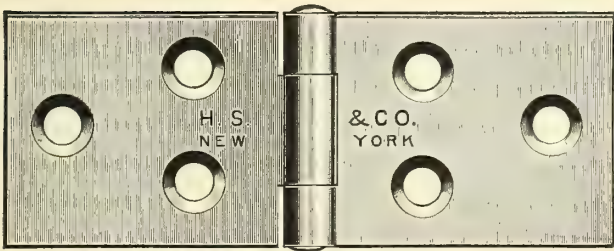
Wrought Brass. No. 251D

Size, inches.....	1 1⁄2 x 1 1⁄2	1 1⁄2 x 2 1⁄4	2 x 2	2 x 2 1⁄2
Dozen pairs.....	\$1.10	1.50	2.00	2.50

Back Flaps

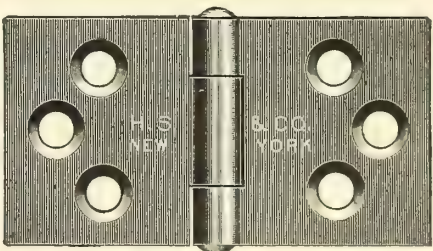
Wrought Steel, Wide

Per Dozen Pairs



Length Inches	Width, Open Inches	Screw Holes in Each Hinge	Size Screw Number	No. 56 Bright Steel	No. GB56 Galvanized Brass Pins Packed with Screws to Match
3⁄4	2 3⁄4	4	6	\$.70	\$1.50
7⁄8	2 11⁄16	6	6	.75	1.60
1	2 7⁄8	6	6	.80	1.80
1 1⁄8	3	6	6	.90	2.00
1 1⁄4	3 3⁄16	6	7	1.00	2.20
1 3⁄8	3 3⁄8	6	7	1.10	2.50
1 1⁄2	3 7⁄16	6	8	1.20	2.70
1 5⁄8	3 7⁄8	6	8	1.30	3.00
1 3⁄4	4	6	8	1.45	3.20
2	4 3⁄8	6	8	1.70	3.75
2 1⁄4	5 1⁄16	6	9	2.35	5.70
2 1⁄2	5 7⁄8	6	10	3.40	8.00
2 3⁄4	6 1⁄4	6	11	3.90	9.20
3	6 3⁄4	8	11	4.30	10.50

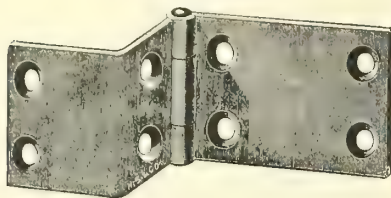
Wrought Steel, Square



Size, Length of Joint Inches	Width, Open Inches	Screw Holes in Each Hinge	Size of Screw Number	No. 58 Bright Steel	No. GB58 Galvanized Brass Pins Packed with Screws to Match
1	2	6	6	\$.75	\$1.60
1 1⁄8	2 1⁄4	6	6	.80	1.75
1 1⁄4	2 5⁄16	6	7	.90	2.00
1 3⁄8	2 9⁄16	6	7	1.00	2.25
1 1⁄2	2 3⁄4	6	8	1.05	2.50
1 5⁄8	3	6	8	1.20	2.75
1 3⁄4	3 3⁄16	6	8	1.30	3.00
2	3 1⁄16	6	8	1.40	3.50
2 1⁄4	4 1⁄8	6	9	2.10	5.00
2 1⁄2	4 5⁄8	6	10	3.00	7.00
2 3⁄4	5 1⁄4	6	11	3.60	8.50
3	5 1⁄2	8	11	4.00	9.80

Chest Hinges

Wrought Steel

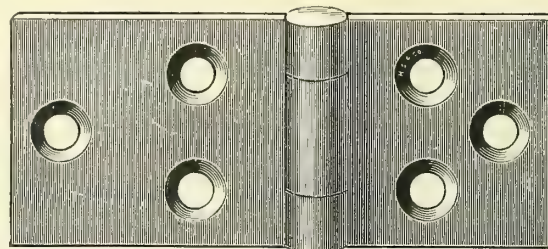


No. 61

Length Inches	Width of Offset From Joint to Bend Inch	Screw Holes in Each Hinge	Size Screw Number	Dozen Pairs
1 1/2	1 1/2	7	7	\$1.35
1 1/2	5/8	7	7	1.35
1 1/2	3/4	8	7	1.35
1 1/2	7/8	8	7	1.35
2	1 1/2	7	8	1.90
2	5/8	7	8	1.90
2	3/4	8	8	1.90
2	7/8	8	8	1.90

Table Hinges

Wrought Steel Flush Riveted

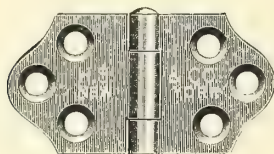


No. 59

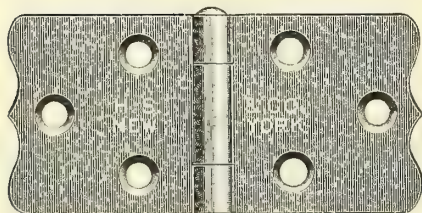
Length Inches	Width Open Inches	Size Screw Number	Dozen Pairs
7/8	2 9/16	6	\$.70
1	2 5/8	6	.75
1 1/8	2 3/4	7	.80
1 1/4	2 7/8	7	.90
1 3/8	2 13/16	7	1.00
1 1/2	3 1/8	8	1.05
1 5/8	3 1/8	8	1.20
1 3/4	3 1/8	9	1.30
2	3 13/16	9	1.40

Wash Tray Hinges

Half Size Cuts



1 1/2 and 1 3/4 inches



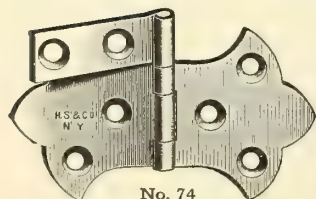
No. 1036 2 inches

Galvanized Brass Pins Packed with Screws to Match

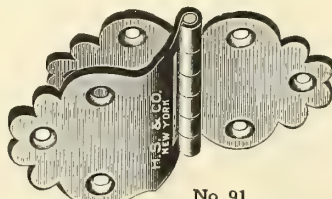
Length, inches.....	1 1/2	1 3/4	2
Width open, inches.....	2 3/4	3 1/8	4 1/8
Dozen pairs.....	\$2.25	2.70	3.25

Water Closet Flaps

Half Size Cuts



No. 74



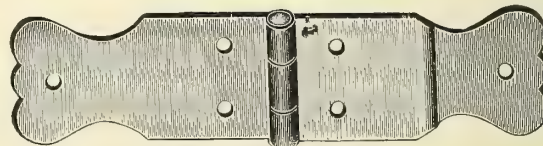
No. 91

Wrought Brass Nickel-Plated Packed with Screws

Number.....	74	91	
Dozen pairs.....	\$1.50	3.40	Pair..... \$4.00

Trunk Hinges

Half Size Cut



No. 1039

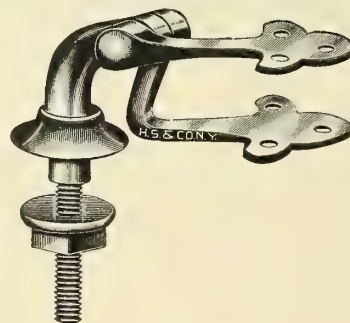
Wrought Steel Japanned

5 3/4 inches wide when open

Dozen pairs..... \$.90

Offset Double Seat Flaps

Half Size Cut



No. 1199

Cast Brass Nickel-Plated

Packed with screws

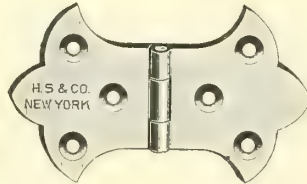
Fancy Hinges

Half Size Cuts



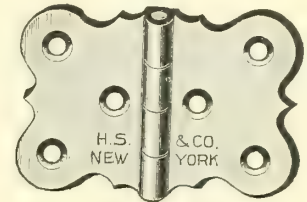
No. 76 Wrought Brass
Per Dozen Pairs

Dipped.....	\$.80
Polished.....	1.10
Nickel-plated.....	1.10



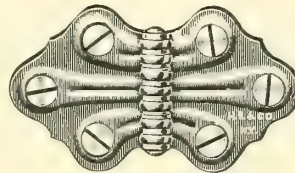
No. 75 Wrought Brass
Per Dozen Pairs

Dipped.....	\$1.00
Polished.....	1.20
Nickel-plated.....	1.20



No. 50 Wrought Brass
Per Dozen Pairs

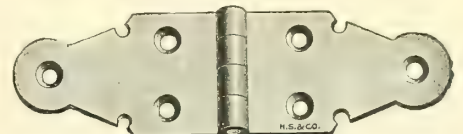
Polished.....	\$2.90
Nickel-plated.....	2.90



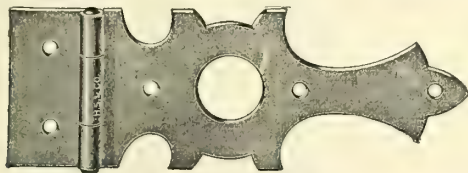
No. 1430 Wrought Brass
Per Dozen Pairs, Packed with Screws
Polished..... \$2.70
Nickel-plated..... 4.15



No. 02128 1/4 Wrought brass, polished, per dozen pairs..... \$2.40

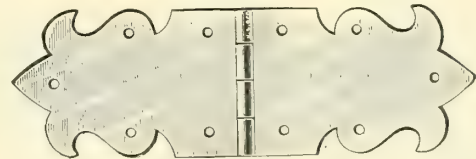


No. 79 Wrought brass, polished, per dozen pairs..... \$2.10



No. 1400A Wrought Steel, Planished and Bronzed
Packed with screws

Length of ornamental strap 4 inches; length of joint 1 3/4 inches; dozen pairs.....	\$3.00
Length of ornamental strap 4 3/4 inches; length of joint 1 3/4 inches; dozen pairs.....	3.30



No. 1070 Sheet brass, polished, dozen pairs..... \$2.80

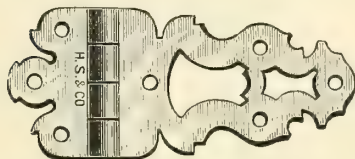
This style can be supplied brass-plated. Prices on receipt of quantity specifications.

No. 1080 Sheet brass, polished, dozen pairs.. \$3.60

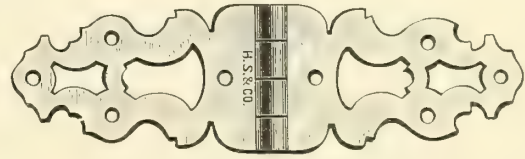


This style can be supplied brass-plated. Prices on receipt of quantity specifications.

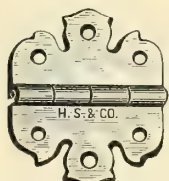
Two-thirds Size Cuts



No. 1348 Wrought brass, polished, gross pairs..... \$12.60



No. 1349 Wrought brass, polished, gross pairs..... \$15.00



No. 1350 Wrought brass, polished, gross pairs..... \$16.00

No. 1350N Wrought brass, nickel-plated, gross pairs..... 16.00



No. 3 Stamped brass, dipped, gross pairs..... \$8.40

No. 3N Stamped brass, nickel-plated, gross pairs..... 10.50

SINCE
1848

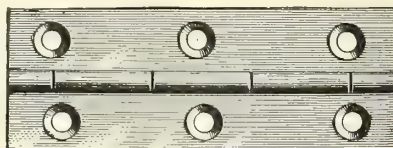
HAMMACHER SCHLEMMER & CO. NEW YORK

Fancy Hinges

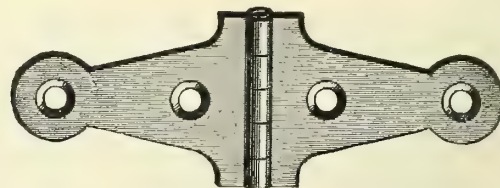
Full Size Cuts



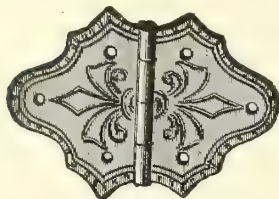
No. 10



No. 933



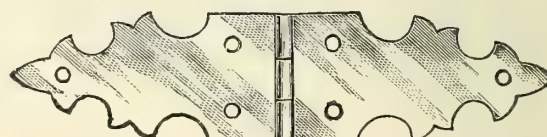
No. 4



No. 905



No. 918



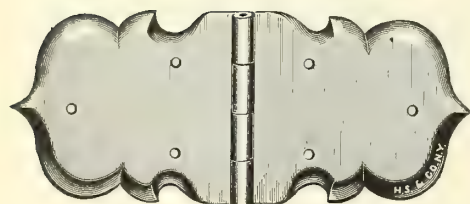
No. 5



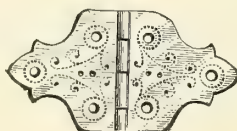
No. 915



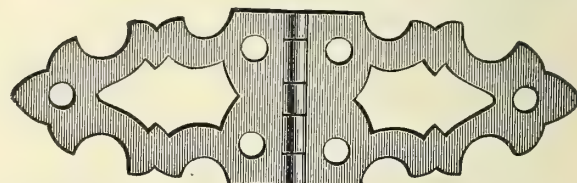
No. 946, $\frac{1}{8}$ x 3 inches. No. 947, $\frac{1}{8}$ x $4\frac{7}{8}$ inches



No. 7



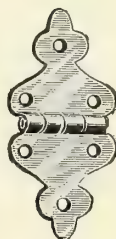
No. 2



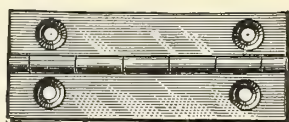
No. 6



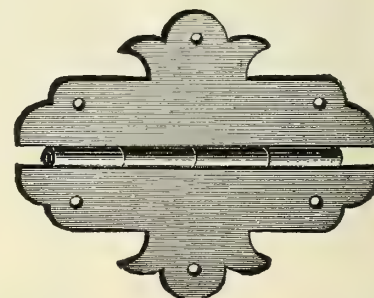
No. 919



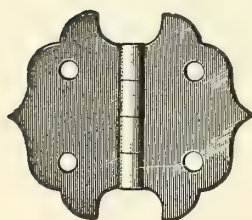
No. 1



No. 936



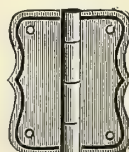
No. 904



No. 8



No. 11



No. 12



No. 1X



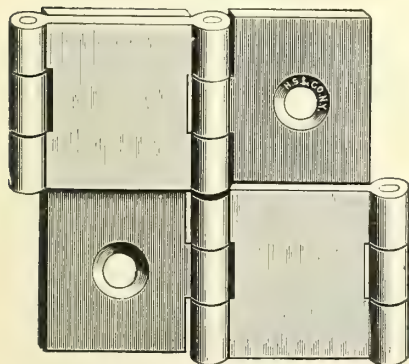
No. 930, $\frac{3}{4}$ x 3 inches. No. 938, $\frac{3}{4}$ x 12 inches

Double Metal

Number	Material	Finish	Gross Pairs Without Screws or Pins	Number	Material	Finish	Gross Pairs Without Screws or Pins
1	Stamped brass	Dipped	\$.90	905	Stamped brass	Dipped	\$3.00
1X	Stamped brass	Dipped	.72	905N	Stamped brass	Nickel-plated	3.00
2	Stamped brass	Dipped	2.10	915	Wrought brass	Polished	3.90
4	Wrought brass	Dipped	5.50	915N	Wrought brass	Nickel-plated	3.90
5	Stamped brass	Dipped	4.50	918	Wrought brass	Polished	4.50
6	Wrought brass	Dipped	5.40	918N	Wrought brass	Nickel-plated	4.50
7	Stamped brass	Polished	6.10	919	Wrought brass	Dipped	2.10
7N	Stamped brass	Nickel-plated	6.10	930	Wrought brass	Polished	12.00
8	Stamped brass	Dipped	3.00	933	Wrought brass	Nickel-plated	8.40
8N	Stamped brass	Nickel-plated	4.45	933N	Wrought brass	Polished	8.40
10	Wrought brass	Dipped	6.50	936	Wrought brass	Nickel-plated	6.90
11	Stamped brass	Dipped	1.50	938	Wrought brass	Polished	48.00
12	Stamped brass	Dipped	1.50	946	Wrought brass	Polished	14.10
12N	Stamped brass	Nickel-plated	1.50	946N	Wrought brass	Nickel-plated	14.10
904	Stamped brass	Nickel-plated	6.60	947	Wrought brass	Polished	15.60

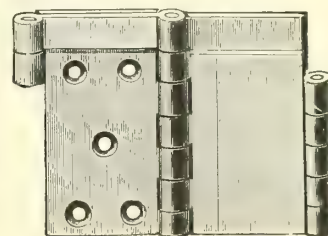
Screen Hinges

Per Dozen Pairs



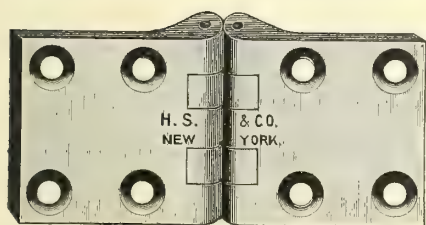
Nos. 103, 104 and 105

For Thickness Wood Inches	Size Overall Closed Inches	No. 103 Wrought Steel Bower Barff	No. 104 Wrought Steel Brass-plated	No. 105 Wrought Brass Polished	No. 106 Cast Brass Polished
$\frac{7}{8}$	$1\frac{3}{4} \times 1\frac{1}{8}$	\$5.65	\$5.65	\$7.50	
1	$1\frac{3}{4} \times 1\frac{1}{4}$	....	6.40	8.00	
$1\frac{1}{8}$	$1\frac{3}{4} \times 1\frac{3}{8}$	....	7.25	8.50	
$1\frac{1}{4}$	$2 \times 1\frac{5}{8}$	....	8.00	10.00	
$1\frac{1}{2}$	$2\frac{1}{4} \times 1\frac{3}{4}$	....	....	....	\$20.00
2	....	....	....	....	26.60



No. 106

Counter Hinges

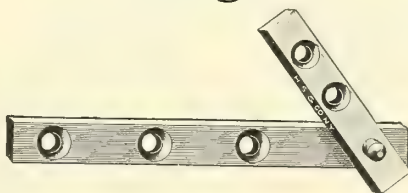


No. 1325

Cast Bronze, Polished
Packed with screws

$1 \times 2\frac{1}{2}$ inches, dozen pairs..... \$10.80
 $1\frac{1}{2} \times 3\frac{1}{4}$ inches, dozen pairs..... 20.30
 $1\frac{3}{4} \times 4$ inches, dozen pairs..... 22.20

Pin or Center Hinges



No. 27

Wrought Iron

Size closed, ins. 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ $4\frac{1}{2}$
 Dozen pairs \$.55 .60 .70 .90 1.50

Patent Desk Hinges

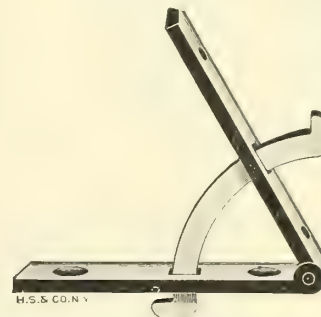
Half Size Cut



No. 1 Wrought brass, polished.
 Packed with screws. $1\frac{3}{8} \times 3\frac{3}{8}$
 inches open, dozen pairs..... \$8.75

Stay Hinges

Full Size Cut



No. 232 Brass, nickel-plated. Made right or left, specify which wanted. Gross pairs..... \$35.00

Flaps



No. 7501

Cast Brass, Polished

$\frac{1}{2} \times 2\frac{3}{8}$ inches, dozen pairs..... \$2.70
 $\frac{5}{8} \times 2\frac{3}{4}$ inches, dozen pairs..... 3.00

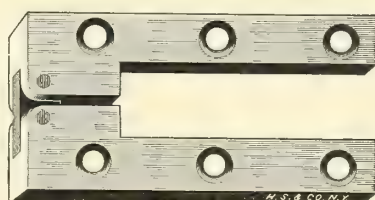


No. 7506

Cast Brass, Polished

1×3 inches, dozen pairs..... \$4.00
 1×4 inches, dozen pairs..... 5.20
 1×5 inches, dozen pairs..... 6.00

Card-Table Hinges

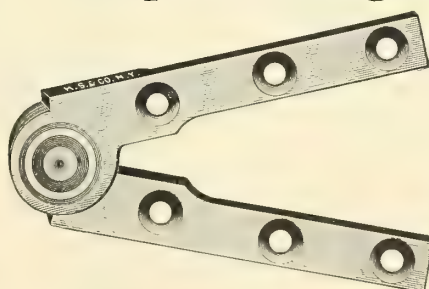


No. 24

Cast Brass, Polished

Size closed, inches..... 2 $2\frac{1}{4}$ $2\frac{1}{2}$
 Dozen pairs..... \$3.50 4.20 4.90

Dolphin Hinges

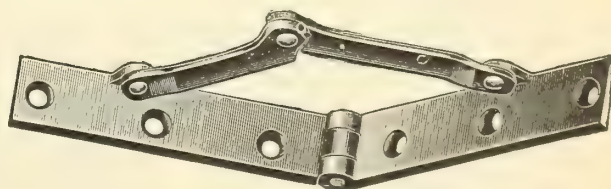


No. 1127 $\frac{1}{2}$

Cast Brass, Polished
 Packed with screws

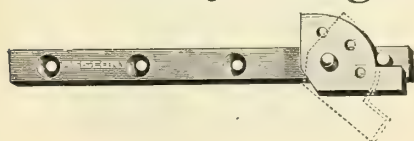
Size closed, inches..... 3 4
 Dozen pairs..... \$8.25 12.00

Desk Hinge and Stop Combined



No. 2 Wrought steel, brass-plated,
 $\frac{3}{4}$ inch wide, 7 inches long open,
 dozen pairs..... \$2.40

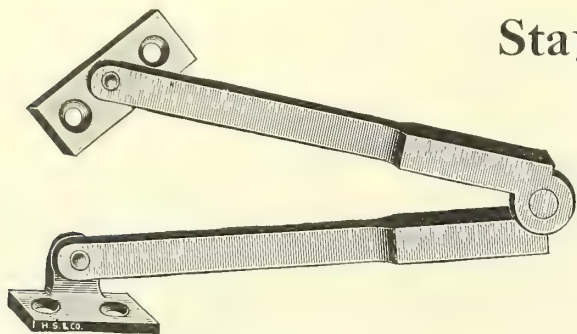
Secretary Hinges



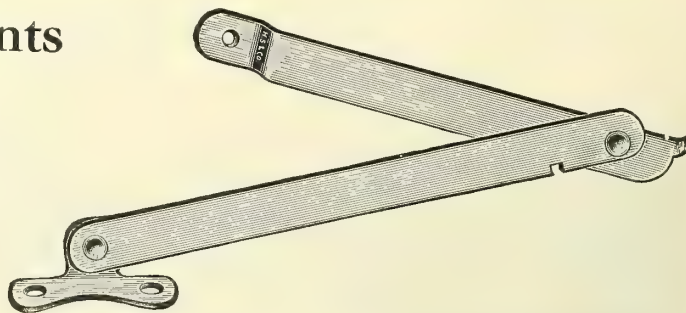
No. 26

Wrought iron, 6 inches long, dozen pair..... \$3.00

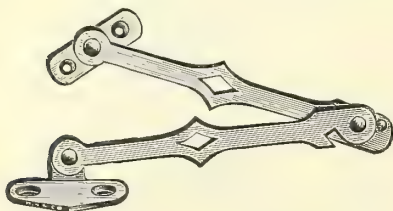
Stay Joints



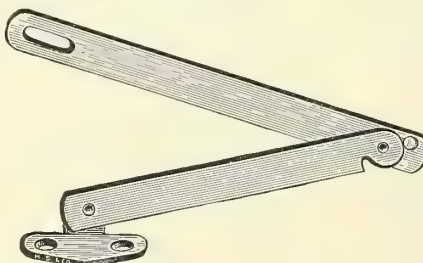
- No. 3 Cast brass, polished, 8 inches, dozen pair \$10.65
 No. 3 Cast brass, polished, 10 inches, dozen pair 12.15
 No. 3 Cast brass, polished, 14 inches, dozen pair 14.55



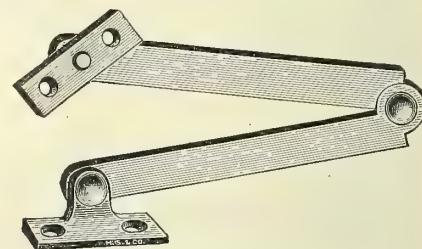
- No. 039 Wrought steel, brass plated, 10 inches, dozen pair... \$1.68



- No. 1238 Wrought brass, dipped, 6 inches, dozen pair..... \$2.50



- No. 1751 Wrought steel, brass-plated, 8 inches, dozen pair \$1.80

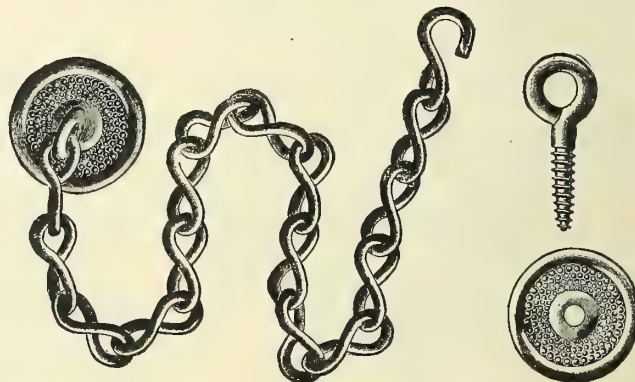


- No. 1750 Wrought bronze, polished, 7 inches, packed with screws, dozen pairs..... \$11.00

Desk Chains

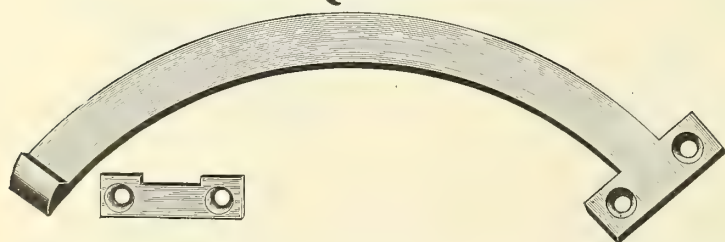


- No. 246 Brass-plated, 10 inches, dozen pieces..... \$.90



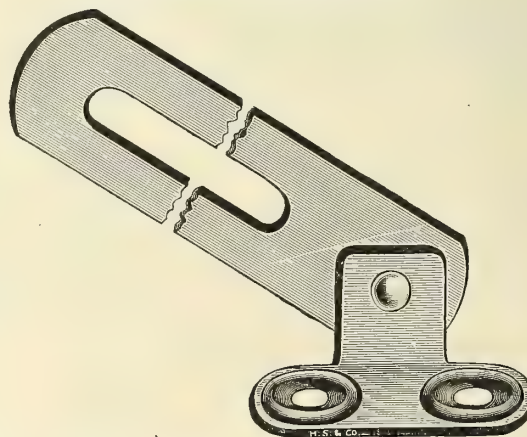
- No. 246 1/2 Brass-plated, 10 inches, dozen pieces..... \$.75

Desk Quadrants



- No. 364 Cast brass, polished, 6 inches, packed with screws, dozen pair \$10.80

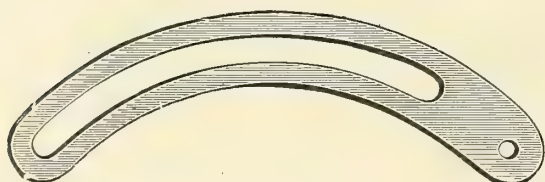
Desk Slides



Wrought Steel, Brass-plated.

- No. 133 Length 6 1/2 inches, width 3/4 inch, dozen pieces..... \$.95
 No. 133 Length 10 inches: width 3/4 inch, dozen pieces..... 1.10
 No. 1721 Length 4 1/2 inches, width 3/8 inch, dozen pieces60

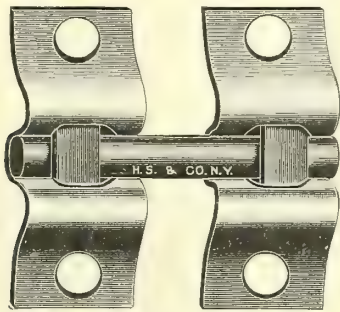
Box Slides



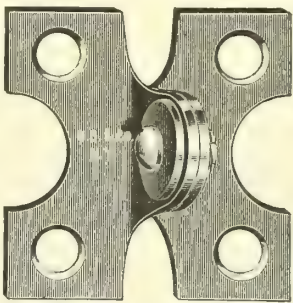
- No. 3322 Wrought brass, 3/8 x 2 1/2 inches, polished or nickel-plated, gross pieces..... \$4.00

Friction Hinges

Full Size Cuts



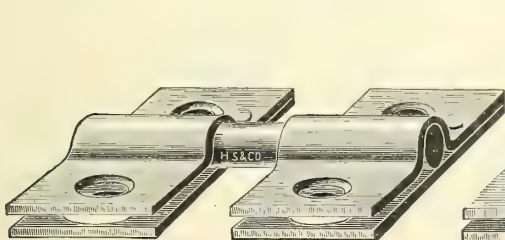
Wrought Steel, Bright



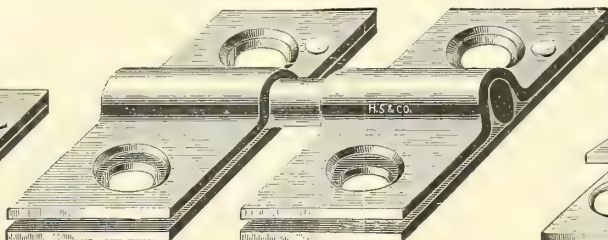
Wrought Steel, Bright

Number	Size, Inches	Gross Pair
150	1 5/8 x 1 1/2	\$4.80
200	1 7/8 x 1 5/8	5.40

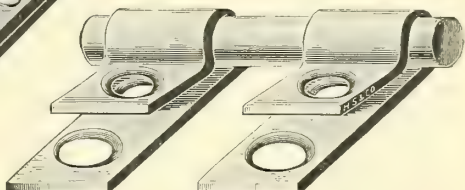
Number	Size, Inches	Gross Pair
101 1/2	1 1/2 x 1 1/2	\$5.25
10	1 7/8 x 1 5/8	6.75
16	2 1/8 x 1 7/8	8.40



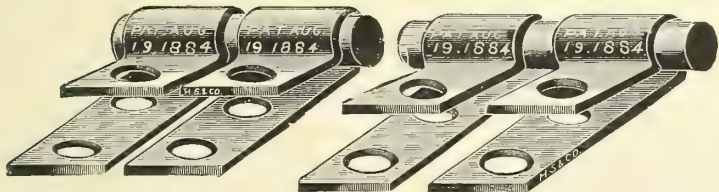
Nos. 1716 and 1716 1/2



Nos. 1720, 1720 1/2 and 1728

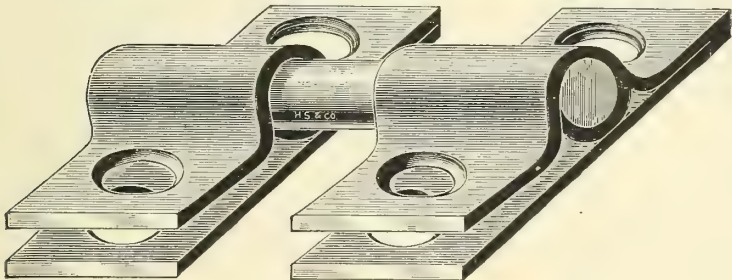


Nos. 1732 and 1732 1/2



No. 1737

No. 1738



No. 1745

Heavy Wrought Steel

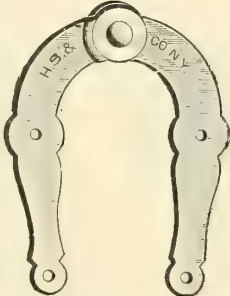
Number	Size, Inches	Finish	Gross Pair
1716	2	Coppered	\$5.80
1716 1/2	2	Bright	5.40
1720	2 1/4	Coppered	9.60
1720 1/2	2 1/4	Bright	9.20
1728	3	Brass-plated	24.00
1732	1 3/4	Coppered	4.80
1732 1/2	1 3/4	Bright	4.40
1737	1 1/4	Coppered	4.80
1738	1 1/2	Coppered	4.80
1745	2 3/8	Coppered	24.00

Triple Mirror Hinges

Three-Quarter Size Cuts



No. 880

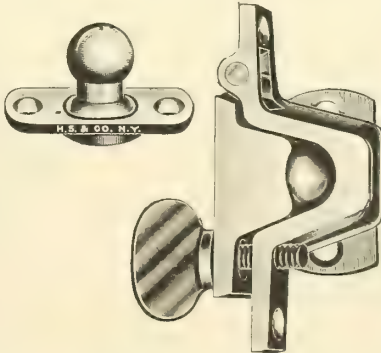


No. 881

Struck Brass, Nickel-plated

No. 880	Gross pieces.....	\$4.50
No. 881	Gross pieces.....	5.25

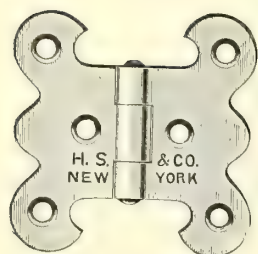
Mirror Movements



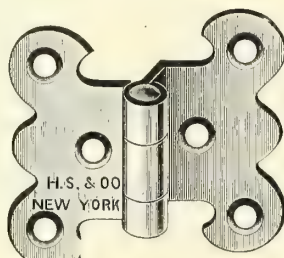
Cast brass, with steel ball pin. Friction can be quickly adjusted.

Number	Size Inches	Dozen Pair
769	3/8 x 2 1/16	\$11.00
771	7/16 x 2 3/8	14.70

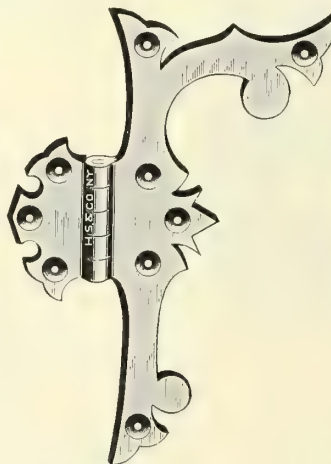
Refrigerator Hinges



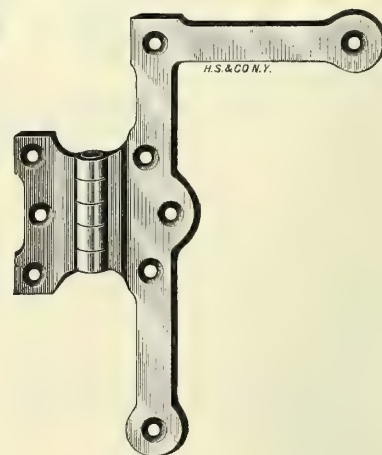
Nos. 1040 and 1140



Nos. 1041 and 1141
3/8 Inch Offset



No. 4



No. S777

Packed with screws

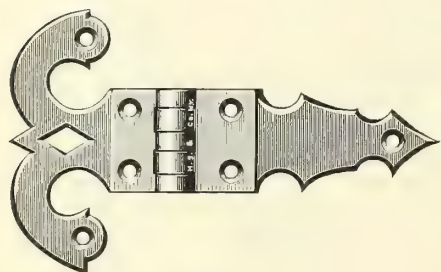
No. 1040	Wrought steel, planished and bronzed, size 2 1/2 x 2 1/2 inches, dozen pairs	\$2.20
No. 1140	Wrought brass, dipped, with brass screws, size 2 1/2 x 2 1/2 inches, dozen pairs	4.50
No. 1041	Wrought steel, planished and bronzed, size 3 x 3 inches, dozen pairs	3.00
No. 1141	Wrought brass, dipped, with brass screws, size 3 x 3 inches, dozen pairs	6.70

Polished Brass

No. 4	Small, 2 1/2 x 5 inches, dozen pairs	\$6.10
No. 4	Medium, 3 x 7 inches, dozen pairs	10.00
No. 4	Large, 4 x 9 1/2 inches, dozen pairs	19.20

Polished Bronze

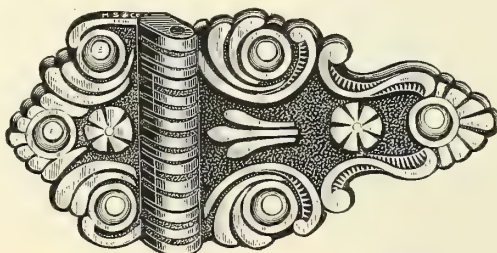
No. S777	2 3/4 x 6 3/4 inches, dozen pairs	15.00
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No. 1

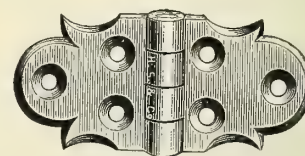
Heavy cast brass, polished. With brass pins. Packed with screws.

Length of Long Flap Inches	Length Overall Inches	Dozen Pairs
3	5	\$4.80
3 1/2	5 3/4	6.40
4	6 1/4	8.25
5	7 1/2	10.65
6	8 1/2	13.35
8	11 1/4	21.35



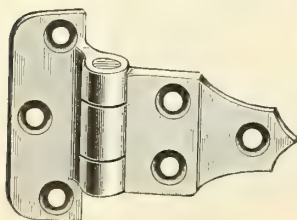
No. 336

No. 336 Cast brass, packed with screws. Length of long flap 2 1/2 inches; 3/8-inch offset, dozen pairs. \$6.20



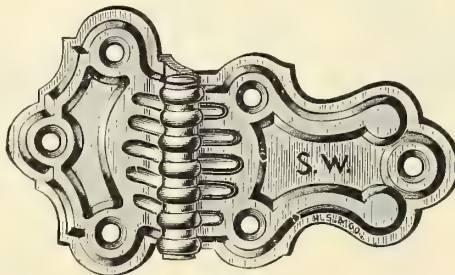
No. 8

No. 8 Cast brass, polished, with brass pins, 1 1/2 x 3 inches, dozen pairs... \$4.70



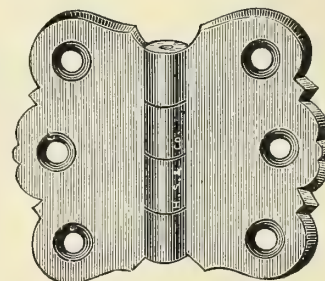
No. 501

No. 501 Cast brass, polished, with brass pins. Length of long flap 2 inches; 3/8-inch offset, dozen pairs. \$4.80



No. 1408

No. 1408 Wrought brass, polished, with brass pins. Packed with screws. Length of long flap 3 inches, width of offset 3/8 inch, dozen pairs... \$6.20



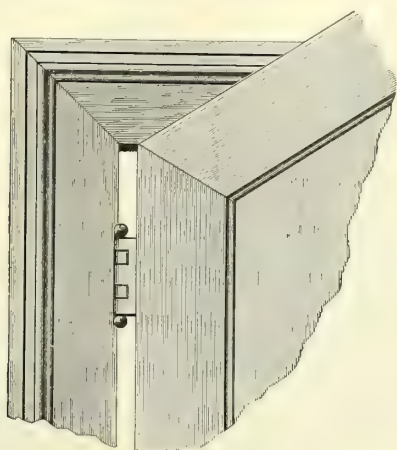
No. 10

No. 10 Cast brass, polished, with brass pins, 3 x 3 1/4 inches, dozen pairs... \$7.40

Invisible Hinges

Soss

As their name implies, Soss Invisible Hinges are actually invisible when the door is closed, and practically so at all times. They are therefore particularly desirable for use where nature's beautiful and delicate patterns in fine woods, brought out by proper finishing, require no metal nor hardware, nor "trim" of any kind to emphasize their elegance.



Door in Operation Mounted with Butt Hinges

Construction

Soss Invisible Hinges are accurately manufactured from the highest grade of material.

Working parts are of frictionless metal—no oil, no noise, no wear.

The cases are made by the die casting method and the leaves are made of stamped steel.

All hinges have roller bearings working as easily as ball-bearing butt hinges.

Plates are accurate up to one thousandth part of an inch. This is a feature of prime importance, particularly in automobile manufacture, as it permits the machining of pillars and the hanging of doors to be done with considerable saving of time and labor.

Economy—Manufacturers can do all mortising by machine.

Small Sizes

Universally used on player pianos and in furniture factories throughout the country on small cabinet work, such as

China Closets	Tables
Filing Cabinets	Music Cabinets
Sideboards and Buffets	Desks
Book Cases	Medicine Cabinets
Dressing Tables	Caskets
Folding Screens	Folding Chairs

and for many other uses. On such work hinges have always been made as inconspicuous as possible. Soss Hinges are invisible.

Styles of Finish

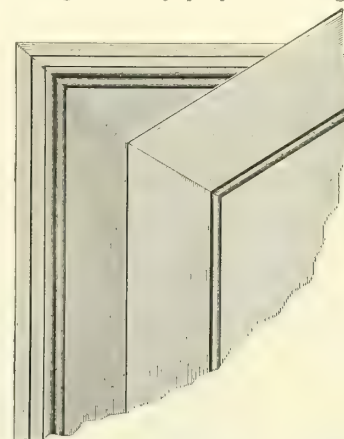
Soss Invisible Hinges are made in two styles, Blunt and Polished.

Blunt finished hinges are simply assembled and plated.

Polished hinges have the center section highly ground and polished, adding to their appearance.

There is no difference in the relative strength. Hinges of either finish are equally strong.

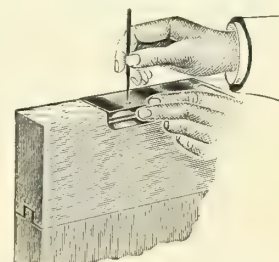
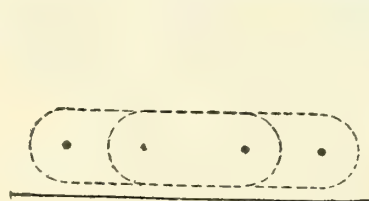
It is difficult to say that a certain size hinge will carry a door of a certain thickness and size, as doors vary greatly in weight. The following table is intended as a general guide for the installation of Soss Hinges, but applies only to doors of average weight and size. Where the doors are unusually large or heavy three hinges should be installed.



Door in Operation Mounted with Soss Hinges

Installation

Simplicity of Installation—Any carpenter or any one who can bore a hole can install Soss Invisible Hinges. They are applied to the



same part of the door and jamb as an ordinary butt, and require no special arrangement of the work. A templet, for convenience in mounting, is enclosed in each box and full directions are given for its use.

Intermediate Sizes

For all doors where ordinary butt hinges are used. There are places for Soss Hinges in every home that is planned. The architect and builder will find these sizes right for partition, closet and inside doors of every description.

Large Sizes for Heavy Duty

No stronger hinges made.

These hinges are adapted for doors of any size.

Size Number	Minimum Thickness Wood Inches	Maximum Thickness Wood Inches	Purpose
100	$\frac{9}{16}$	...	For use on key slips of piano players, pianos and light cabinet work.
101	$\frac{9}{16}$	...	For use on pianos, piano players, furniture and cabinet work.
102	$\frac{9}{16}$	...	Same use and carrying capacity as No. 101, but plates have square corners.
103	$\frac{3}{4}$	...	Same use as above smaller sizes, but has increased clearance between the plates.
104	$\frac{3}{4}$	$\frac{7}{8}$	For doors 5x2 feet.
108	1	$1\frac{1}{8}$	For doors 5x2 feet.
112	$1\frac{1}{8}$	$1\frac{3}{4}$	For doors 6x2 feet 6 inches.
116	$1\frac{3}{8}$	$1\frac{1}{2}$	For doors 6x2 feet 6 inches.
118	$1\frac{3}{8}$	$1\frac{1}{2}$	For doors 6x2 feet 6 inches.
120R	$1\frac{3}{4}$	$2\frac{1}{2}$	For doors 7x3 feet.
120J	$1\frac{3}{4}$	...	For metal and fireproof doors.

For listings of Soss Invisible Hinges, see next five pages

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Invisible Hinges

Soss

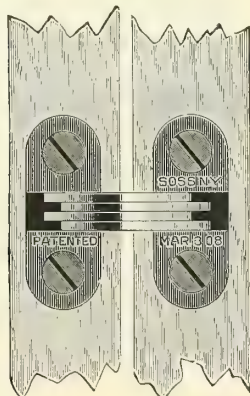
Full Size Illustrations

All hinges on this page are packed with screws and are finished in brass, nickel, bronze or antique copper. In ordering be sure to state which finish is wanted



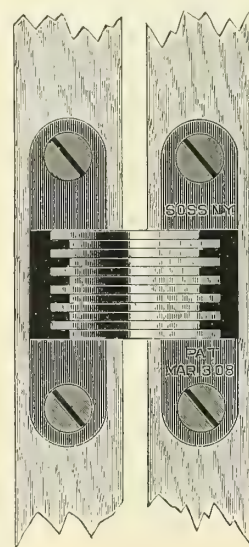
No. 100

For very light work. Round end plates



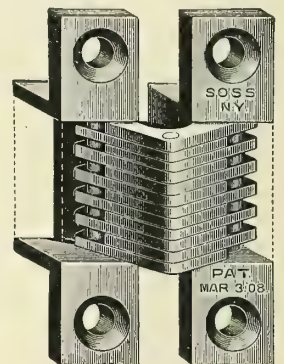
No. 101

For ordinary light work. Round end plates



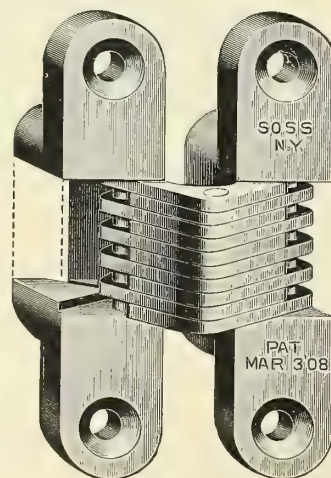
No. 102

Same as No. 101, except has square end plates



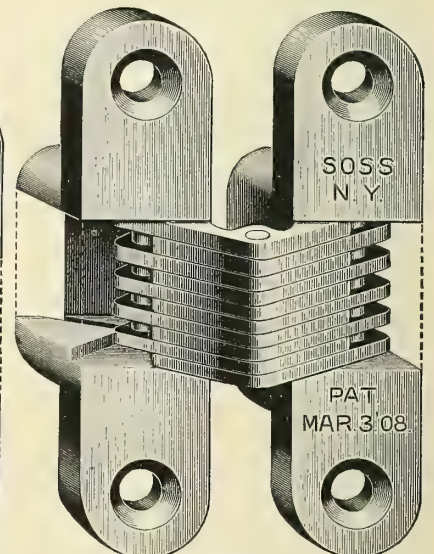
No. 103

For light work. Increased clearance permits the mortise to be made farther from the edge of the wood, thereby avoiding the danger of splitting or raising the veneer, or, when set close to edge a clearance of $\frac{1}{32}$ inch projection may be obtained.



No. 104

For light doors. Counter flaps, lockers, radiator seats, hall seats, small closets, secret panels, various kinds of furniture.



No. 108

Used for similar purposes as No. 104, but in cases where greater strength is required.

Number	100	101	102	103	104	108
Length of plates, inches	1	$1\frac{11}{16}$	$1\frac{13}{16}$	$1\frac{1}{2}$	$2\frac{3}{8}$	$2\frac{3}{4}$
Width of plates, inch	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$
Depth of mortise, inch	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{3}{4}$
Minimum thickness of wood required, inch	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	1
Clearance between plates, inch	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$
Pair, blunt finish	\$.28	.40	.40	.32	.75	1.10
Pair, polished		.50	.50	.42	1.00	1.50

For detailed description of construction, installation, uses, styles of finish, etc., see preceding page

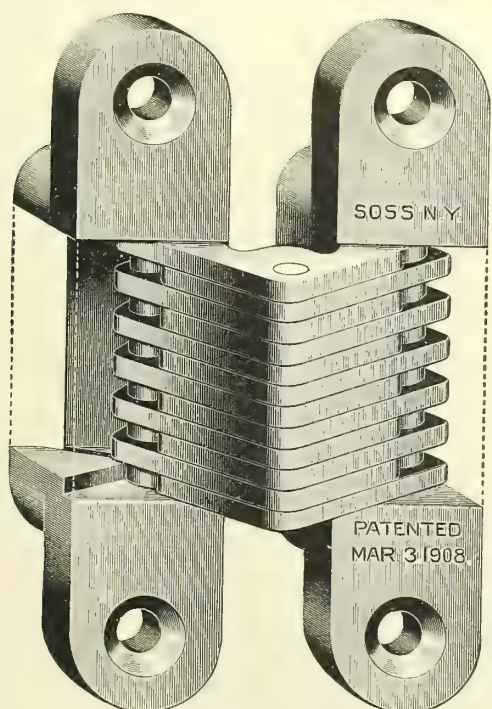
See page 977 for Hinge Routing Machine

Invisible Hinges

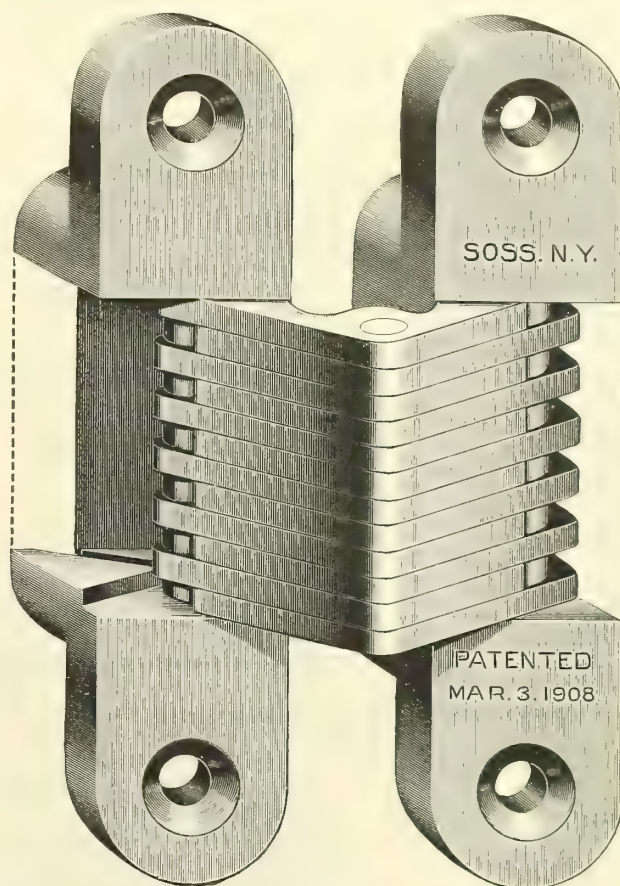
Soss

Full Size Illustrations

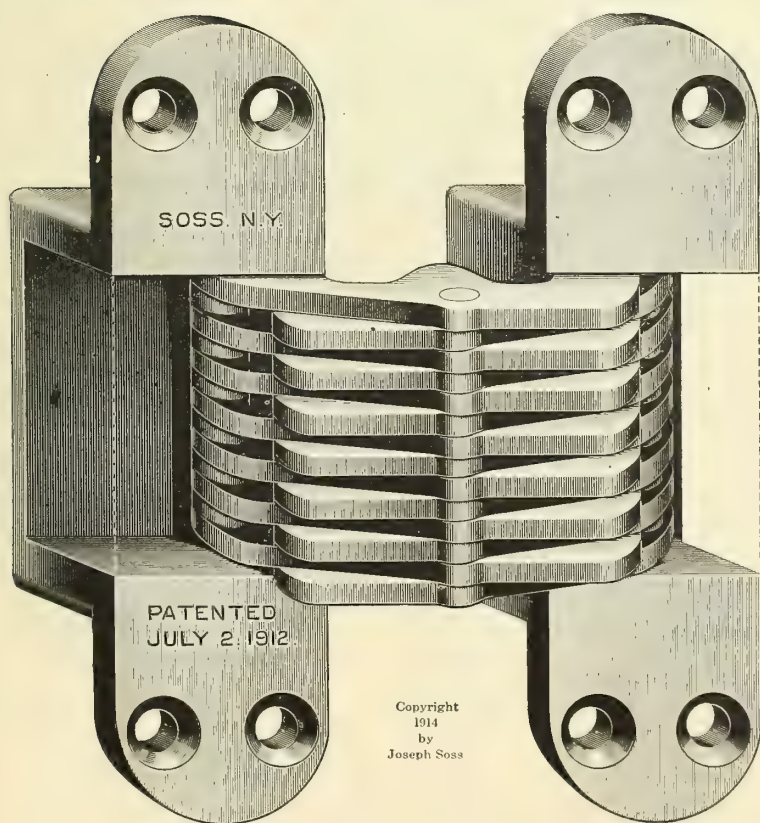
All hinges on this page are packed with screws and are finished in brass, nickel, bronze or antique copper. In ordering be sure to state which finish is wanted.



No. 112
For Standard House Doors, Normal Clearance



No. 116
For Standard House Doors, Heavier and Larger than usual, Normal Clearance



No. 118
For Standard House Doors where Extra Clearance is Required. Heavy

Number.....	112	116	118
Length of plates, inches.....	3½	4¾	4¼
Width of plates, inches.....	¾	1	1½
Depth of mortise, inches.....	15/16	1 3/16	1 9/16
Minimum thickness of wood required, inches.....	1 1/8	1 3/8	1 3/8
Clearance between plates, inches.....	9/16	11/16	1 5/32
Pair, blunt finish.....	\$1.90	2.60	2.60
Pair, polished.....	2.50	3.60	

For detailed description of construction, installation, uses, styles of finish, etc., see page 971 See page 977 for Hinge Routing Machine

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Invisible Hinges

Soss

The Soss Hinges on this page are large and powerfully made, being specially designed for heavy house doors, and are able to carry up to 1000 pounds. Packed with screws and are finished in brass, nickel, bronze or antique copper. In ordering be sure to state which finish is desired.

Full Size Illustration of No. 120-R

No. 120-J

These hinges are practically the same as 120-R (illustrated), except that they have square cornered plates, specially designed for metal and fireproof doors. The square cornered plates have $\frac{1}{16}$ -inch taper to allow for graduated bevel at edge of door.

Length of plates,
inches $4\frac{7}{8}$

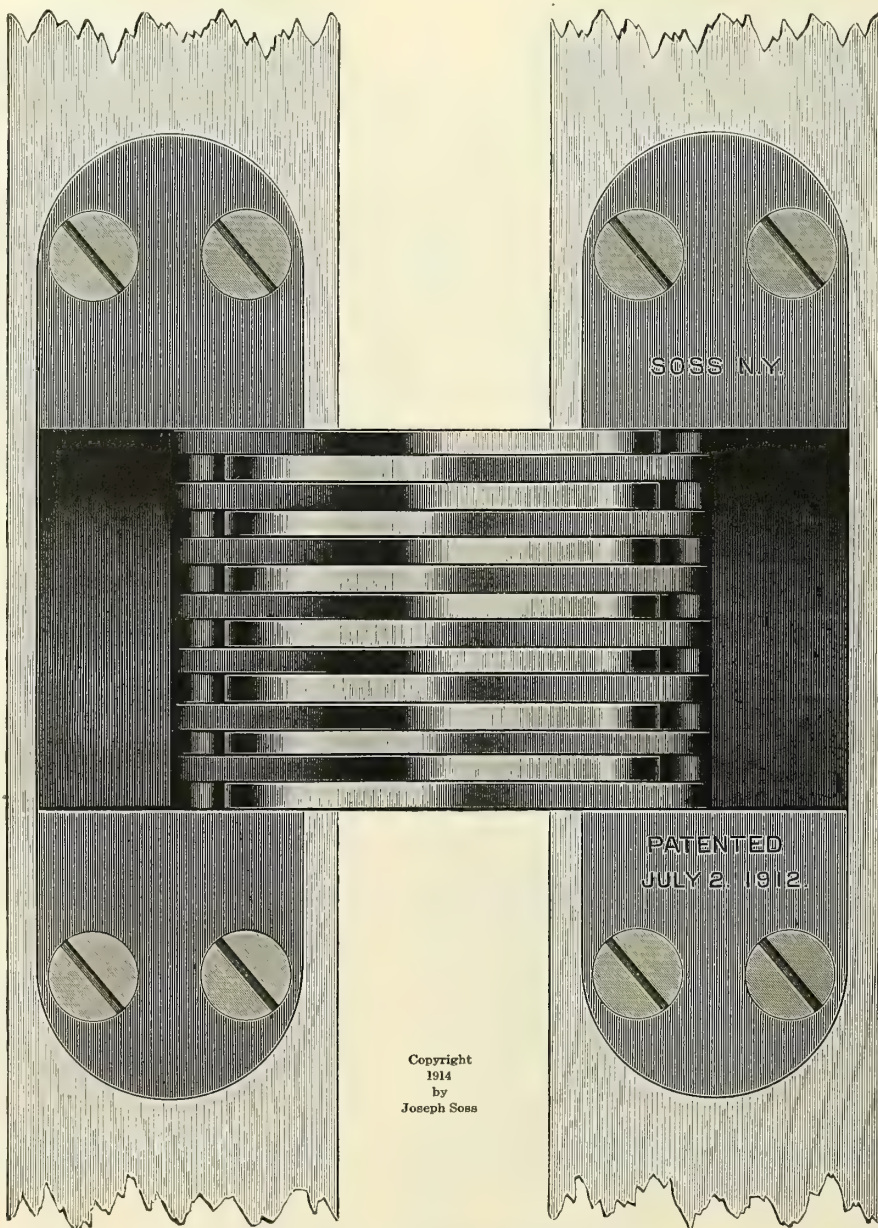
Width of plates,
inches $1\frac{5}{16}$

Depth of mortise,
inches $1\frac{9}{16}$

Minimum thickness
required, inches... $1\frac{3}{4}$

Clearance between
plates, inches.... $1\frac{7}{16}$

Pair, blunt finish.. \$3.00



No. 120-R

These hinges are illustrated, full size, on this page. They are made with round cornered plates of equal thickness throughout, for mounting heavy wooden house doors. They are the strongest hinges made for this purpose.

Length of plates,
inches 5

Width of plates,
inches $1\frac{5}{16}$

Depth of mortise,
inches $1\frac{9}{16}$

Minimum thickness
of wood required,
inches $1\frac{3}{4}$

Clearance between
plates, inches.... $1\frac{7}{16}$

Pair, blunt finish.. \$3.00

Copyright
1914
by
Joseph Soss

Above is full size illustration of No. 120-R (listed and described on right of cut), carrying a heavy wooden door. Note width of clearance, which is of special value where there is a projecting trim

For detailed description of construction, installation, uses, styles of finish, etc., see page 971

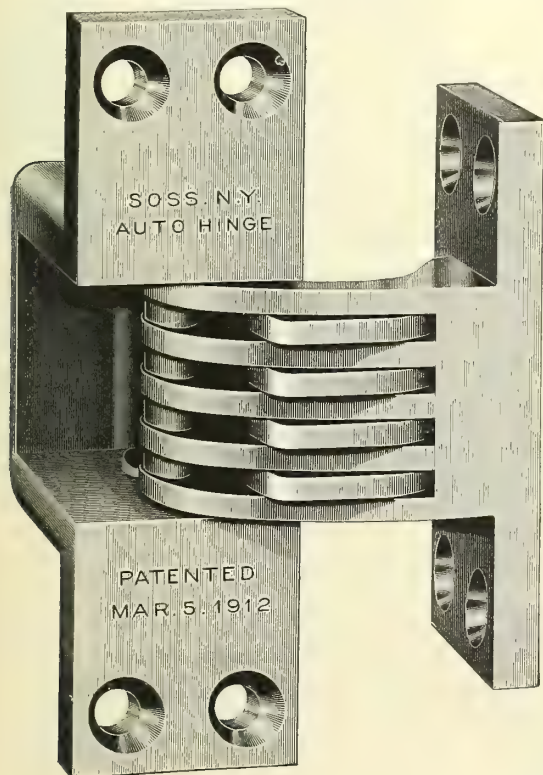
See page 977 for Hinge Routing Machines

Invisible Automobile Door Hinges

Soss

Flush Doors. Clean Lines. No Projections. Full Size Illustrations

The trouble avoided and time gained when hanging doors with Soss Hinges are features of prime importance. They can be installed flush with outside of the pillar allowing steel or aluminum panel to be turned over on face of hinge and fastened in rabbet or slot to receive it, thus permitting of more than ordinary clearance. These Hinges are mechanically accurate, an important feature, as they permit machining of the pillars before assembling in the body.

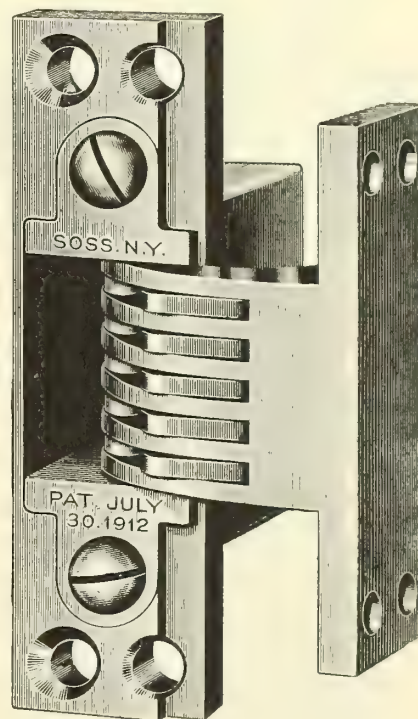


No. 117

This hinge is quite as strong as No. 123, but is not detachable and also lacks the non-corrosive waterproof case. Furnished without rabbet only.

Packed one Set of Eight Hinges in a Box

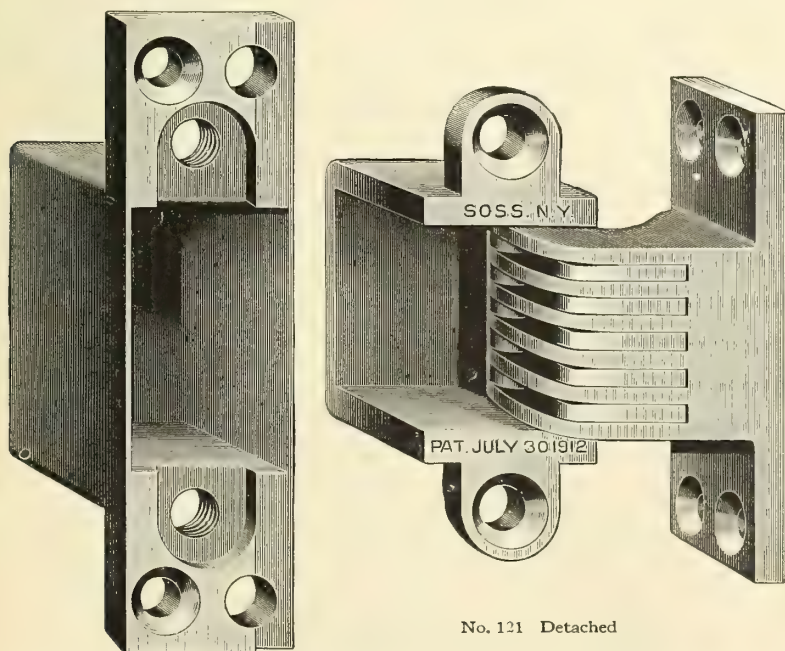
Style	117 Non-detachable	121 Detachable	123 Detachable
Face of hinge on pillar, inches	4x1 $\frac{3}{16}$	3 $\frac{1}{4}$ x $\frac{7}{8}$	3 $\frac{3}{4}$ x1 $\frac{5}{16}$
Face of hinge on door, inches	3x1 $\frac{1}{4}$	2 $\frac{1}{2}$ x $\frac{7}{8}$	3x1 $\frac{1}{4}$
Mortises into pillar, inches	1 $\frac{3}{16}$ x2x1 $\frac{3}{4}$	1 $\frac{1}{4}$ x1 $\frac{5}{8}$ x $\frac{7}{8}$	1 $\frac{3}{4}$ x1 $\frac{5}{16}$ x2
Clearance in opening, inch	1	$\frac{11}{16}$	1
Weight of set of eight, pounds	9	5	11
Pair.....	\$ 1.50	1.00	2.00



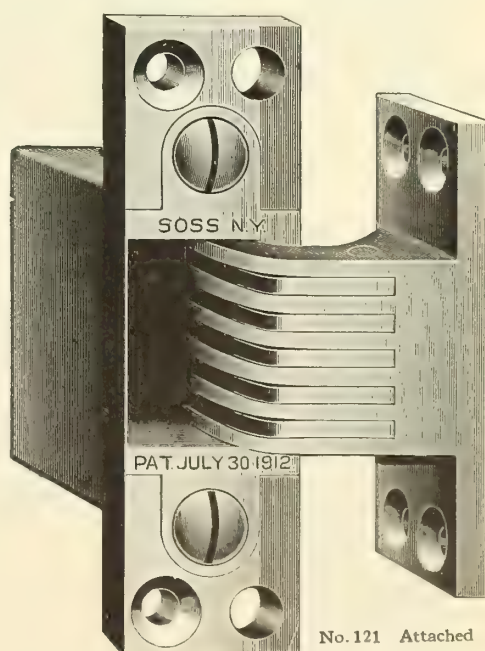
No. 123

An exceptionally strong hinge, made for limousine, coupe, landaulet, coach and touring car doors. Easily and quickly detached by removing two machine screws shown in illustration; does not interfere with attachment to pillar or door. Made with non-corrosive water-proof case, which prevents the water from entering and causing rot in the pillar.

Furnished with or without rabbet.



No. 121 Detached



No. 121 Attached

Made for roadster and touring car doors. The left hand illustration shows how easily the door may be removed without marring the pillars. It is necessary only to remove the two machine screws shown in right illustration. The non-corrosive waterproof case attached to the body section of the hinge prevents water from entering and causing rot in the pillar. Furnished with or without rabbet.

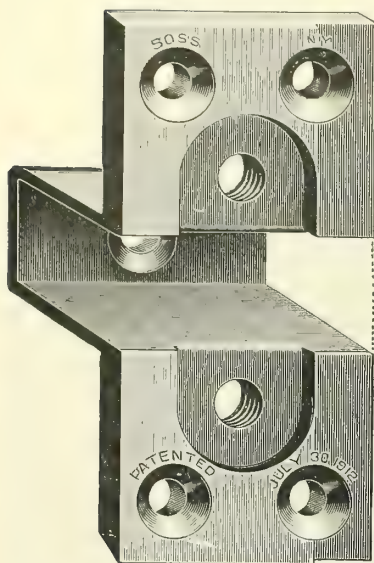
See page 971 for detailed description of construction, installation uses, styles of finish, etc. See page 977 for Hinge Routing Machines

Invisible Automobile Door Hinges

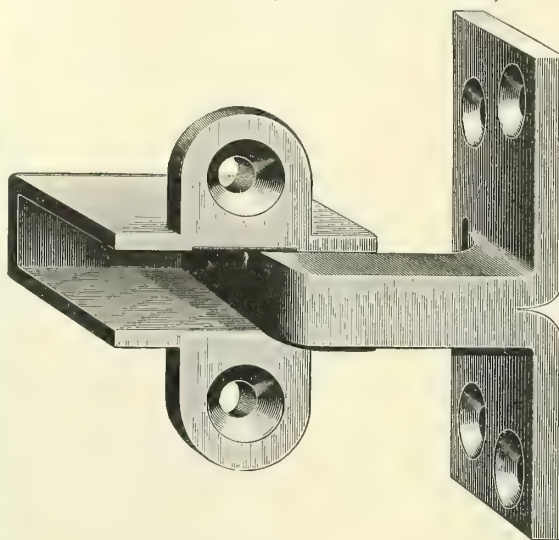
Soss

Flush Doors. Clean Lines. No Projections

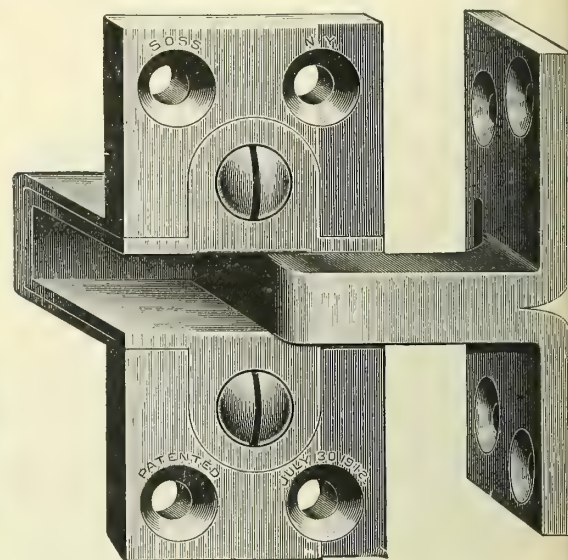
(Full Size Illustrations)



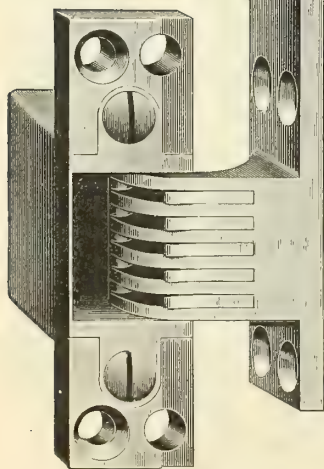
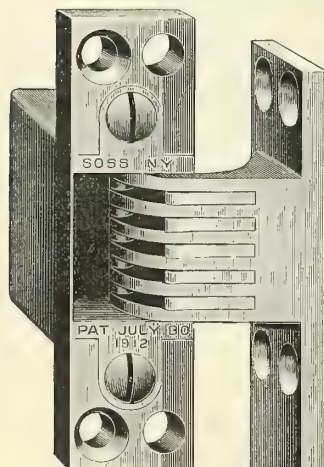
Detached



No. 111



Attached



Special "B"

Illustration is Two-Thirds Actual Size
of 121 Mounted on Plate

Made for medium priced cars. Hinges are sturdily constructed and have a neat and well finished appearance. The left hand illustration shows how quickly they may be detached without marring the wood. Simply remove the two machine screws shown in right hand illustration. Furnished with rabbet only. Packed a set of eight in a box. Weight, six pounds.

Face of hinge on pillar, $1\frac{3}{8} \times 2\frac{3}{4}$ inches
Face of hinge on door, $1\frac{1}{4} \times 2\frac{1}{2}$ inches
Mortises into pillar $\frac{7}{8} \times 1\frac{3}{8} \times 1\frac{1}{2}$ inches deep
Clearance in opening, $\frac{3}{4}$ inch full

Pair, \$.50

Special "B"

(Illustration on the left)

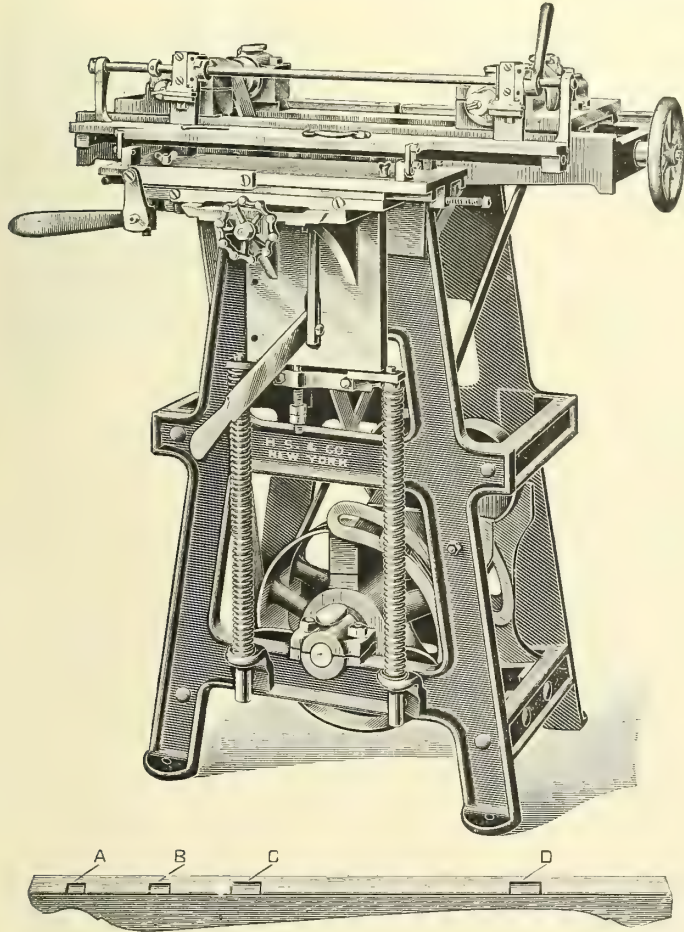
These hinges are made to order only with door plate, any desired length. They permit very rapid work in hanging the doors, as both hinges are held in perfect alignment. Any of the hinges shown on preceding page (Nos. 117, 121 and 123) may be mounted in this manner, and we will be pleased to quote prices on application. When corresponding be sure to state exact length of plate, together with quantity to be ordered, which naturally will decide the price.

See page 971 for detailed description of construction, installation, uses, styles of finish, etc.

See next page for Hinge Routing Machines.

The H. S. & Co. Hinge Routing Machine

Especially designed for cutting large quantities of similar sized hinge mortises or recesses



This is a two-spindle machine, spindles adjustable from 4 to 22 inch sweep, center to center.

Machine has self-contained counter shaft with tight and loose pulleys 7 inches in diameter and for a 2½-inch belt. (The counter should run 1,000 revolutions per minute.)

The routing is done with a ¼-inch router, which leaves a very small corner to be removed by hand. The belts, which preferably should be endless, run over idlers, thus maintaining proper tension whether the spindles are close together or wide apart. The spindles are adjusted by means of a hand wheel at right of the machine.

The table of the machine is adjustable to permit a little deeper cut on the pin side of the hinge where the hinge is thickest. This is an important and particularly commendable feature.

The spindles are driven by 2-inch belts, and the illustration shows the corner post of a Victrola, the two cuts marked A and B being cut at one time, while the mortises C and D are made at a subsequent operation, and by thus handling this corner post twice, 800 complete pieces were finished in ten hours, making 1,600 operations for a hinge recess 1⅞ x ¾ inches.

Weight of machine, approximately 600 pounds, and occupies a space of about 3 x 3 feet.

If the H. S. & Co. Machine does not seem to exactly meet requirements and you will submit your hinge problem, we can possibly arrange modifications accordingly.

Each, net..... \$400.00

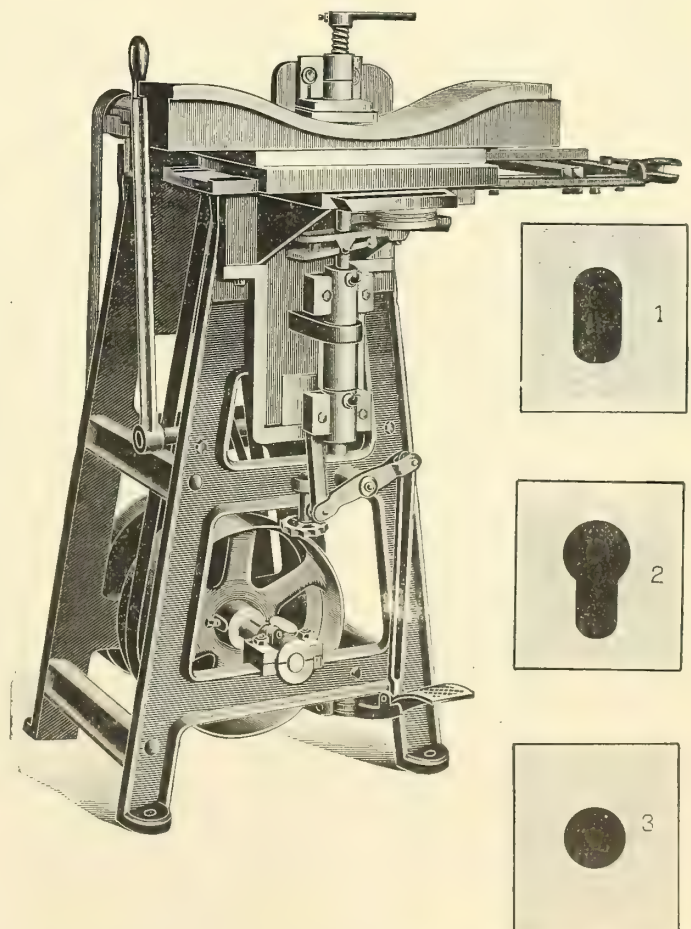
The H. S. & Co. Lock Mortising and High Speed Drilling and Routing Machine

This also is a two-spindle machine, and will mortise and keyhole with one handling for the entire line of cabinet mortise locks in either drawer fronts or door stiles. The right-hand spindle cutting for the body of the lock and the left-hand for the selvage.

For use as a high-speed drilling or routing machine the main spindle has a motion of 4½ inches, has ½-inch hole to take the regular wood boring bits, or by means of a chuck straight shank bits from ⅛ to ½ inch could be used. By disconnecting the upper slide the plate holding the clamping device can be removed for special routing, the slide having a lateral motion of 7½ inches. Drilling can be done 2½ inches to the center from the table which has an adjustment of 1¾ inches. The tight and loose pulleys are 7 inches in diameter for 2½-inch belt, and should run 1,000 revolutions. The main spindle requires a 2-inch belt. The selvage spindle requires a 1½-inch belt. The key-hole spindle requires a 1-inch belt.

The routing for mortises for body of lock can be done either with the ordinary routing bit, working it out gradually as the size of the bit will stand, or by the use of the short length twist drills with ½-inch shank made for blacksmith's drill presses, by grinding a long taper point, as shown in cut, drilling a hole at each end of intended mortise and as many intermediate ones as necessary, the remaining wood being removed by lateral movements to the extent of taper point of drill. For deep mortises this seems to be the most expeditious. In ordering router bits specify depth of mortise to be cut, and style and size of keyhole bits.

Each, net..... \$150.00

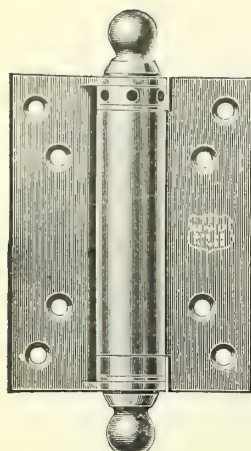


SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Spring Butt Hinges

Bommer



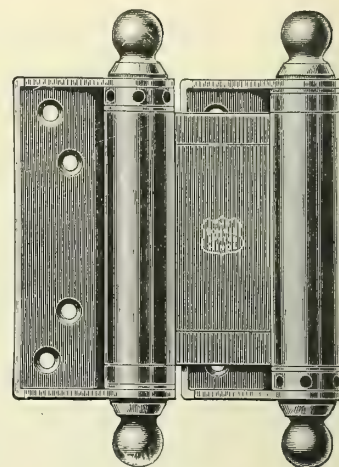
Double Acting'

See next page for listing

Size of Hinge Required Inches	Requirements For Doors not Exceeding the Following Dimensions				Thickness Hanging Strip Inches	
	Thickness Inches	Width Inches		Thickness Inches		Width Inches
3	3/4	27	or	1	24	1/2
4	7/8	30	or	1 1/4	24	5/8
5	1 1/8	30	or	1 1/2	27	5/8
6	1 1/4	33	or	1 3/4	27	3/4
7	1 3/8	33	or	2	30	7/8
8	1 1/2	36	or	2 1/4	30	1
10	1 3/4	36	or	2 1/2	33	1 1/8
12	2 1/4	39	or	3	36	1 1/4

For hardwood or plate glass doors always use the largest size hinge which the thickness of the door will permit.

Packed one pair in a box with screws to match.



Single Acting

Single Acting

Planished Steel

Length of Flanges Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper, Statuary Finish or Dull Brass Finish Imitation Bower-Barff		Dull Brass, Antique Brass Light or Antique Brass Mottled		Sand Blast, Antique Copper or Antique Brass Also Nickel-plated	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	0	\$.80	450	\$1.00	300	\$1.20	600	\$1.20	250	\$1.60
4	1	1.00	451	1.20	301	1.40	601	1.40	251	1.90
5	5	1.30	455	1.60	305	1.80	605	1.80	255	2.40
6	9	1.80	459	2.20	309	2.50	609	2.50	259	3.20
7	13	2.30	463	2.80	313	3.20	613	3.20	263	4.00
8	17	3.30	467	4.00	317	4.50	617	4.50	267	5.60
10	21	4.50	471	5.50	321	6.20	621	6.20	271	7.70
12	25	6.00	475	7.30	325	8.30	625	8.30	275	9.90
For office gates, 1 1/4 to 2 1/2 inches thick, 2 1/2 feet wide with handrail not over 4 inches.										
5	7	\$2.00	457	\$2.50	307	\$2.70	607	\$2.70	257	\$3.50

Polished Steel

Length of Flanges Inches	Bronze, Brass or Nickel-plated Also Genuine Bower-Barff		Antique Copper, or Statuary Finish		Dull Brass, Antique Brass, Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	50	\$2.30	350	\$2.50	650	\$2.50	550	\$2.60	150	\$3.30
4	51	2.50	351	2.80	651	2.80	551	2.90	151	3.60
5	55	3.00	355	3.30	655	3.30	555	3.50	155	4.50
6	59	3.80	359	4.10	659	4.10	559	4.30	159	5.80
7	63	4.50	363	4.90	663	4.90	563	5.20	163	7.20
8	67	5.70	367	6.30	667	6.30	567	6.70	167	9.30
10	71	8.30	371	9.20	671	9.20	571	9.70	171	12.40
12	75	11.30	375	12.30	675	12.30	575	13.00	175	16.00
For office gates, 1 1/4 to 2 1/2 inches thick, 2 1/2 feet wide, with handrail not over 4 inches.										
5	57	\$4.00	357	\$4.30	657	\$4.30	557	\$4.60	157	6.20

Bronze or Brass

Length of Flanges Inches	Highly Polished		Antique Copper, or Statuary Bronze Also Nickel-plated		Dull Brass, Antique Brass Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	100	\$4.00	400	\$4.50	700	\$4.05	500	\$4.60	200	\$5.20
4	101	4.50	401	5.00	701	5.00	501	5.10	201	5.80
5	105	5.50	405	6.00	705	6.00	505	6.20	205	7.10
6	109	6.80	409	7.40	709	7.40	509	7.60	209	8.60
7	113	8.50	413	9.30	713	9.30	513	9.60	213	10.80
8	117	10.90	417	12.10	717	12.10	517	12.50	217	14.30
10	121	14.70	421	16.10	721	16.10	521	16.60	221	18.60
12	125	19.80	425	21.50	725	21.50	525	22.20	225	24.70
For office gates, 1 1/4 to 2 1/2 inches thick, 2 1/2 feet wide, with handrail not over 4 inches.										
5	107	\$8.00	407	\$8.50	707	\$8.50	507	\$8.80	207	\$10.00

It will be noted that most of the above numbers are supplied in several finishes. In all such cases the finish should be specified as well as the number.

Spring Butt Hinges

Bommer

Continued from preceding page, which see for Single acting Hinges in this style, also for table giving size hinges to use on various weight doors

Double Acting

See preceding page for illustration

Planished Steel

Length of Flanges Inches	Japanned, Dead Black		Bronze or Brass-plated		Antique Copper, Statuary Finish Dull Brass, also Imitation Bower-Barff		Dull Brass, Antique Brass Light or Antique Brass Mottled		Sand Blast Antique Copper or Antique Brass, also Nickel-plated	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	29	\$1.60	479	\$2.00	329	\$2.20	629	\$2.20	279	\$3.00
4	30	2.00	480	2.40	330	2.80	630	2.80	280	3.80
5	33	2.50	483	3.10	333	3.50	633	3.50	283	4.80
6	36	3.50	486	4.30	336	4.90	636	4.90	286	6.30
7	39	4.50	489	5.50	339	6.30	639	6.30	289	8.10
8	42	6.50	492	8.00	342	9.00	642	9.00	292	11.20
10	45	9.00	495	11.00	345	12.40	645	12.40	295	15.30
12	48	12.00	498	14.50	348	16.50	648	16.50	298	19.80
6	For office gates, 1¼ to 2½ inches thick, 2½ feet wide, with hand rail not over 3¼ inches.						638	6.30	288	8.00

Polished Steel

Length of Flanges Inches	Bronze, Brass or Nickel-plated Also Genuine Bower-Barff Finish		Antique Copper or Statuary Finish		Dull Brass, Antique Brass Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	79	\$4.50	379	\$5.00	679	\$5.00	579	\$5.20	179	\$6.30
4	80	5.00	380	5.50	680	5.50	580	5.80	180	7.00
5	83	6.00	383	6.50	683	6.50	583	7.00	183	8.40
6	86	7.50	386	8.30	686	8.30	586	8.80	186	10.30
7	89	9.00	389	9.90	689	9.90	589	10.50	189	12.50
8	92	11.40	392	12.70	692	12.70	592	13.50	192	16.00
10	95	15.50	395	17.10	695	17.10	595	18.20	195	21.50
12	98	21.00	398	23.00	698	23.00	598	24.40	198	29.00
6	For office gates, 1¼ to 2½ inches thick, 2½ feet wide, with handrail not over 3¼ inches.						588	10.00	188	11.50

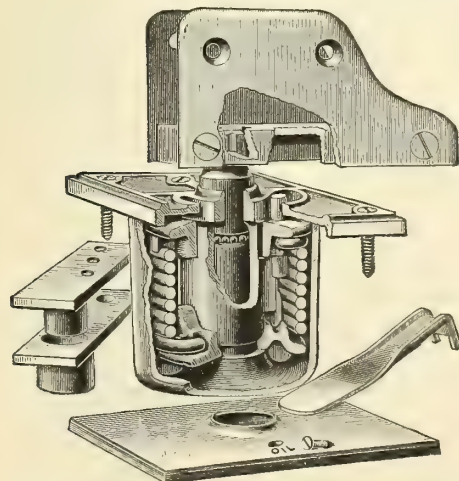
Bronze or Brass

Length of Flanges Inches	Highly Polished		Antique Copper, Statuary Finish also Nickel-plated		Dull Brass, Antique Brass Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	129	\$7.40	429	\$8.10	729	\$8.10	529	\$8.30	229	\$9.40
4	130	8.50	430	9.40	730	9.40	530	9.70	230	10.80
5	133	10.20	433	11.20	733	11.20	533	11.60	233	12.90
6	136	12.50	436	13.70	736	13.70	536	14.20	236	15.60
7	139	15.90	439	17.50	739	17.50	539	18.10	239	19.80
8	142	20.40	442	22.50	742	22.50	542	23.30	242	25.50
10	145	27.20	445	30.00	745	30.00	545	31.00	245	34.00
12	148	36.80	448	40.20	748	40.20	548	41.50	248	45.90
6	For office gates, 1¼ to 2½ inches thick, 2½ feet wide, with handrail not over 3¼ inches.						538	\$17.50	238	18.70

It will be noted that most of the above numbers are supplied in several finishes. In all such cases the finish should be specified as well as the number

Mortise Floor Spring Hinges

Bommer Ball Bearing



These hinges swing doors double action, but by using a stop bead on the casing they work equally well single action. They are easily fitted to doors of any thickness, as the shoe is adjustable. The tension of the spring is also adjustable, and the weight of the door is supported on tool steel ball-bearings set upon a raised centerpost. The ball bearings are covered by a hollow spindle which allows no water, dirt, or grit to reach them, making them wear years longer.

Only the best oil-tempered springs are used. All parts are interchangeable. No hanging strip is required, the back edge of the door being slightly rounded.

These hinges impart an easy movement to the door.

If wanted without side plates, a top pivot with movable plunger is furnished in connection with the invisible socket bar shown on lower part of next page, without extra charge. Where two finishes are required in combination, send diagram locating each. The more expensive of the two finishes will govern the price. Sent out correctly set up for doors specified, but the tension may be reduced or increased as desired.

See next page for listing

Mortise Floor Spring Hinges

Bommer Ball Bearing

See preceding page for illustration and description. Packed one set in a box, complete with wrench and screws to match.

Planished Steel

Thickness of Door Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper Statuary Finish Imitation Bower-Barff		Dull Brass or Antique Brass		Sand Blast Antique Copper or Antique Brass Finish		Dimensions of Top Plate Inches	Depth of Cup Inches	Distance from Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set			
$\frac{7}{8}$ to $1\frac{1}{2}$	*2	\$2.35	452	\$2.90	302	\$3.15	602	\$3.15	252	\$3.75	$3\frac{3}{4}$ x $5\frac{1}{8}$	3	$1\frac{5}{8}$
$1\frac{3}{8}$ to 2	*4	2.90	454	3.50	304	3.80	604	3.80	254	3.90	$3\frac{7}{8}$ x $5\frac{5}{8}$	$3\frac{1}{2}$	$1\frac{3}{4}$
2 to $2\frac{1}{2}$	*6	3.50	456	4.10	306	4.55	606	4.55	256	4.60	$4\frac{1}{2}$ x $6\frac{1}{2}$	$3\frac{3}{4}$	2
$2\frac{1}{2}$ to $3\frac{1}{2}$	*8	6.70	458	7.25	308	7.70	608	7.70	258	7.75	$4\frac{1}{2}$ x $6\frac{1}{2}$	$3\frac{3}{4}$	2

*See bottom of page for cast metal boxes for setting hinges Nos. 2, 4, 6 and 8 into cement or tile floors

Polished Steel

Thickness of Door Inches	Bronze, Brass or Nickel-plated, also Genuine Bower-Barff		Antique Copper or Statuary Bronze		Dull Brass or Antique Brass		Verde Antique Finish		Silver-plated, either Bright or Oxidized		Dimensions of Top Plate Inches	Depth of Cup Inches	Distance from Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set			
$\frac{7}{8}$ to $1\frac{1}{2}$	52	\$3.80	352	\$4.00	652	\$4.00	552	\$4.40	152	\$7.00	$3\frac{3}{4}$ x $5\frac{1}{8}$	3	$1\frac{5}{8}$
$1\frac{3}{8}$ to 2	54	4.10	354	4.35	654	4.35	554	4.75	154	7.50	$5\frac{7}{8}$ x $5\frac{5}{8}$	$3\frac{1}{2}$	$1\frac{3}{4}$
2 to $2\frac{1}{2}$	56	4.70	356	5.00	656	5.00	556	5.40	156	8.25	$4\frac{1}{2}$ x $6\frac{1}{2}$	$3\frac{3}{4}$	2
$2\frac{1}{2}$ to $3\frac{1}{2}$	58	7.80	358	8.30	658	8.30	558	8.70	158	11.50	$4\frac{1}{2}$ x $6\frac{1}{2}$	$3\frac{3}{4}$	2

Bronze or Brass

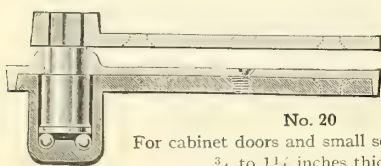
Thickness of Door Inches	Highly Polished		Antique Copper or Statuary Finish Nickel-plated		Dull Brass or Antique Bronze		Verde Antique Finish		Silver-plated, either Bright or Oxidized		Dimensions of Top Plate Inches	Depth of Cup Inches	Distance from Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set			
$\frac{7}{8}$ to $1\frac{1}{2}$	102	\$5.85	402	\$6.45	702	\$6.45	502	\$7.00	202	\$9.35	$3\frac{3}{4}$ x $5\frac{1}{8}$	3	$1\frac{5}{8}$
$1\frac{3}{8}$ to 2	104	7.00	404	7.60	704	7.60	504	8.20	204	10.50	$3\frac{7}{8}$ x $5\frac{5}{8}$	$3\frac{1}{2}$	$1\frac{3}{4}$
2 to $2\frac{1}{2}$	106	8.15	406	8.75	706	8.70	506	9.40	206	11.70	$4\frac{1}{2}$ x $6\frac{1}{2}$	$3\frac{3}{4}$	2
$2\frac{1}{2}$ to $3\frac{1}{2}$	108	11.10	408	11.70	708	11.70	508	12.40	208	15.20	$4\frac{1}{2}$ x $6\frac{1}{2}$	$3\frac{3}{4}$	2

It will be noted that most of the above numbers are supplied in several finishes. In all such cases the finish should be specified as well as the number.

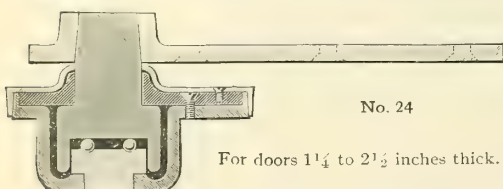
Pivot Hinges

Bommer Ball-Bearing, Without Springs

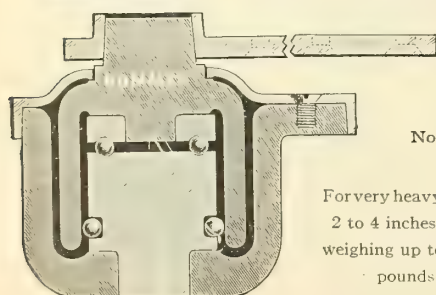
These hinges may be used to hang doors either single or double action. They are durable and noiseless, work smoothly and will swing the heaviest doors with slight exertion.



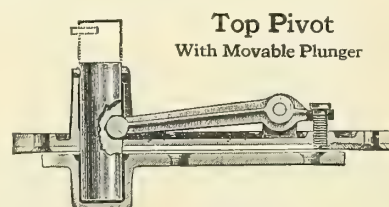
No. 20
For cabinet doors and small secret doors
 $\frac{3}{4}$ to $1\frac{1}{4}$ inches thick.



No. 24
For doors $1\frac{1}{4}$ to $2\frac{1}{2}$ inches thick.



No. 28
For very heavy doors
2 to 4 inches thick
weighing up to 2,000
pounds.



Top Pivot
With Movable Plunger



Invisible Socket Bar

The Top Pivot with movable plunger is furnished in connection with the invisible socket bar for all pivot hinges illustrated on this page. The movable plunger can be raised out of its cup, clear of the top of the door by means of the set-screw.

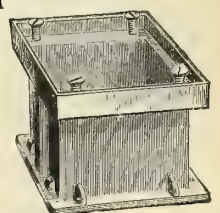
Per Set, Complete, Including Top Pivot, Invisible Socket Bar and Screws to Match

Cast Iron (Polished)						Bronze						From Center of Pivot to Casing Inches	From Bottom of Socket Bar to Floor to Floor Inch
Japanned		Bronze-plated		Antique Cop-per-plated		Highly Polished		Dimensions of Top Plate Inches		Depth of Cup Inches			
No.	Set	No.	Set	No.	Set	No.	Set						
20	\$2.50	470	\$3.30	320	\$3.70	120	\$4.60	1	x 4	1 1/8	5/8	1 1/4	
*24	2.90	474	4.10	324	4.60	124	5.80	4	x 3 1/4	1 5/8	1 1/2	3/8	
*28	8.40	478	10.00	328	10.90	128	12.50	5 1/2	x 5 1/4	3 1/4	2 1/4	1/2	

Cast Metal Boxes for Setting Floor Spring Hinges and Pivot Hinges into Cement or Tile Floors

	Each
For No. 2 Mortise Floor Spring Hinge.....	\$1.20
For No. 4 Mortise Floor Spring Hinge.....	1.80
For No. 6 Mortise Floor Spring Hinge.....	2.40
For No. 8 Mortise Floor Spring Hinge.....	2.40
For No. 24 Pivot Hinge.....	.90
For No. 28 Pivot Hinge.....	2.40

Prices include screws

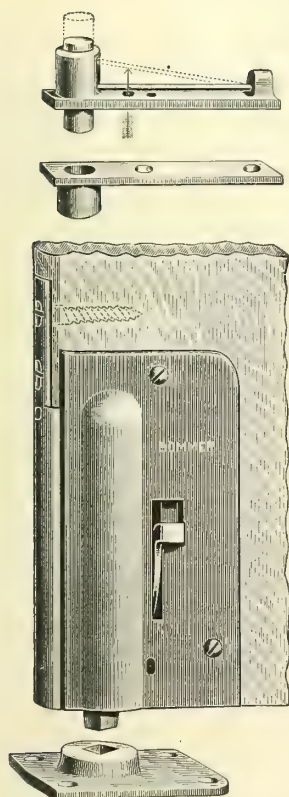


Floor Surface Spring Hinge

Bommer Double Release

Vertical Type—Ball Bearing

Suitable for Both Double Acting and Single Acting Doors



This hinge has two release movements. First, the spring-action is temporarily released on either side of the door through an angle of 90 degrees by pressing either side-pedal with the foot when opening the door, and is automatically re-engaged when the door is closed.

Second, the spring-action is held permanently released on both sides of the door through an angle of 180 degrees by inserting a wire nail, when the door is open, in a hole provided in hinge-frame and side plates, permitting the door to swing freely without spring-action in either direction until the nail is withdrawn and the spring-action automatically re-engaged by closing the door.

The entire mechanism is contained in the hinge-frame and completely enclosed by the side plates; there are no delicate parts near the floor to rust away; the pintle of the hinge has a squared shank fitted into a correspondingly squared socket of the floor-plate and cannot jump out.

The ball-bearings are of hardened tool steel and move in an enclosed steel ball-race near the top of hinge, away from water, dust and dirt.

This hinge is easy to apply, no hanging strip is required, no holes to cut in the floor. It is the strongest and most durable hinge of its type, the springs are made of the best oil-tempered steel wire, have great resilience and power and never go lame.

These hinges as sent out have the spring correctly set up for the doors specified, but the spring power can be adjusted to suit all requirements at any time after hinge is fixed to the door.

The top pivot furnished with the hinge has a spring-actuated plunger, which permits the door to be taken down quickly and easily without any unscrewing. The workmanship, finish and elegance of appearance are unrivalled.

A special right-angle jamb socket plate for cement or tile floors will be furnished instead of the regular floor plate if so ordered (without charge).

Packed one set in a box, with screws to match.

Planished Steel

Thickness of Door Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper, Statuary Finish, or Imitation Bower-Barff		Dull Brass or Antique Brass		Sand Blast, Antique Copper, Antique Brass, also Planished Nickel-plated		From Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1 1/8 to 1 1/2	20	\$2.80	470	\$3.75	320	\$4.10	620	\$4.10	270	\$4.90	1 1/4
1 1/2 to 2	22	4.20	472	5.60	322	6.15	622	6.15	272	7.35	1 1/2
1 3/4 to 2 3/4	24	8.40	474	11.20	324	12.30	624	12.30	274	14.70	2

Polished Steel

Thickness of Door Inches	Bronze, Brass, Nickel-plated, also Genuine Bower-Barff		Antique Copper or Statuary Finish		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1 1/8 to 1 1/2	70	\$5.00	370	\$5.50	670	\$5.50	570	\$6.60	170	\$7.25	1 1/4
1 1/2 to 2	72	7.50	372	8.25	672	8.25	572	9.90	172	10.90	1 1/2
1 3/4 to 2 3/4	74	15.00	374	16.50	674	16.50	574	19.80	174	21.80	2

Bronze or Brass

Thickness of Door Inches	Bronze or Brass		Antique Copper or Statuary Finish Nickel-plated		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1 1/8 to 1 1/2	120	\$7.00	420	\$7.70	720	\$7.70	520	\$9.30	220	\$10.20	1 1/4
1 1/2 to 2	122	10.50	422	11.55	722	11.55	522	13.95	222	15.30	1 1/2
1 3/4 to 2 3/4	124	21.00	424	23.10	724	23.10	524	27.90	224	30.60	2

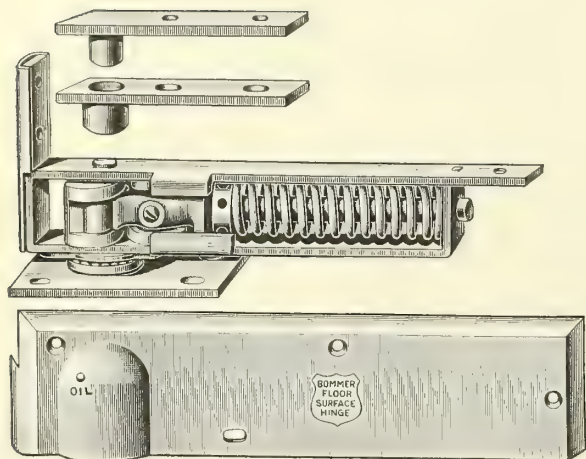
It will be noted that most of above numbers are supplied in several finishes; in all such cases the finish should be specified as well as the number

Floor Surface Spring Hinge

Bommer—Release and Hold Back

Has Efficient Alignment Device, Horizontal Compression Type, Ball Bearing

Suitable for Both Double-Acting and Single-Acting Doors



This is the most durable hinge of its type. It holds the door open when swung beyond 90 degrees at either side. When desired the spring-action can be entirely released so that the door will swing free, without spring-action, through an arc of 180 degrees in either direction by inserting a wire nail (when the door is open) into a hole provided in the side plates for that purpose.

The spring is of the compression type, made of the best oil-tempered steel wire. These hinges as sent out have the spring correctly set for the doors specified, but the tension of the spring can be adjusted to suit all requirements after the hinge is fixed to the door. The weight of the door is carried on hardened tool-steel ball-bearings contained in an enclosed steel ball-race.

The alignment can be adjusted to a nicety through an unusually large radius after the hinge is in place and can then be permanently locked by the aid of a screwdriver.

The lubricating system of this hinge permits all bearings and friction surfaces to be lubricated from one oil-hole at either side of the hinge; both hinge-frame and floor-plate are reinforced by a method which secures longer bearings for the spindle. The spring-actuated plunger is centrally guided in the side-extensions of the hinge-frame. A suitable top pivot is furnished with the hinge. This hinge is easy to apply, being screwed fast directly to

the door and to the surface of the floor, which is the most reliable method. Back edge of door is slightly rounded.

If special right-angle jamb plate for cement or tile floors is required state so on order and add 25 cents per set to list price.

Packed one set in a box, with screws to match

Planished Steel

Thickness of Door Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper Statuary Finish also Imitation Bower-Barff		Dull Brass or Antique Brass		Sand Blast Antique Copper Antique Brass also Planished Nickel-plated		From Center of Spindle to Back Edge of Door Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1 1/8 to 1 3/4	18	\$3.40	468	\$4.20	318	\$4.50	618	\$4.50	268	\$5.40	1 1/2
2 to 2 1/2	19	4.20	469	5.10	319	5.50	619	5.50	269	5.70	2 1/8

Polished Steel

Thickness of door Inches	Bronze, Brass or Nickel-plated also Genuine Bower-Barff		Antique Copper or Statuary Finish		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Back Edge of Door Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1 1/8 to 1 3/4	68	\$5.50	368	\$5.80	668	\$5.80	568	\$6.40	168	\$9.70	1 1/2
2 to 2 1/2	69	6.00	369	6.30	669	6.30	569	6.90	169	10.20	2 1/8

Bronze or Brass

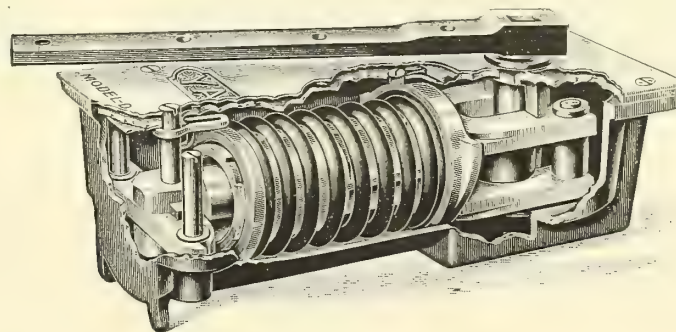
Thickness of Door Inches	Bronze or Brass		Antique Copper Statuary Finish or Nickel-plated		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Back Edge of Door Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1 1/8 to 1 3/4	118	\$8.40	418	\$9.30	718	\$9.30	518	\$10.10	218	\$13.40	1 1/2
2 to 2 1/2	119	10.10	419	10.90	719	10.90	519	11.80	219	15.10	2 1/8

It will be noted that most of the above numbers are supplied in several finishes; in all such cases the finish should be specified as well as the number

Double-Acting Door Closing Floor Hinge

Yale Model D (Bardsley Type)

This is a combined spring and door closer, and is placed in the floor under the door. It also takes the place of the butts ordinarily used to hang the door, as the bottom of the door is hung on the pintle provided with the hinge, thus forming pivots on which the door swings in either direction.



Furnished regularly in polished bronze. Polished brass at regular prices. Nickel, dull brass, antique copper, statuary bronze, or Bower-Barff finishes, at an additional price. Other special finishes to order. When floor hinges are to be set in tile, cement or concrete floors, a cast iron box should be used to permit easy removal of the hinge. In ordering, give size of floor hinge. Each set in a box, complete with screws to match.

No. 31 For light butlers pantry and other similar interior doors in dwellings. Length, 9 inches; width, 4 inches; depth, $3\frac{3}{8}$ inches; center of pintle to end of hinge, $1\frac{9}{16}$ inches; set including pivot shown below \$ 9.65

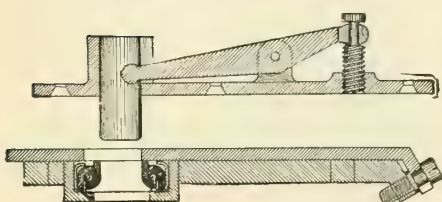
No. 32 For medium interior doors in dwellings, offices and public buildings, or for small vestibule doors up to 2 feet 6 inches wide. Length, $9\frac{3}{8}$ inches; width, $4\frac{1}{2}$ inches; depth, $3\frac{1}{4}$ inches; center of pintle to end of hinge, $1\frac{13}{16}$ inches; set including pivot shown below 11.00

No. 33 For outside doors up to 2 feet 9 inches wide, or heavy interior doors. Length, $10\frac{1}{2}$ inches; width, 5 inches; depth, $3\frac{5}{8}$ inches; center of pintle to end of hinge, 2 inches; set including pivot shown below 14.85

No. 34 For outside doors up to 3 feet wide. Length, $11\frac{1}{2}$ inches; width, $5\frac{1}{2}$ inches; depth, $3\frac{7}{8}$ inches; center of pintle to end of hinge, $2\frac{1}{4}$ inches; set including pivot shown below \$17.60

No. 35 For outside doors up to 3 feet 6 inches wide. Length, $12\frac{1}{2}$ inches; width, 6 inches; depth, $4\frac{3}{8}$ inches; center of pintle to end of hinge, $2\frac{1}{2}$ inches; set including pivot shown below 20.35

No. 36 For outside doors up to 4 feet wide. Length, $13\frac{1}{2}$ inches; width, $6\frac{3}{8}$ inches; depth, $4\frac{3}{4}$ inches; center of pintle to end of hinge, 3 inches; set including pivot shown below 23.10



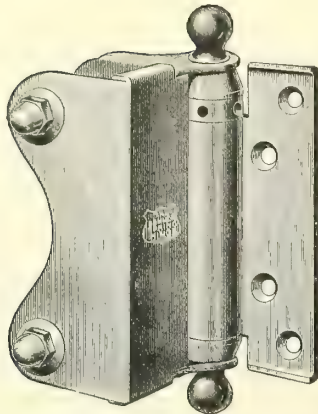
Adjustable Ball-Bearing Top Pivot

This pivot is supplied with above hinges. It requires no lubrication. By turning the end screw, the top of the door may be brought nearer to, or removed farther from the jamb.

Box-Flanged Spring Hinges

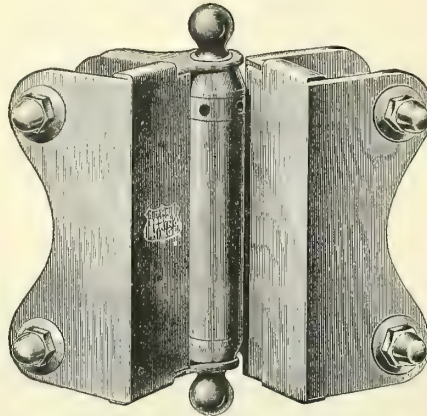
Bommer

For Lavatory Doors on Marble or Slate Partitions



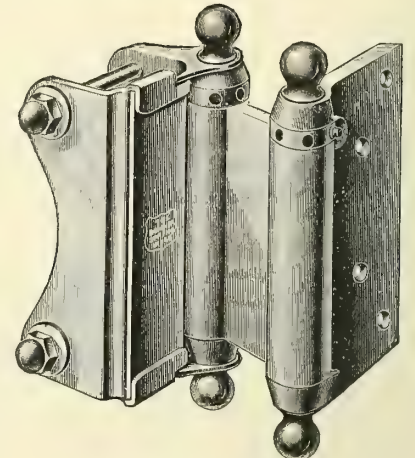
No. 1000 Single Action

For partitions with hanging stile. One box flange



No. 1001 Single Action

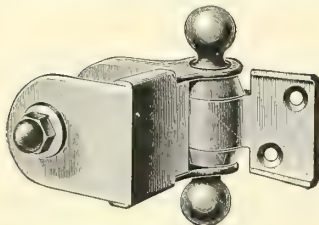
For partitions with hanging stile. Two box flanges



No. 1005 Double Action

For partitions with hanging stile. One box flange

Can be used for either right or left hand doors opening in or out. These hinges are suitable for marble or slate partitions of the following thicknesses: 1 inch, 1 1/4 inches, 1 1/2 inches, 1 3/4 inches, 2 inches. The box flange for the marble is adjustable 1/4 inch over and under above sizes to allow for variations in thickness. They are made to close the door, but if so specified in single action hinges the springs can be made reverse action, to hold the door open, without extra charge. The length of the flanges is 4 inches. The exact thickness of both the marble and the door must be stated.



No. 01000 Blank

Made of brass, nickel-plated or bronze, highly polished. Specify which is desired. For statuary, dull brass or antique finishes add 10 per cent.

No. 1000 Pair.....	\$6.60
No. 1001 Pair.....	8.70
No. 1005 Pair.....	9.90

For extra light and narrow doors one hinge, No. 1000, and one blank, No. 01000, may be used.

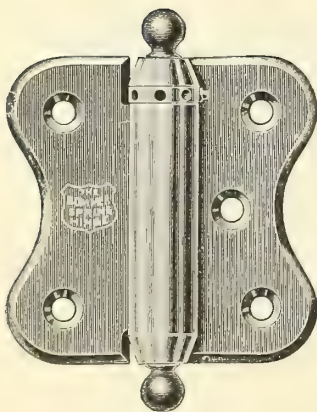
Set.....	\$5.40
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Packed with necessary bolts and screws to match.

Surface Spring Hinges

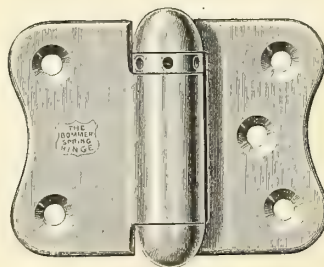
Bommer

Single Acting, for Lavatory Doors



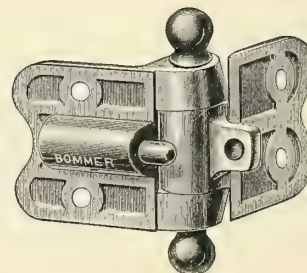
No. 1011

Length of flange 4 inches



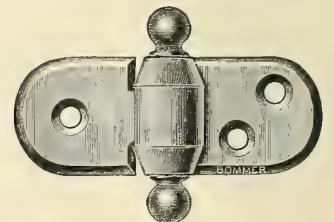
No. 1010

Length of flange 3 inches



No. 1020 Rear View

Checking blank for use with Hinge No. 1011



No. 01011

For use with Hinge No. 1011

These hinges, as regularly made, close the door, but if so ordered can be made with reverse springs to hold it open without extra charge. State if wanted for marble or wood partitions; if for marble, state its thickness.

Packed with bolts and screws to match.

Made in brass, nickel-plated, or bronze, highly polished. Specify which desired.

Checking Blank

Holds the door partly open while closet is unoccupied.

Used in connection with 4-inch surface spring hinges, one hinge, No. 1011, and one checking blank, No. 1020, constitute one set. (Dispenses with use of indicator bolt.)

If wanted for marble, state thickness.

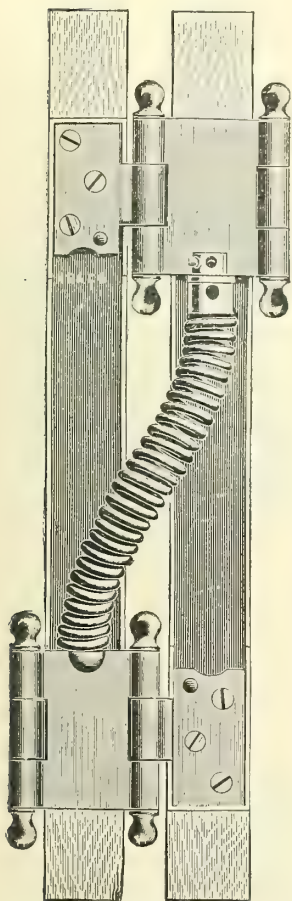
Set.....	\$6.40
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No. 1011 Pair.....	\$6.40
No. 1010 Pair.....	5.00

For extra light and narrow single action lavatory doors, one hinge, No. 1011, and one blank, No. 01011, may be used. Set, \$5.20.

Spring and Blank Butts

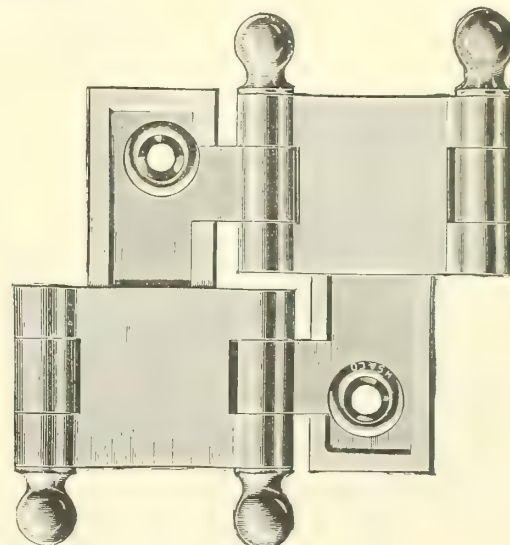
Chicago Double Acting



Spring Butt

The spring is always concealed when the door is closed.

A pair of spring butts are intended for each door, but when doors are light, one spring butt at the top and one blank butt at the bottom will work very well. Never put the blank butt at the top of the door. Be particular to hang them in perpendicular line.



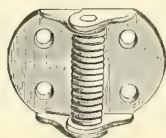
Blank Butt

Planished Wrought Steel. Prices per pair, packed with screws to match

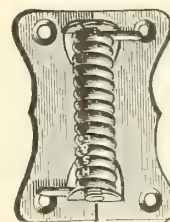
For Doors, Thickness-Inches	Spring Butts		Blank Butts	
	No. 1½ Japanned	No. 131½ Bronze-plated	No. 3½ Japanned	No. 133½ Bronze-plated
7⁄8 to 1	\$1.30	\$1.60	\$.65	\$.80
1 1⁄8 to 1 1⁄4	1.60	1.95	.80	1.00
1 3⁄8 to 1 1⁄2	2.60	3.20	1.30	1.60

Show Case Spring Hinges

Half Size Cuts



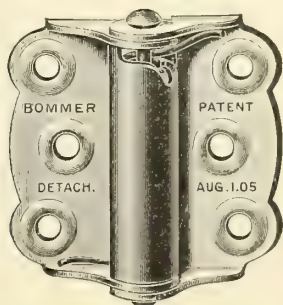
No. 422 Wrought steel, brass-plated, with brass spring, 1½ inches long, gross pair..... \$10.00



No. 23 Wrought steel, copper bronzed, with brass-plated spring, 2¼ inches long, dozen pairs..... \$1.50

Screen Door Spring Hinges

Bommer Detachable



Made of wrought steel, 2¾ x 2¾ inches.

An easily detachable screen door hinge is often very convenient.

To detach this hinge, simply push the end of the spring down into the hook on the barrel and withdraw the pintle; then take the door down without unscrewing.

This hinge has enclosed oil-tempered steel coil-spring, is well made and will give good service.

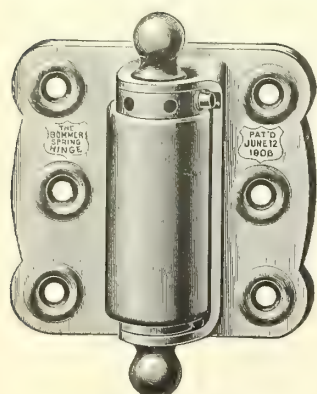
Packed with screws to match.

No. 960½ Japanned, dozen pairs..... \$1.90
 No. 961 Bronze-plated, dozen pairs..... 2.80
 No. 963 Dull brass finish, dozen pairs..... 3.20

Screen Door Spring Hinges

Bommer Adjustable Tension

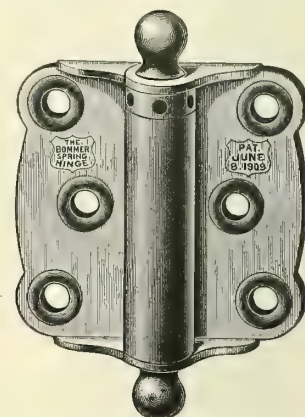
The coil spring is entirely enclosed and is made of best oil-tempered steel wire. These hinges are of excellent workmanship and finish and are made of heavy metal. The tension of the spring can be regulated after the hinge is applied to the door.



Nos. 2001, 2010 and 2012
Extra Heavy, 3x3 Inches

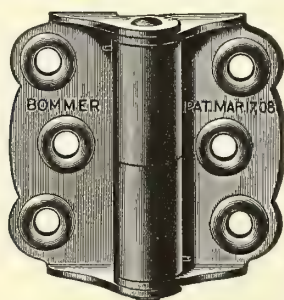
Packed one pair in a box, with screws to match

Number	Material	Finish	Pair
2001	Planished Steel	Bronze-plated	\$1.10
2010	Bronze	Highly polished	2.30
2012	Brass	Dull Brass	2.60
2100	Planished Steel	Japanned	.60
2101	Planished Steel	Bronze-plated	.75
2102	Planished Steel	Antique Copper	.90
2110	Bronze	Highly polished	1.60
2112	Brass	Dull Brass	1.80



Nos. 2100, 2101, 2102, 2110 and 2112
Heavy, 3x3 Inches

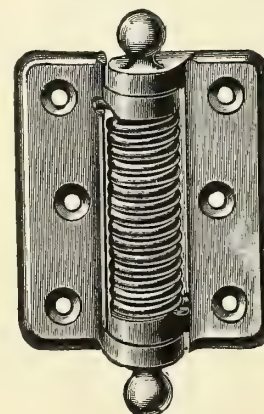
Bommer Wrought Steel



These hinges have two bearing joints, no matter which end is uppermost, thereby greatly increasing its strength and durability. Has enclosed oil-tempered spiral coil spring. 2 3/4 x 2 3/4 inches.

Number	Finish	Packed	Dozen Pair
900	Japanned	Without screws	\$1.50
900 1/2	Japanned	With screws	1.90
901	Bronze-plated	With screws to match	2.80
903	Dull Brass	With screws to match	3.20

H. S. & Co.

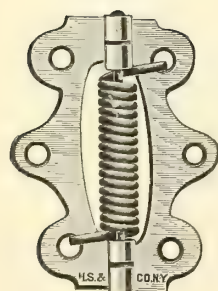


No. 2715 Cast bronze, polished, 3x3 inches. Packed with screws to match. Dozen pair..... \$25.60

Anti-Friction Spring Hinges

Single Acting

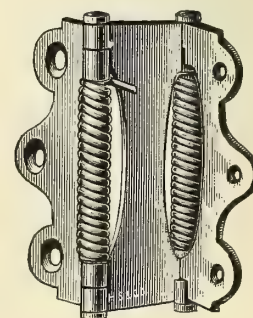
Number	Length Inches	Material	Finish	Dozen Pair
1	2 3/8	Wrought Brass	Dipped	\$3.00
3	3	Wrought Brass	Dipped	4.50
5	5	Wrought Brass	Dipped	7.50
13	3	Wrought Iron	Brass-plated	3.00



Single Acting

Double Acting

Number	Length Inches	Material	Finish	Dozen Pairs
9	3	Wrought Brass	Dipped	\$8.30
11	5	Wrought Brass	Dipped	16.50



Double Acting

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Strap and Tee Hinges

Packed One Pair in a Box with Screws



This style of packing is most economical, convenient and time-saving in railroad shops and factories generally. The slight extra cost of packing is more than balanced by the great saving in the store room, eliminating all waste of materials and having hinges and proper screws ready for instant use. The hinges are illustrated and described in detail on the next page.

Prices are Per Hundred Pairs

Wrought Steel, Plain

Size, inches.....	3	4	5	6	8	10	12
Style							
Light Strap.....	\$7.50	\$9.00	\$11.00	\$13.00	\$16.50	\$22.75	\$32.50
Heavy Strap.....	10.00	13.75	16.50	23.75	38.50	57.00	
Corrugated Heavy Strap.....	10.60	14.35	17.00	25.00	40.00	57.50	
Light Tee.....	6.80	7.25	9.40	10.60	12.50	18.75	24.40
Heavy Tee.....	13.75	15.85	19.25	25.00	35.75	47.50	
Extra Heavy Tee.....	15.00	19.35	23.35	35.75	50.50	71.50	
Corrugated Extra Heavy Tee.....	15.00	19.35	24.10	37.10	52.50	73.10	

Wrought Steel, Japanned

Size, inches.....	3	4	5	6	8	10	12
Style							
Light Strap.....	\$8.15	\$9.65	\$12.00	\$14.25	\$18.25	\$25.00	\$36.00
Heavy Strap.....	10.50	14.50	17.50	25.50	41.00	61.00	
Corrugated Heavy Strap.....	11.10	15.25	18.00	27.00	42.50	62.50	
Light Tee.....	7.35	7.75	9.90	11.25	13.25	20.00	26.00
Heavy Tee.....	14.50	16.75	20.00	26.25	37.50	50.00	
Extra Heavy Tee.....	15.65	20.25	24.25	37.25	53.00	75.00	
Corrugated Extra Heavy Tee.....	15.65	20.25	25.25	38.75	55.00	77.00	

Hinge Hasps

Packed one in a box, with screws, in same manner as hinges described and illustrated above

Prices Per Hundred Hasps

Wrought Steel, Plain

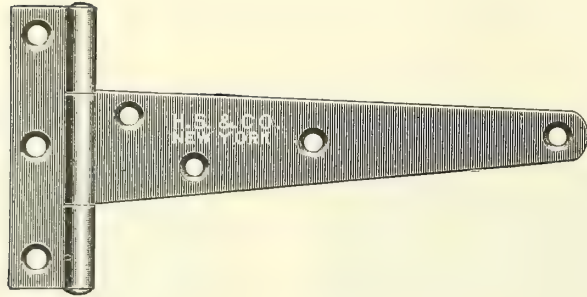
Size, inches.....	3	4½	6	8	10	12
Hundred.....	\$7.00	8.75	11.65	15.15	21.20	30.30

Wrought Steel, Japanned

Size, inches.....	3	4½	6	8	10	12
Hundred.....	\$6.75	9.50	12.50	16.15	22.75	32.50

Wrought Steel Tee Hinges

Prices Per Dozen Pairs



Light

Length of Strap Inches	Width of Strap at Joint Inches	Length of Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
3	1 ¹ / ₁₆	2 ¹ / ₂	6	\$.75	\$1.20	\$1.50
4	1 ¹ / ₁₆	2 ³ / ₄	7	.80	1.35	1.70
5	1 ³ / ₁₆	3	8	1.00	1.70	2.10
6	1 ¹ / ₄	3 ¹ / ₂	8	1.20	2.10	2.50
7	1 ¹ / ₂	3 ¹ / ₂	9	1.35	2.35	2.90
8	1 ⁹ / ₁₆	4	9	1.50	2.55	3.25
10	1 ³ / ₄	4 ¹ / ₂	10	2.20	3.70	4.60
12	2 ¹ / ₈	4 ³ / ₄	11	3.00	5.50	6.70

Heavy

Length of Strap Inches	Width of Strap at Joint Inches	Length of Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
4	1 ⁵ / ₁₆	3	8	\$.90	\$1.50	\$1.85
5	1 ³ / ₈	3 ¹ / ₂	8	1.05	1.95	2.50
6	1 ⁵ / ₁₆	3 ¹ / ₂	9	1.25	2.30	2.90
8	1 ³ / ₄	4	10	1.55	2.80	3.50
10	2	4 ¹ / ₂	11	2.30	4.20	5.15
12	2 ⁷ / ₁₆	5 ¹ / ₂	12	3.20	6.20	7.75

Extra Heavy

Length of Strap Inches	Width of Strap at Joint Inches	Length of Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
6	2 ⁵ / ₁₆	4 ¹ / ₂	11	\$3.00	\$6.00	\$8.50
8	2 ⁵ / ₈	5 ¹ / ₂	13	5.00	10.00	13.50
10	3 ¹ / ₈	7	14	7.40	14.25	19.00
12	3 ³ / ₈	7 ³ / ₄	14	10.70	21.20	28.00
14	3 ³ / ₈	7 ³ / ₄	16	11.80	23.00	30.00
16	3 ³ / ₈	7 ³ / ₄	16	12.60	24.50	31.50

Wrought Steel Strap Hinges



Prices Per Dozen Pairs

Light

Length of Each Strap Inches	Width at Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
3	1 ¹ / ₈	6	\$.85	\$1.30	\$1.45
4	1 ¹ / ₈	7	1.10	1.75	2.00
5	1 ⁵ / ₁₆	8	1.35	2.35	2.80
6	1 ⁹ / ₁₆	9	1.70	3.15	3.75
8	1 ⁷ / ₈	10	2.40	4.30	5.00
10	2 ¹ / ₁₆	10	3.30	5.90	6.90
12	2 ³ / ₄	11	4.90	9.20	10.80

Heavy

Length of Each Strap Inches	Width at Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
4	1 ⁹ / ₁₆	9	\$1.60	\$2.85	\$3.30
5	1 ¹³ / ₁₆	9	2.15	4.25	5.00
6	2 ¹ / ₂	11	2.80	6.40	7.80
8	3	12	4.50	10.25	12.35
10	3 ⁷ / ₁₆	13	6.80	15.50	19.00
12	4	14	10.40	23.50	27.50
14	4 ¹ / ₂	16	12.20	25.70	30.40

Wrought Brass Strap and Tee Hinges

Polished, Packed With Brass Screws

Tee

Length of Strap Inches	Width of Strap at Joint, Inches	Length of Joint Inches	Dozen Pairs
3	1 ¹ / ₁₆	2 ¹ / ₂	\$3.40
4	1 ¹ / ₁₆	2 ³ / ₄	4.30
5	1 ³ / ₁₆	3	5.60

Strap

Length of Each Strap Inches	Width at Joint Inches	Dozen Pairs
3	1 ¹ / ₈	\$4.50
4	1 ¹ / ₈	6.00
5	1 ⁵ / ₁₆	8.00

Hook Hinges

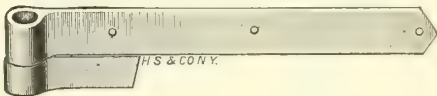
For Wood



No. 78 Wrought Iron

Size, inches.	14	18
Dozen pairs.	\$7.60	10.25

For Stone



No. 80 Wrought Iron

Size, inches.	14	18
Dozen pairs.	\$6.00	7.50

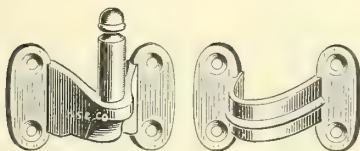
Plate Hinges



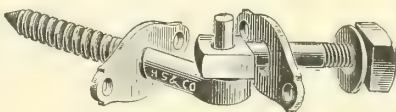
No. 162 Fast Joint, Wrought Iron, Japaned

Size, inches.	12	14	16
Dozen pairs.	\$6.00	8.00	9.00

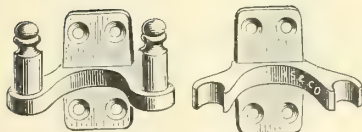
Gate Hinges



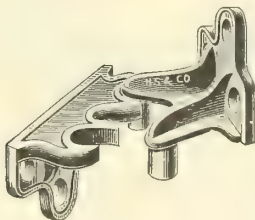
Upper Hinge



Upper Hinge



Lower Hinge

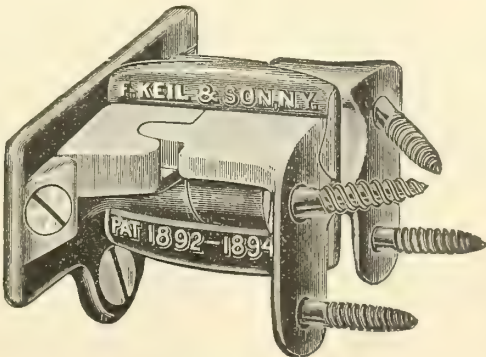


Lower Hinge

No. 224 Self-shutting. To swing both ways. Cast iron, japaned. Dozen sets. \$3.25

No. 274 Self-shutting. To swing both ways. Japaned. Upper hinge wrought iron; lower hinge cast iron. Dozen sets. \$7.60

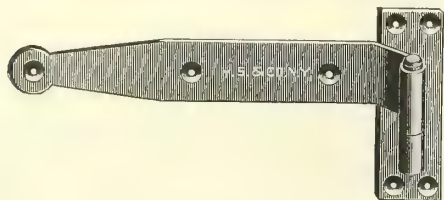
This hinge has a powerful concealed coil spring which keeps the gate closed. Double acting. Space between post and gate. 2 7/8 inches.



Half Size Cut

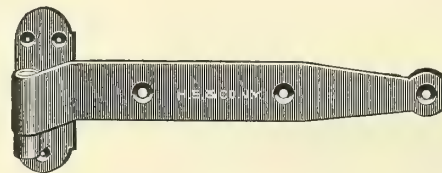
No. 2750 Cast iron, japaned, pairs. \$2.00

Blind Hinges



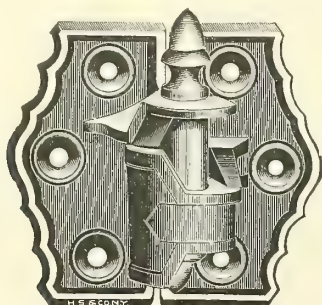
For wood. Wrought steel. Prices per dozen pairs.

Size, inches.....	10	12
No. 940 Plain.....	\$5.28	6.24
No. 1940 Galvanized.....	9.60	11.40



For brick. Wrought steel. Prices per dozen pairs.

Size, inches.....	10	12
No. 54 Plain.....	\$7.44	8.40
No. 1054 Galvanized.....	12.60	13.80



No. 1

Clark No. 1

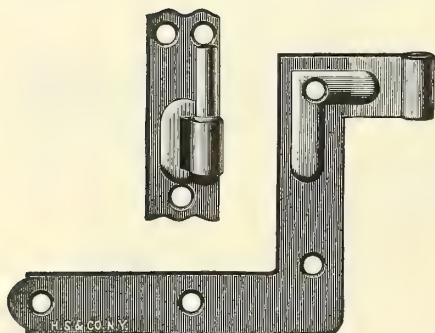
Cast Iron. For Wood

1¼-inch Throw

Set includes hinges and fasts

Dozen sets..... \$3.50

Wrought Steel—New York City Style

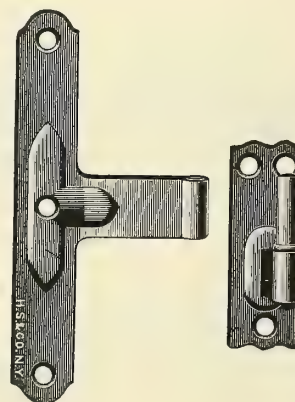


For Wood

Number	Along Blind Inches	Finish	100 Pair
1640	8	Plain Steel	\$12.00
1640	10	Plain Steel	12.50
1360	8	Galvanized	18.00
1360	10	Galvanized	20.00

For Brick

1644	8	Plain Steel	13.00
1644	10	Plain Steel	13.50
1364	8	Galvanized	22.00
1364	10	Galvanized	24.00



For Wood

No. 1642 6 inches along blind, plain steel, 100 pair..... \$14.50

For Brick

No. 1646 6 inches along blind, plain steel, 100 pair..... 15.50

Combination Sets, Blind Hinges and Fast

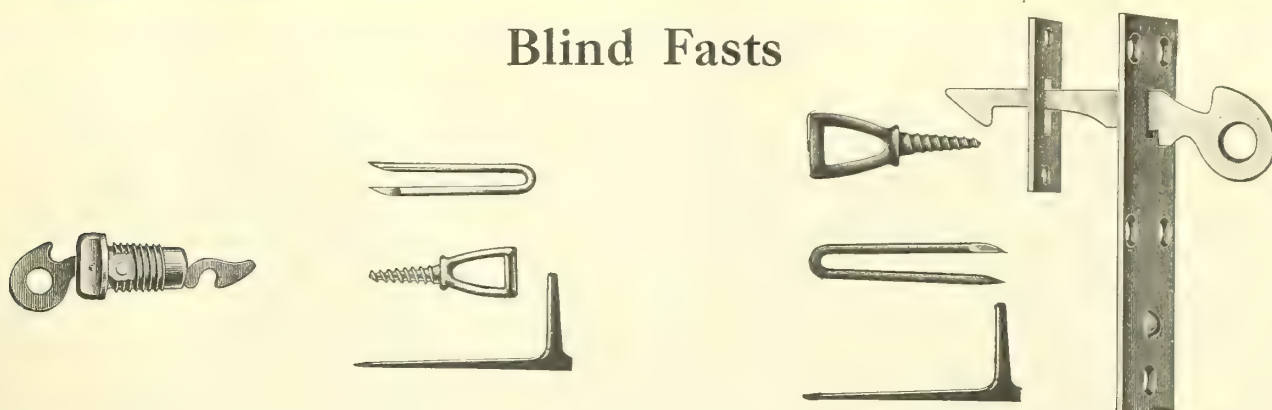
(Fast are Illustrated and Listed on next page)

Packed with screws

Set Number	Hinges Number	Fasts Number	Size Inches	100 Sets
1	1640	1680	8	\$40.00
2	1640	1680	10	42.00
3	1644	1680½	8	42.00
4	1644	1680½	10	44.00

Set Number	Hinges Number	Fasts Number	Size Inches	100 Sets
5	1360	1380	8	\$60.00
6	1360	1380	10	64.00
7	1364	1380½	8	64.00
8	1364	1380½	10	68.00

Blind Fasts



Number	Material	Gross Sets
1680	Plain, for wood	\$12.00
1380	Galvanized, for wood	20.00
1680½	Plain, for brick	12.00
1380½	Galvanized, for brick	20.00

Number	For	Material	Gross Sets
1684	Wood	Plain Steel	\$13.00
1684	Wood	Galvanized Steel	30.00
1684½	Brick	Plain Steel	13.00
1684½	Brick	Galvanized Steel	30.00

Extra Parts for Blind Fasts



Back catch for wood, gross..... \$2.80



Back catch for brick, gross..... \$2.80



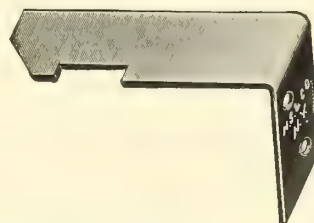
Sill Staple, gross..... \$1.30

Blind Springs



To go underneath blind

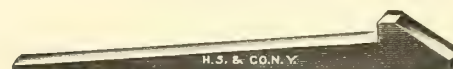
Japaned, gross..... \$4.00



For wood

Wrought iron, 4 inches, gross..... \$3.00

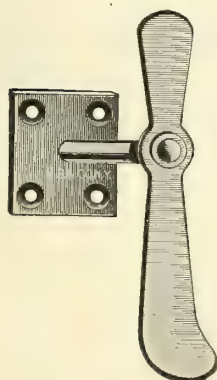
Blind Hooks



For brick
Wrought Iron

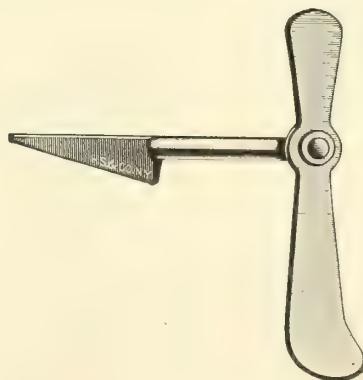
Length, inches.....	4	5	6
Gross.....	\$2.29	2.40	2.80

Blind Turnbuckles



For wood

Wrought iron, gross..... \$14.00

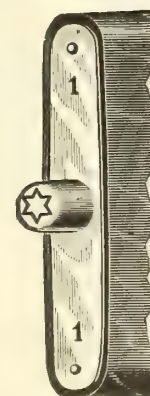


For brick

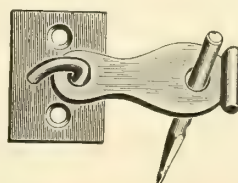
Wrought iron, gross..... \$14.00

Blind-Slat Tenons

Star



Planished brass, with suitable nails, gross..... \$1.00



Drops and Pins

No. 10 Japaned, gross..... \$5.50

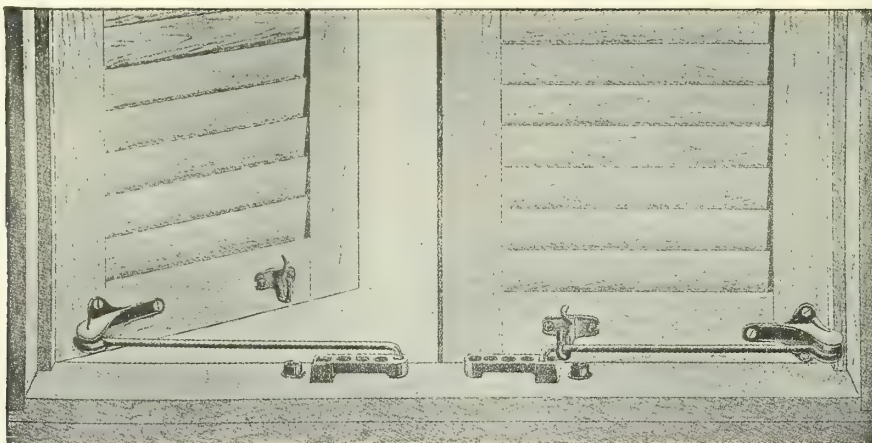
SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Shutter Fasteners or Adjusters

Superior

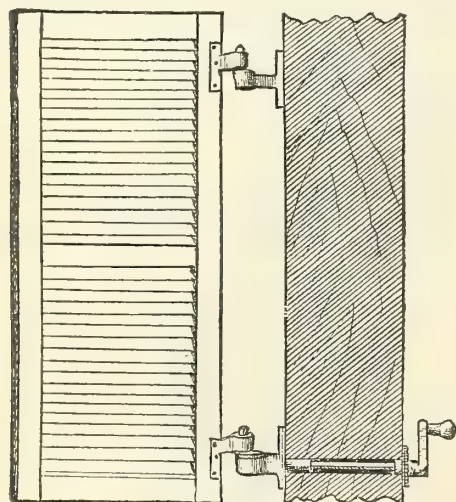


These fasteners do away with the disagreeable features of the old style locking hinges and outside fasts. The Superior Fasteners can be used to lock the shutters closed either from the inside or from the outside. The shutters can be bowed at any angle, or held back against the side of the house. The locking, at the closed position, is automatic, whether operated from the inside or outside. No danger of slamming in a wind. Complete control without leaning over the sill.

The Superior Fastener does away with all the arguments against shutters, and secures to the user their solid advantages. The bar is made of drop-forged steel, practically unbreakable.

Prices Per Dozen Pairs, with Screws to Match

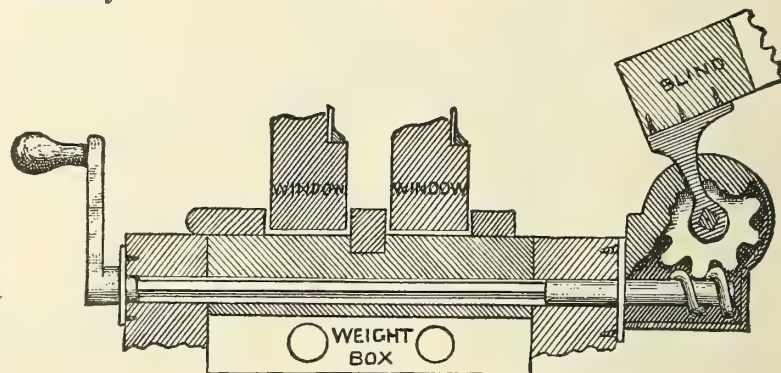
Length, Inches	For Size Shutters Inches	Japanned	Galvanized
9	12 to 13	\$4.50	\$6.00
10 ³ / ₄	14 to 15	5.00	6.50
12	16 to 17	5.50	7.00
14	18 to 19	6.50	7.75



Side View

Shutter Worker

Mallory



Cross Section

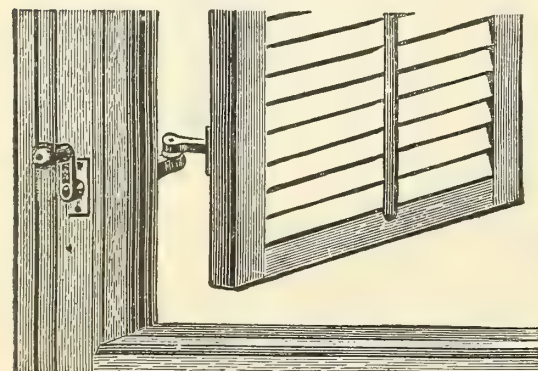
Operates the shutter from the inside without raising the sash or screen. Holds the shutter open, locked, in any position. In fact, the shutter is always locked, open or closed, and can be moved only by the handle. Can be operated against any wind. Does not interfere with removing the blinds.

The construction of the Shutter Worker is very simple. The sectional view shows the construction of the Worker and the method of installing. The only cutting required is a half-inch hole bored through the casing. The rod does not interfere with the sash weights and the Worker can be attached to the shutter when it is in any position. (A set means the complete hardware for a window of two blinds, including the upper hinges.)

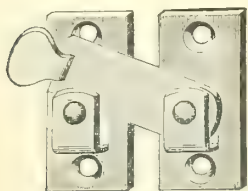
Per Set

Finish	For Frame House 2½ Inches Throw	For Brick House 3½ Inches Throw
Crank Handles and Plates		
Japanned	\$1.50	\$1.75
Nickel	1.75	2.00
Old Brass	2.00	2.25
Bronze	2.25	2.50

Extra for galvanizing throughout, per set..... \$1.00

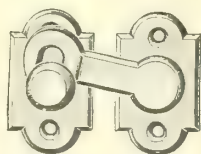


Shutter Bars



Packed with screws
Wrought Steel Size, 2 Inches

- No. N937 Bronze plated, dozen... \$1.60
No. R937 Antique copper, dozen... 1.80
Wrought Bronze
No. 937½ Polished, dozen... 2.80



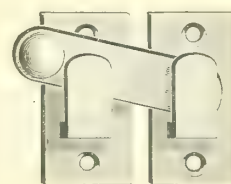
Packed with screws
Cast Brass, Polished

- No. 914 Size 2½ inches, dozen... \$3.20
No. 915 Size 3 inches, dozen... 4.80



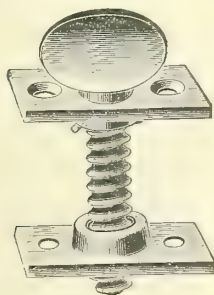
No. T55
Packed with screws
Cast Iron, Tuscan Bronzed

- Size, inches... 2 2½ 3
Dozen... \$.60 .60 .60



- Packed with screws Size 2½ inches
No. 2689½ Cast bronze, polished,
Dozen... \$8.00
No. K.A.2689½ Cast brass, old
"brass finish, dozen... 8.56

Shutter Screws



- Cast Iron, Heavy, Japanned
Size, inches... 2 2½
Gross... \$13.20 13.80

Stubs and Plates



Cast Iron, Japanned

- No. 1 ¾ x 2 inches, gross pairs... \$2.88
No. 2 Heavy, 1½ x 2½ inches, gross
pairs... 3.84

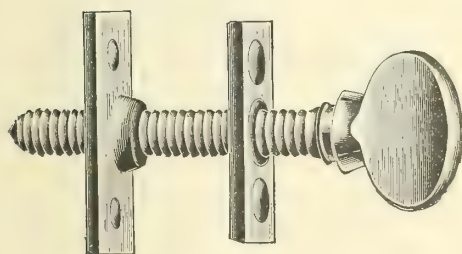


Cast Iron, Japanned

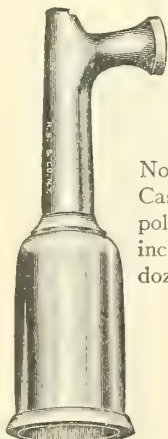
- No. 11 ¾ x 2 inches, gross pairs... \$2.88
No. 12 Extra heavy, 7⁄8 x 2¼ inches,
gross pairs... 5.04

Sash Screws

Full Size Cut



- No. 100 Cast brass, dozen... \$2.00



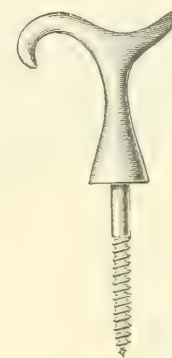
- No. P1315½
Cast bronze,
polished, 4½
inches long,
dozen... \$6.25

Sash Pull Hooks

Packed with Screws



- No. D315
Cast iron,
bronzed,
2⅞ inches
long,
dozen... \$.90



- No. 1818 Cast
bronze, pol-
ished, 1¾
inches above
shoulder,
dozen... \$3.60

Sash Poles for above, 1¼ inches diameter by 7 feet long, made of selected ash, dozen, \$8.95

Sash Pull Plates

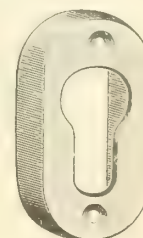


- 1 Inch in diameter. Packed with screws
No. T400 Wrought steel, amber
bronzed, dozen... \$.40
No. 800P Wrought bronze, polished,
dozen... .90



- No. 803P 1½ x 3 inches. Packed with
screws. Cast bronze polished,
dozen... \$2.80

Sash Pole Holders



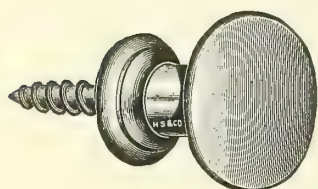
- No. 158P 1½ x 2¾ inches. Packed
with screws. Dozen... \$3.10

SINCE
1848

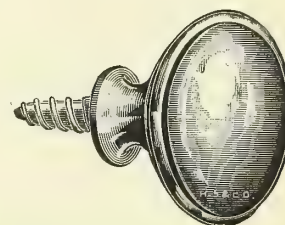
HAMMACHER SCHLEMMER & Co. NEW YORK

Shutter Knobs

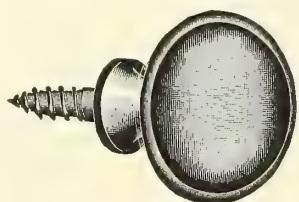
Full Size Cuts



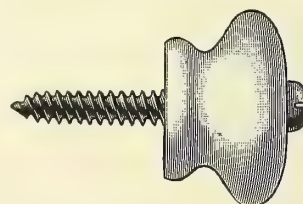
No. 1161½ Cast bronze, polished, 7/8 inch diameter, gross..... \$18.00
No. 1161½ Cast bronze, polished, 1 1/8 inch diameter, gross..... 19.20



No. 1534¼ Wrought bronze, polished, 1 1/8 inches diameter, dozen..... \$1.00
No. DA1534¼ Wrought brass, old brass finish, 1 1/8 inches diameter, dozen..... 1.40
No. N3534¼ Steel, bronze-plated, 1 1/8 inches diameter, dozen.. .84



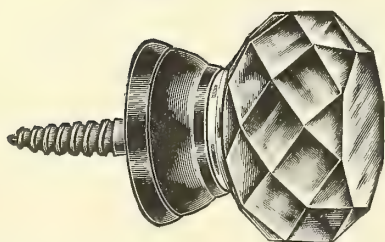
No. 1534 Cast bronze, polished, 1 3/8 inches diameter, dozen..... \$4.50



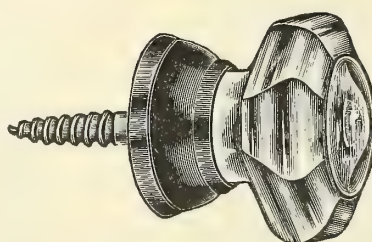
No. 10 Porcelain, with Round Head, Bronzed Screw
Size, inches..... 5/8 3/4 1 1 1/4 1 1/2 1 3/4
Gross..... \$3.35 3.50 3.75 5.50 6.75 10.00

Glass Shutter Knobs

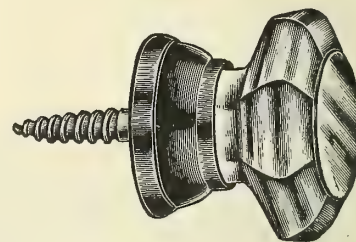
Full Size Cuts



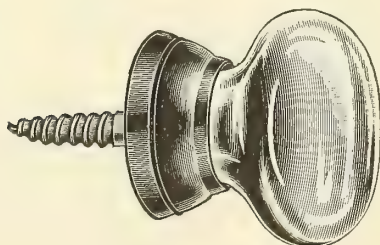
No. OB21S Cut glass, brass mountings, old brass finish, dozen..... \$30.00



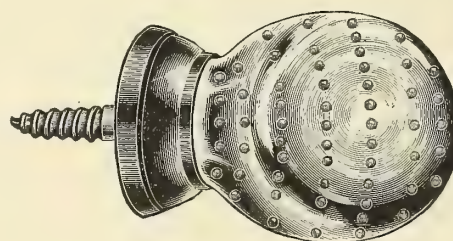
Pressed Glass
No. 16S Polished bronze mountings, dozen..... \$10.00
No. OB16 Brass mountings, old brass finish, dozen..... 10.00



No. 4S Pressed glass, polished bronze mountings, dozen..... \$7.50



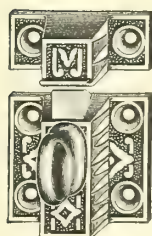
Pressed Glass
No. 1S Polished bronze mountings, dozen..... \$7.50
No. OB1S Brass mountings, old brass finish, dozen..... 7.50



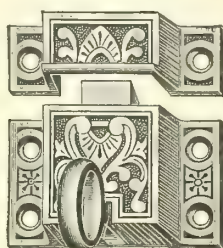
No. SB32S Pressed glass, flecked, bronze mountings, statuary bronze finish, dozen..... \$18.75

Transom Catches

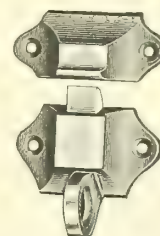
Half Size Cuts



No. 3279 Regular bevel. Packed with screws. Cast iron, amber bronzed, 1¼ x 1⅜ inches, dozen..... \$1.58

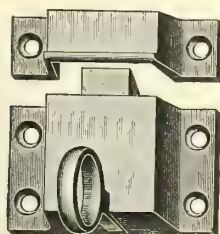


No. 3278 Regular or reverse bevel Packed with screws. Cast iron, amber bronzed, 1¼ x 2⅛ inches, dozen..... \$1.68



This catch is made strong and heavy and narrow, for use on narrow iron or wood frames. Regular bevel.

No. 36 Packed with screws. Cast bronze, polished, 1 x 1½ inches, dozen..... \$5.00



Regular or reverse bevel. 1¼ x 2¼ inches. Packed with screws.

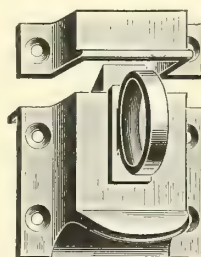
No. 2278½ Cast bronze, polished, dozen..... \$7.50

No. KA2278½ Cast brass, old brass finish, dozen..... 8.94

No. N13278 Cast iron, bronze-plated, dozen..... 4.95

No. DA13278 Cast iron, old brass finish, dozen..... 5.54

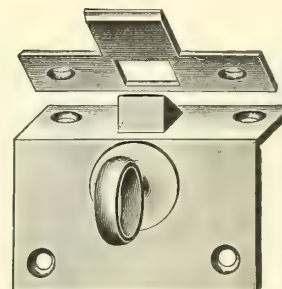
No. LB2278½ Cast bronze, statuary bronze finish, dozen..... 8.94



Regular bevel, 2½ x 1⅞ inches. Packed with screws.

No. 3847P Cast bronze, polished, dozen..... \$14.65

No. OB3847 Cast brass, old brass finish, dozen..... 16.15



Regular bevel 1½ x 2⅝ inches. Packed with screws.

No. 2279½ Cast bronze, polished, dozen..... \$15.00

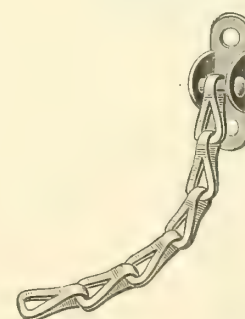
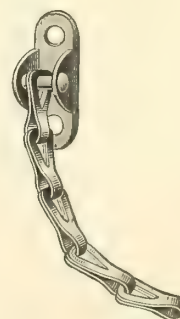
No. KA2279½ Cast brass, old brass finish, dozen..... 16.44

Transom Chains



Packed with screws

Number	Material	Finish	12 inches Dozen	15 inches Dozen
0200½	Wrought Steel	Tuscan Bronzed	\$3.36	\$3.84
NO200½	Wrought Steel	Bronze-plated	3.84	4.32
200½	Wrought Bronze	Polished	6.24	6.72

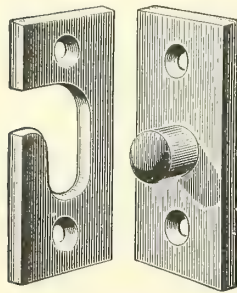


Wrought steel Packed with screws 10 inches long

Number	Finish	Dozen
T31	Amber Bronzed	\$2.50
YT31	Bronze-plated	3.00

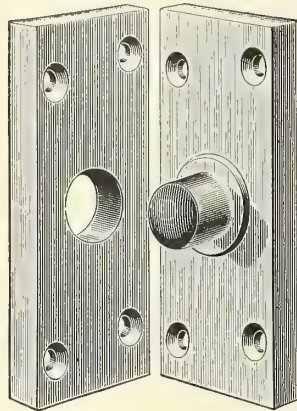
Sash Centers or Transom Plates

Plain

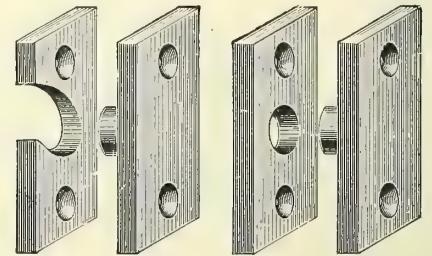


Cast Iron, Japanned

- No. 4 $1 \times 2\frac{7}{8}$ inches, dozen sets.... \$1.00
 No. 22 $\frac{15}{16} \times 2\frac{1}{4}$ inches, dozen sets.... .70
 No. 6 $1\frac{1}{4} \times 3\frac{3}{8}$ inches, dozen sets... 1.80



No. 40 Cast iron, japanned, $1\frac{1}{2} \times 3\frac{7}{8}$ inches, dozen sets..... \$4.30

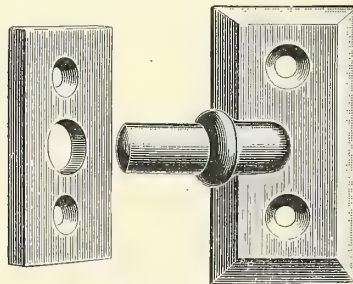


- No. 1330 $\frac{1}{2}$ Cast bronze, polished, $\frac{3}{4} \times 2\frac{1}{4}$ inches. Packed with screws. Dozen sets, as shown... \$14.40
 No. 1330 Dozen sets, all open..... 14.40
 No. 1330 $\frac{3}{4}$ Dozen sets, all closed... 14.40

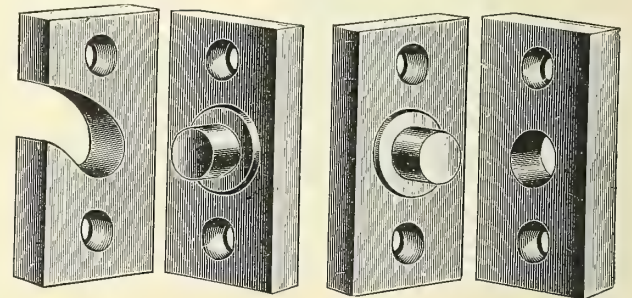


No. 1333 $\frac{1}{2}$ Cast iron, amber bronzed, $\frac{7}{8} \times 1\frac{1}{8}$ inches. Dozen sets..... \$2.64

- No. 9750 Cast bronze, polished, $\frac{3}{4} \times 1\frac{1}{4}$ inches. Packed with screws. Dozen sets..... 5.40

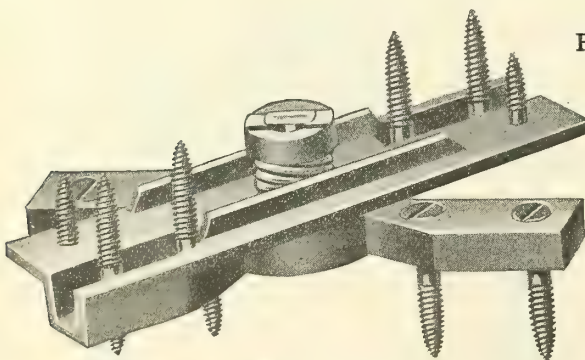


No. 30 Cast iron, $1 \times 2\frac{3}{16}$ inches, dozen sets..... \$1.20



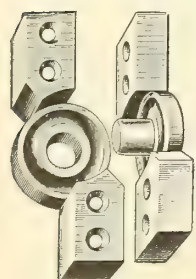
- No. 1331 Cast bronze, polished, $1\frac{1}{2} \times 2\frac{3}{4}$ inches. Packed with screws. Dozen sets, as shown... \$31.68
 No. 1331 $\frac{1}{2}$ Dozen sets, all open..... 31.68
 No. 1331 $\frac{1}{4}$ Dozen sets, all closed..... 31.68

Rabbeted For One-half inch Rabbet



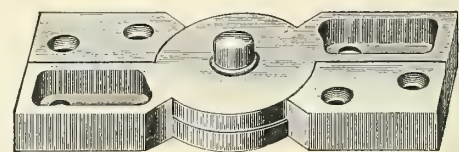
Friction Center

Has automatic adjustment for shrinkage of woodwork, which eliminates all strain on parts. 6 inches long. Coppered iron. Style S, $1\frac{3}{4}$ inches. Dozen sets.....\$9.60



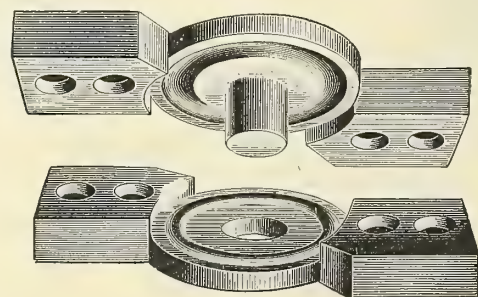
No. PO 1140 Cast Bronze, Polished. Packed with Screws

- | Size, inches.. | $1\frac{1}{2} \times 4$ | $1\frac{3}{4} \times 4$ | 2×4 | $2\frac{1}{4} \times 4$ | $2\frac{3}{8} \times 4$ |
|----------------|-------------------------|-------------------------|--------------|-------------------------|-------------------------|
| Sets..... | \$1.88 | 2.00 | 2.38 | 2.75 | 3.13 |



No. 1306
Cast Bronze, Polished, Steel Bushed
Packed with screws

- | Size, inches..... | $1\frac{3}{4} \times 4\frac{1}{2}$ | $2 \times 4\frac{1}{8}$ | $2\frac{1}{4} \times 5$ | $2\frac{1}{2} \times 5\frac{1}{4}$ |
|-------------------|------------------------------------|-------------------------|-------------------------|------------------------------------|
| Set..... | \$4.05 | 4.50 | 5.25 | 6.00 |



Cast Iron, Coppered. Packed with Screws

- | Number..... | 42 $\frac{1}{2}$ | 43 | 44 | 45 | 46 |
|-------------------|------------------------------------|------------------------------------|-------------------------|------------------------------------|------------------------------------|
| Size, inches..... | $1\frac{1}{2} \times 3\frac{1}{2}$ | $1\frac{3}{4} \times 3\frac{7}{8}$ | $2 \times 4\frac{1}{4}$ | $2\frac{1}{4} \times 4\frac{7}{8}$ | $2\frac{1}{2} \times 5\frac{3}{8}$ |
| Dozen sets..... | \$7.40 | 8.90 | 11.10 | 13.30 | 15.60 |

Transom Lifters

Solid Grip

Number	Material and Finish	Diameter Inch	Length Feet	Each
643	Iron, coppered	$\frac{1}{4}$	3	\$.55
644	Iron, coppered	$\frac{1}{4}$	4	.55
314	Iron, coppered	$\frac{5}{16}$	4	1.00
315	Iron, coppered	$\frac{5}{16}$	5	1.15
325	Iron, coppered	$\frac{3}{8}$	5	1.50
326	Iron, coppered	$\frac{3}{8}$	6	1.70
338	Iron, coppered	$\frac{1}{2}$	8	3.70
214	Steel, bronze-plated	$\frac{5}{16}$	4	1.30
215	Steel, bronze-plated	$\frac{5}{16}$	5	1.50
214	Steel, old brass finish	$\frac{5}{16}$	4	1.30
215	Steel, old brass finish	$\frac{5}{16}$	5	1.50
214	Steel, antique copper	$\frac{5}{16}$	4	1.30
215	Steel, antique copper	$\frac{5}{16}$	5	1.50
0314	Solid bronze, polished	$\frac{5}{16}$	4	5.00
0315	Solid bronze, polished	$\frac{5}{16}$	5	5.75

To get size of Lifters wanted, measure from floor to center of transom and deduct 5 feet for a top or center hung transom, or $3\frac{1}{2}$ feet for bottom hung transom.

We recommend:
 $\frac{1}{4}$ -inch Rod for transoms not over 12 pounds in weight
 $\frac{5}{16}$ -inch Rod for transoms not over 20 pounds in weight
 $\frac{3}{8}$ -inch Rod for transoms not over 30 pounds in weight
 $\frac{1}{2}$ -inch Rod for transoms not over 75 pounds in weight
 Brackets provide for recess as deep as 1 inch.

Simplex

This lifter will operate all styles of transoms, automatically and securely. It is out of the way, as the operation is by a straight push or pull. Does not mar the trim below the transom and is easily installed.

Iron, Coppered

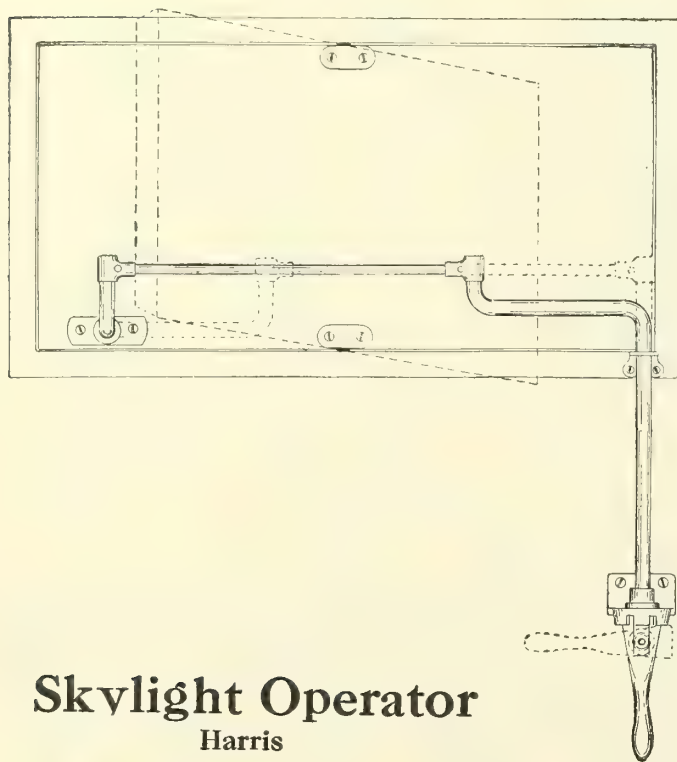
No. 10	3 feet, size of rod $\frac{1}{4}$ inch, each	\$.65
No. 11	4 feet, size of rod $\frac{5}{16}$ inch, each	1.30
No. 12	5 feet, size of rod $\frac{3}{8}$ inch, each	2.05

The length measurement indicates length of rod in the old style lifter. The Simplex Lifter to take the place of the old 3-foot lifter would be about 18 inches long. One foot should be added to this for each additional foot.

Example: No. 10-3 would be $\frac{1}{4}$ inch rod about 18 inches long, but taking place of regular 3-foot lifter.

Transom Operator

Payson



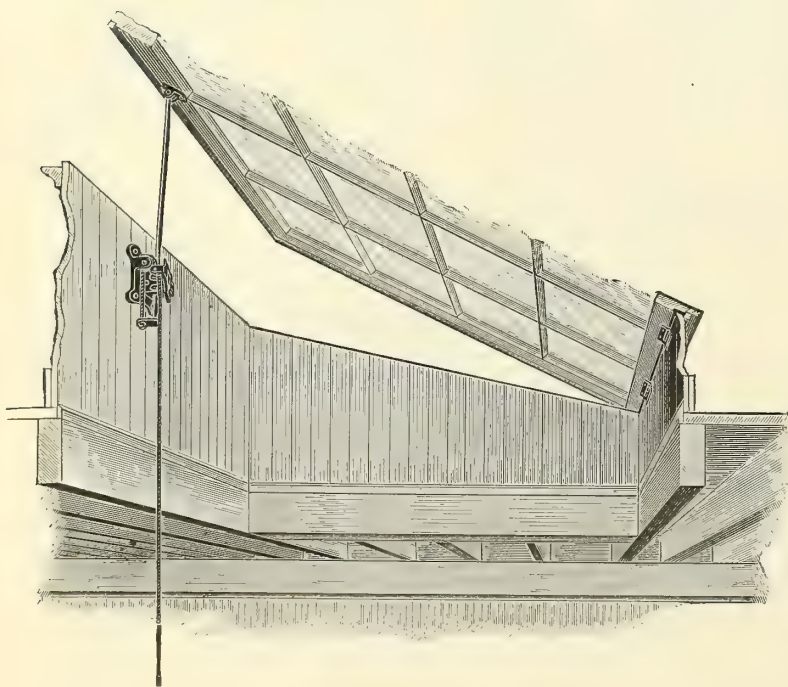
For sash pivoted top and bottom. For sash hinged at ends, opening in or out.

Made only in $\frac{3}{8}$ -inch, $\frac{1}{2}$ -inch or $\frac{5}{8}$ -inch rod. This operator will handle any sash pivoted top and bottom or hinged on the end. The lock is a ratchet device, holding the sash securely locked. In ordering give width and height of transom, width of trim, distance from floor to bottom of transom, projections if any, recess if any, material and finish.

Prices on application.

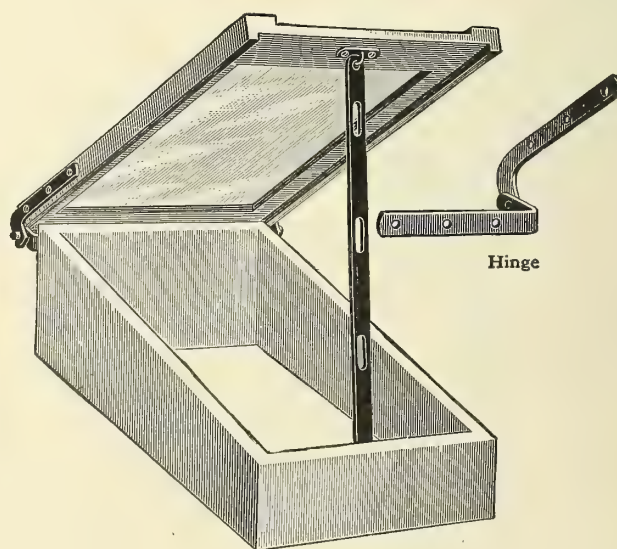
Skylight Operator

Harris



Scuttle Fasteners and Hinges

Sargent



Strong and effective in all positions. Skylights may now be handled as easily as windows have been heretofore. With a single cord perfect control is maintained over any skylight. No breakage of glass—no slamming of sash—no rattle. Firm, strong and “sure grip.” Cannot be put on wrong. Let rope hang straight down. No blocking or building up required. Applicable to all skylights.

- No. 1 $\frac{5}{16}$ -inch rod for sash 3 x 4 feet, rod 18 inches long. Use No. 8 sash cord. Common coppered or bronze, each. . . . \$ 6.40
- No. 2 $\frac{1}{2}$ -inch rod for sash larger than 3 x 4 feet, rod 24 inches long. Use No. 10 sash cord. Common coppered bronze, each. . . . 10.40

Wrought steel, japanned. Fasteners and hinges complete.

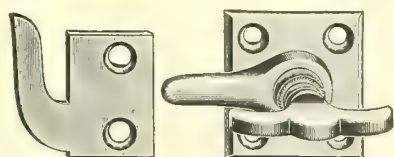
Number.	2
Length of rod, inches.	26
Dozen sets.	\$7.50

SINCE
1848

HAMMACHER SCHLEMMER & CO. NEW YORK

Casement Fasteners

Half Size Cuts

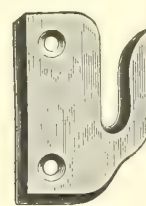


Packed with screws
1 3/8 x 1 3/8 Inches. Reversible

Number	Material	Finish	Dozen
02160	Cast Bronze	Polished	\$8.10
KA02160	Cast Brass	Old Brass	9.18
E02160	Cast Bronze	Nickel-plated	9.18
LB02160	Cast Bronze	Statuary Bronze	9.18



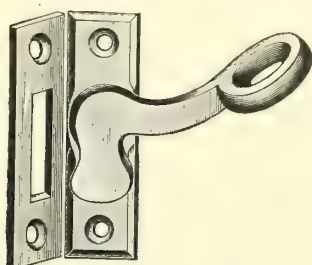
Strike, Style 200 1/2



Strike, Style 200

Packed with screws
1 1/8 x 2 Inches. Reversible

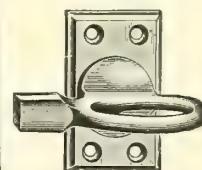
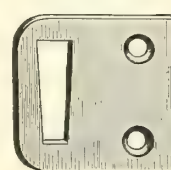
Number	Material	Finish	Dozen
200	Cast Bronze	Polished	\$10.00
OB200	Cast Brass	Old Brass	12.00
200 1/2	Cast Bronze	Polished	10.00
OB200 1/2	Cast Brass	Old Brass	12.00



Packed with screws
5/8 x 2 1/2 Inches. Not reversible

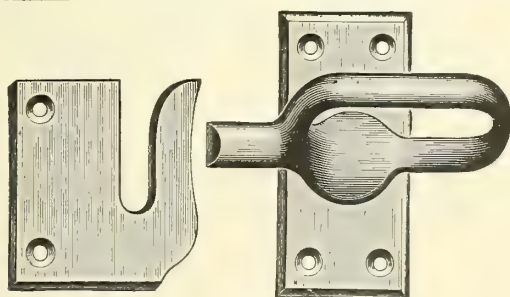
Made right and left hand. State which wanted. Illustration shows left hand.

Number	Material	Finish	Dozen
02162	Cast Bronze	Polished	\$9.72
KA02162	Cast Brass	Old Brass	10.80
E02162	Cast Bronze	Nickel-plated	10.80
LB02162	Cast Bronze	Statuary Bronze	10.80



Packed with screws
1 x 1 3/8 Inches. Reversible

Number	Material	Finish	Dozen
02161 1/2	Cast Bronze	Polished	\$8.10
KA02161 1/2	Cast Brass	Old Brass	9.18

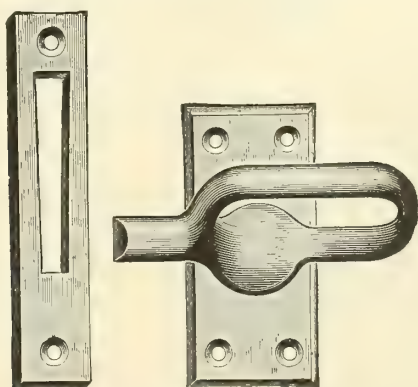


Packed with screws
1 3/8 x 3 Inches. Reversible

Number	Material	Finish	Dozen
139P	Cast Bronze	Polished	\$17.00
OB139	Cast Brass	Old Brass	18.50

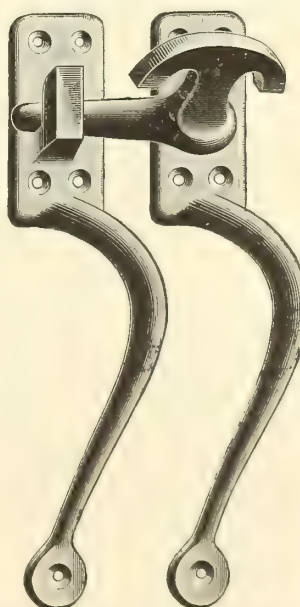
Packed with screws
1 x 1 3/8 Inches. Reversible

Number	Material	Finish	Dozen
02161	Cast Bronze	Polished	\$8.10
KA02161	Cast Brass	Old Brass	9.18



Packed with screws
1 3/8 x 3 Inches. Reversible

Number	Material	Finish	Dozen
138P	Cast Bronze	Polished	\$17.00
OB138	Cast Brass	Old Brass	18.50



For Double Casements

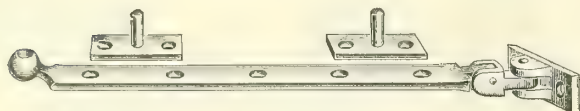
Packed with screws

1 x 6 1/4 Inches

No. OB489M Cast Brass, old brass finish, dozen..... \$31.90

No. 489M Cast bronze, polished, dozen..... 29.60

Casement Adjusters



No. 043 $\frac{1}{4}$ Reversible. Packed with screws. For sash opening out. Cast bronze, polished. Width of bar $\frac{3}{4}$ inch.

12 inches long, dozen..... \$32.40
15 inches long, dozen..... 32.40

Can be furnished to order 18 and 24 inches long.



Reversible. Packed with screws. For sash opening out. Plate $1\frac{3}{8} \times 8\frac{3}{4}$ inches. Rod $\frac{5}{16} \times 7\frac{7}{8}$ inches.

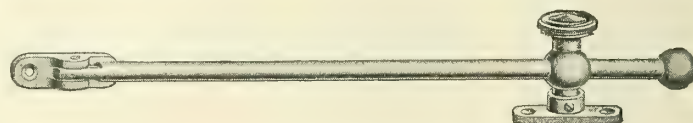
No. Y84 Cast iron fittings, wrought steel rod, bronze-plated finish, dozen..... \$11.10
No. OB88 Cast brass fittings, wrought brass rod, old brass finish, dozen..... 18.00
No. 88P Cast bronze fittings, wrought bronze rod, polished, dozen..... 16.20
No. A3B88P Cast bronze fittings, wrought bronze rod, statuary bronze finish, dozen..... 18.00



No. 043 $\frac{1}{2}$ Reversible. Packed with screws. For sash opening out. Diameter of rod $\frac{3}{8}$ inch. Cast iron fittings, wrought steel rod, coppered finish.

12 inches long, dozen..... \$5.25
16 inches long, dozen..... 5.65

No. 43 $\frac{1}{2}$ Cast bronze fittings, wrought bronze rod, polished.
12 inches long, dozen..... \$16.25
16 inches long, dozen..... 18.75



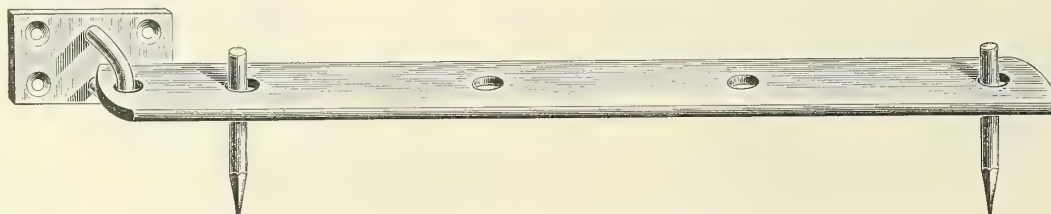
No. OB68 Reversible. Packed with screws. For sash opening out. Cast brass fittings, wrought brass rod, old brass finish.

12 inches long, dozen..... \$24.10
15 inches long, dozen..... 25.90



Reversible. Packed with screws. For sash opening in. This adjuster may be applied on the rabbetted sill under the sash. The bar is $\frac{1}{4} \times \frac{1}{2}$ inch, 12 inches long and has clearance of $\frac{3}{4}$ inch.

No. 46 $\frac{1}{2}$ Cast bronze, polished, dozen..... \$64.80
No. OB46 $\frac{1}{2}$ Cast brass, old brass finish, dozen..... 73.45



No. P74 Reversible. Packed with screws. For sash opening out. Size of plate, $1\frac{5}{16} \times 1\frac{5}{16}$ inches. Size of bar, $\frac{3}{4} \times 10$ inches..
With 2 pins each. Wrought steel, coppered, dozen..... \$4.30

Hold Fast



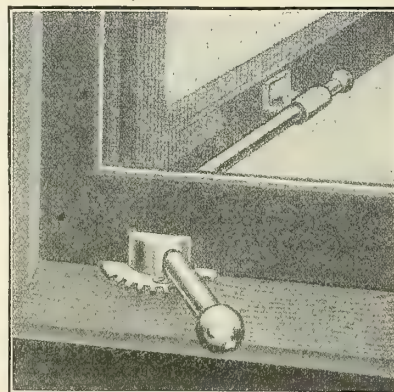
This Adjuster may be operated without opening screens or storm sash. Will lock securely at any desired angle, holding the sash firmly in strong winds. Has no springs, catches, gears or ratchets; requires no special arrangement or alteration of woodwork.

The bearings are machine made and accurately fitted and all parts are of solid brass excepting underpivot and inner rod of operating lever, which are steel and thoroughly protected from the weather.

The adjusters are easily put on by any intelligent carpenter and will last a lifetime.

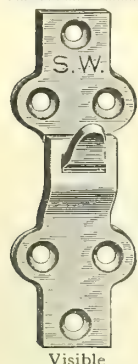
Further information and prices on application.

Bull Dog



Reversible. For sash opening out. Operates the sash and locks it securely at any point without disturbing the screen. Requires very little alteration of the woodwork.

Further information and prices on application.



Visible

Storm Window Hangers

Schroeders—Packed With Screws

Four pieces (two pairs) to a set

Visible

No. 1716J	Wrought steel, japanned, dozen sets	\$1.50
No. 1716Z	Wrought steel, Sherardized, dozen sets	2.00
No. 1716	Wrought brass, dozen sets	6.30

Invisible

No. 1714J	Wrought steel, japanned, dozen sets	\$1.50
No. 1714Z	Wrought steel, Sherardized, dozen sets	2.00

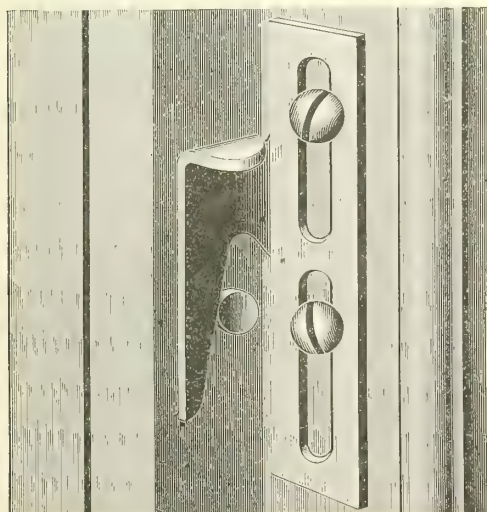


Invisible

Storm Window Fasteners

Moore

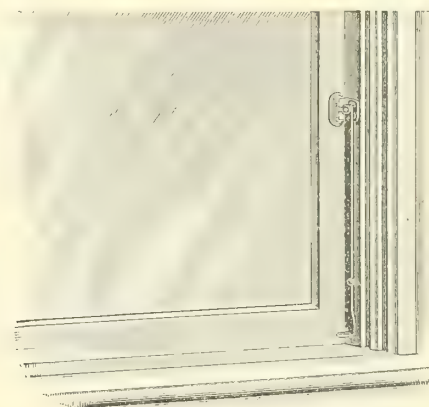
Four to a set. Packed with pins and screws



No. 1706J	Wrought steel, japanned, dozen sets	\$3.00
No. 1706Z	Wrought steel, Sherardized, dozen sets	4.00
No. 1706	Wrought brass, dozen sets	6.90

Schroeders—For Side Attachment

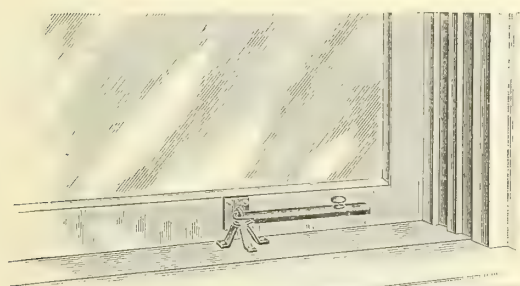
Two to a set. Packed with screws



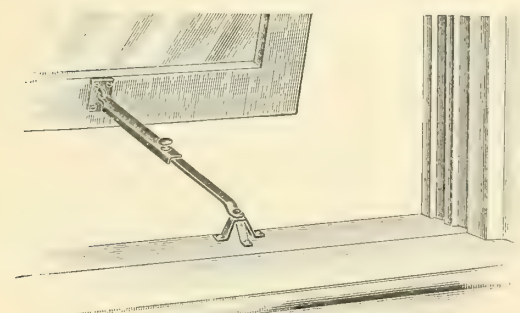
Showing Fastener Applied

No. 1719J	Wrought steel, japanned, dozen sets	\$2.00
No. 1719Z	Wrought steel, Sherardized, dozen sets	2.50

Storm Window Sill Fasteners



Showing Window Closed



Showing Window Opened

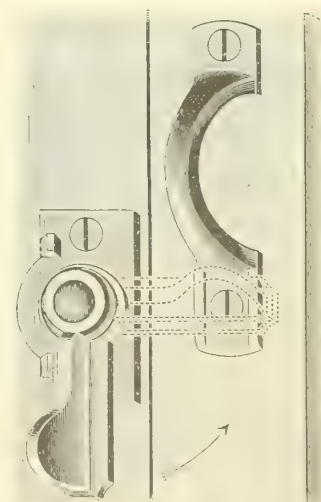
Packed with screws

No. 1722J	Wrought steel, japanned, dozen	\$1.80
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No. 1722Z	Wrought steel, Sherardized, dozen	2.25
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Cellar Window Fasteners

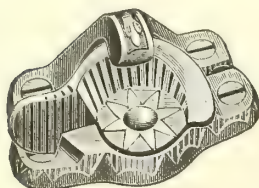
Half Size Cut



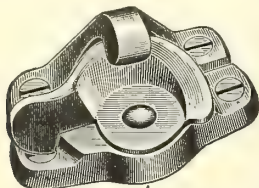
No. 12	Reversible. Packed with screws. Cast iron, Tuscan bronzed finish, dozen	\$1.40
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Sash Fasteners

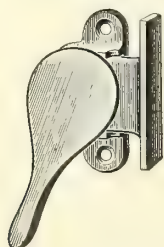
Packed With Screws. Half Size Cuts



No. 70 Cast iron, bronzed, gross.... \$6.75

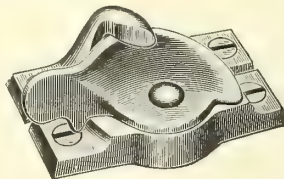


- No. 2282 Cast iron, bronze-plated, gross..... \$8.30
 No. 182 Cast iron, old brass finish, gross..... 8.30
 No. 083 Cast iron, antique copper finish, gross..... 8.30
 No. 84 Cast bronze, polished, gross.. 44.00
 No. 084 Cast bronze, nickel-plated, gross..... 52.00
 No. 88 Cast brass, old brass finish, gross..... 50.00

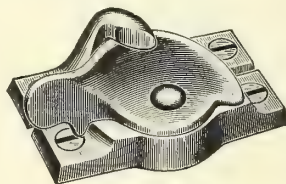


For side of sash

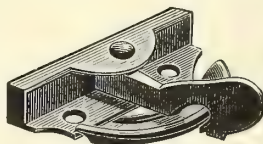
- No. T324 Malleable iron, Tuscan bronzed, dozen..... \$1.10
 No. 328P Cast bronze, polished, dozen..... 3.20



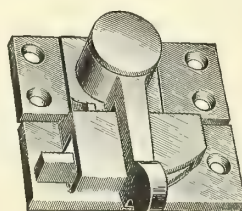
- No. 222 Cast iron, old brass finish, dozen..... \$6.00
 No. 28 Cast brass, old brass finish, dozen..... 11.25
 No. 025 Cast bronze, statuary bronze finish, dozen..... 11.25



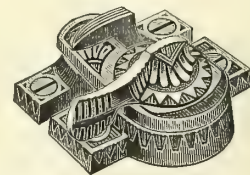
No. 44 Cast bronze, polished, dozen.. \$14.00



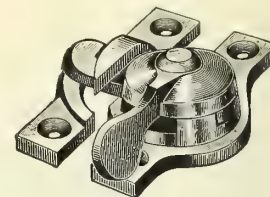
No. 200 Cast iron, japanned, gross.. \$7.80



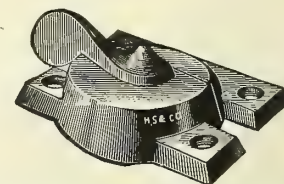
No. 4350 Cast bronze, polished, dozen..... \$8.10



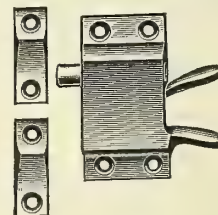
No. 404 Cast iron, bronzed, gross... \$6.25



- No. 1427 Cast iron, amber bronzed, dozen..... \$1.13
 No. 1427½ Cast bronze, polished, dozen..... 5.83



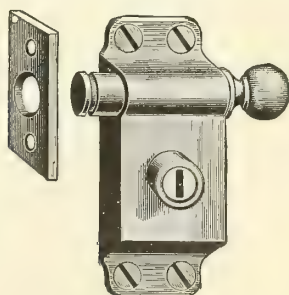
No. 103 Cast bronze, polished, dozen.. \$4.00



No. 55 Cast Bronze, Polished

- No. 53 5/8x1 7/8 inches overall, dozen.. \$5.30
 No. 55 7/8x1 3/4 inches overall, dozen.. 6.00

Sash Bolt and Lock



No. 266

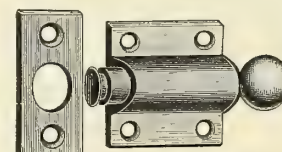
Cast Bronze, Polished

Bolt can be released by handle, except when deadlocked by key, making window secure from attack from outside. Four lever tumblers, twelve changes.

Two strikes and two nickel-plated keys with each lock.

- Dozen..... \$21.65 No. 15 3 inches long, iron, coppered, gross..... \$2.35

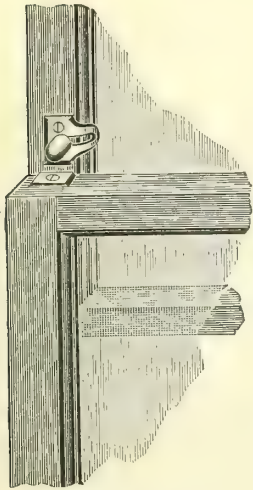
Sash Bolt



No. 1405 Cast bronze, polished, three strikes with each bolt, dozen..... \$5.85

Window Spring Bolt



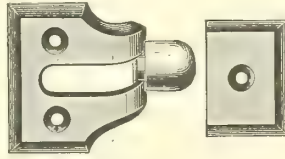


Showing Lock Attached
Sash Open

Ventilating Sash Locks

Ives—Packed With Screws

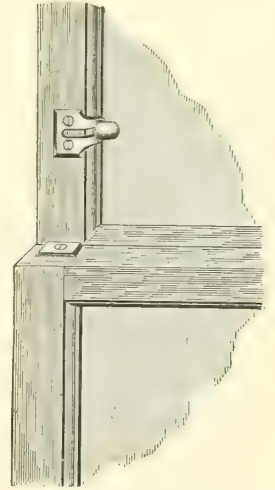
No cutting or mortising of the sash is required



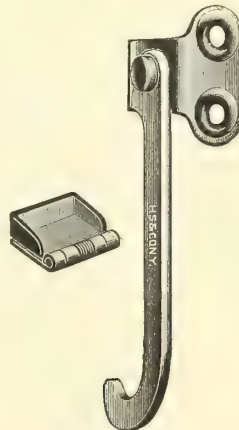
Half Size Cut

This device allows windows to be left open at the top, the bottom or both top and bottom, with entire security against intrusion. Easily applied to either side of upper sash.

No. 033½	Cast iron, bronze-plated, gross.....	\$25.75
No. 034	Cast bronze, polished, gross.....	39.90



Showing Lock Attached
Sash Closed

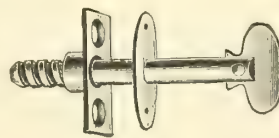


Half Size Cut

Holland—Packed With Screws

Windows may be left open at the top, the bottom, or both, with perfect security. The lock cannot be operated by reaching over or under the sashes, nor can anything between the sashes unlock it. Windows can be opened to the full extent from the inside only. Both sashes must first be closed and the lock bar released by turning back the spring socket on top of lower sash. Made of case-hardened steel.

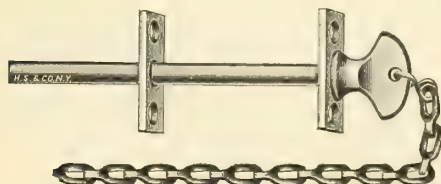
Bronze-plated, dozen	\$3.00
Antique copper finish, dozen	3.00



Acme

Locks the window securely at any desired position. Drawing the upper and lower sashes together, it prevents the admission of dust or wind and prevents rattling.

Solid brass, polished, dozen	\$3.75
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Sash Pins

The pins are steel. Head and plates are polished brass.

No. 30	Brass chain, dozen.....	\$3.00
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Ventilating Sash Locks



These locks allow windows to be left open for ventilation with no danger from outside intrusion. They also protect against forgetfulness in locking the windows, as they automatically lock the sash.

Illustration shows application to sash.

Fasten the bolt to lug with lower screws first. If the bolt should not fit snug to lug, drive over with hammer and fasten slide as shown.

Made of Steel

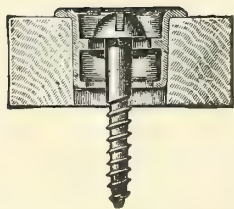
No. 21	Bronze-plated, dozen	\$5.60
No. 25	Old brass finish, dozen	5.60

Stop Bead Washers and Screws

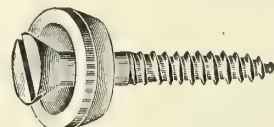
For Windows and Doors

Packed with 1¼-inch screws to match

Full Size Cuts



Taplins Adjustable



No. 185	Wrought bronze, polished, gross	\$6.00
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No. 1	Wrought bronze, polished, gross	\$3.70
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Front View

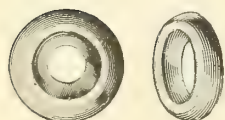


Side View Showing Knurled Edges

Adjustable



No. 16	Wrought bronze, polished, gross	\$3.85
No. OB16	Wrought brass, old brass finish, gross	4.30
No. N16	Wrought bronze, nickel-plated, gross	4.30
No. 183	Wrought bronze, polished, gross	\$3.50



No. 6242
Full Size Cuts
Front and Side Views

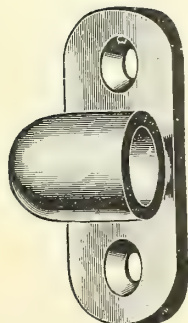
H. S. & Co.

These washers can also be used for all other purposes where a washer is wanted to make a finish to a screw head. Made of wrought brass, dipped.

No. 6199	½ inch diameter over all, ⅜-inch hole, per 1000	\$1.80
No. 6242	⅝ inch diameter over all, ¼-inch hole, per 1000	2.00

Guard Rail Bracket

For Windows and Doors



Full Size Cut

No. 5788 Cast brass, polished, for $\frac{1}{2}$ -inch rod or tubing, dozen \$3.60

No. 5799 Cast brass, polished, for $\frac{1}{2}$ -inch rod or tubing, pair 1.00



Full Size Cut
No. 5799

Wall Case Handles

Half Size Cut



No. 443 Cast brass, polished. Packed with screws. Size over all $5\frac{1}{2}$ inches, bar $\frac{1}{2}$ inch thick, opening $1\frac{1}{8}$ inches, dozen \$13.80

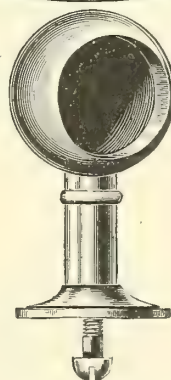
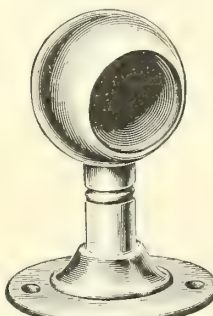
Wall Case Sockets

Half Size Cuts

Base to center of hole $2\frac{1}{16}$ inches, size of hole 1 inch. Made of cast brass. Packed with screws

No. 10799 $\frac{1}{2}$ Polished, dozen . . . \$4.32

No. OB10799 $\frac{1}{2}$ Old brass finish, dozen 4.32



Base to center of hole $2\frac{1}{16}$ inches, size of hole 1 inch. Packed with screws

No. 10779 Cast brass, polished, dozen \$3.60

No. N10779 Cast bronze, nickel-plated, dozen 3.60

No. OB10779 Cast brass, old brass finish, dozen 3.60

No. P10779 Cast bronze, polished, dozen 3.60

See index for rods or tubing, for guard rail brackets or wall case sockets, listed above

Bar Sash Lifts

Half Size Cut

Packed with Screws



Nos. 412 and 812
 $1\frac{1}{4}$ x 4 Inches

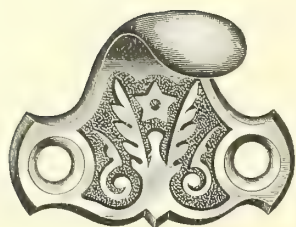


Nos. 410 and 810
 $1\frac{3}{8}$ x 5 Inches

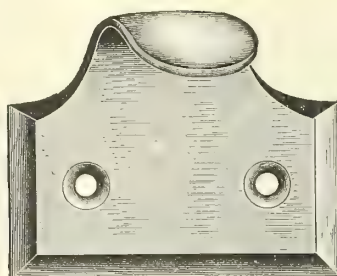
No. T412M	Cast iron, Tuscan bronzed finish, dozen	\$.85
No. YT412M	Cast iron, bronze-plated, unpolished, dozen . . . . .	.95
No. DA412M	Cast iron, antique copper finish, unpolished, dozen	1.00
No. OB412M	Cast brass, old brass finish, polished, dozen	1.85
No. 812M	Cast bronze, polished, dozen	4.00
No. A3B812M	Cast bronze, statuary bronze finish, dozen	4.60
No. T410M	Cast iron, Tuscan bronzed, dozen . . . . .	.95
No. YT410M	Cast iron, bronze-plated, unpolished, dozen	1.05
No. DA410M	Cast iron, antique copper finish, unpolished, dozen	1.10
No. OB810M	Cast brass, old brass finish, polished, dozen	5.20
No. 810M	Cast bronze, polished, dozen	4.60
No. A3B810M	Cast bronze, statuary bronze finish, dozen	5.20

Hook Sash Lifts

Full Size Cuts

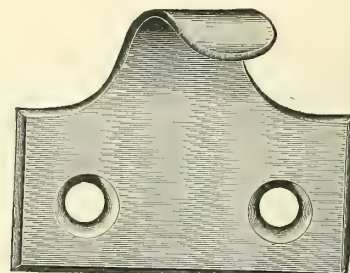


No. 3190 Cast iron, amber bronzed,
gross..... \$2.00



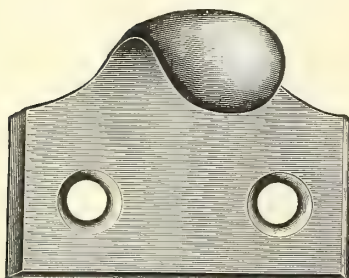
No. N11845 Steel, bronze-plated,
gross..... \$10.37

No. R11845 Steel, antique copper
finish, gross..... 11.45

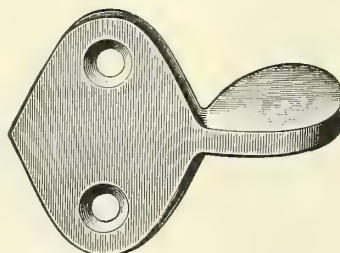


No. 2180 1/2 Wrought bronze, pol-
ished, gross..... \$11.45

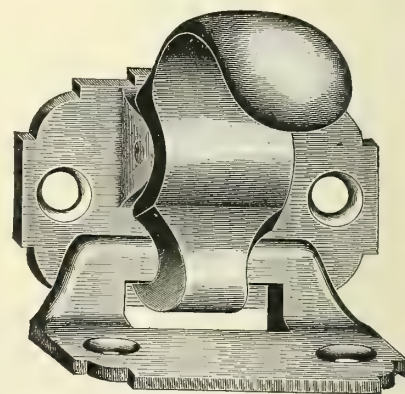
No. DA2180 1/2 Wrought brass, old
brass finish, gross..... 14.00



No. 2184 Cast bronze, polished, dozen \$3.00



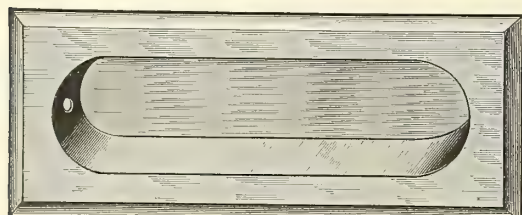
No. 1804P Cast bronze, polished,
dozen..... \$1.55



No. N13313 Cast iron, bronze-plated,
dozen..... \$2.80

Flush Screen Lifts

Full Size Cuts



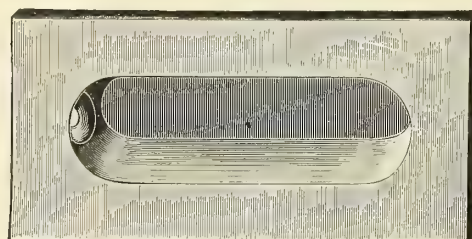
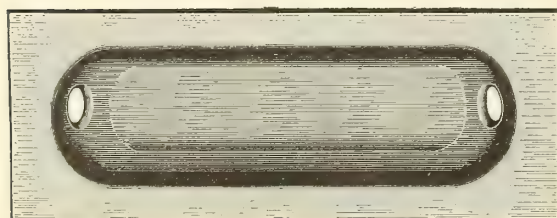
No. 1912 Wrought brass, dipped, gross..... \$4.70



No. 1911 Wrought brass, dipped, gross..... \$1.00

Flush Sash Lifts

Full Size Cuts



No. 2885 Wrought bronze, polished, gross..... \$8.00

No. 1104 Cast bronze, polished, gross..... 23.70

No. 10330 Cast bronze, polished, gross..... \$26.00

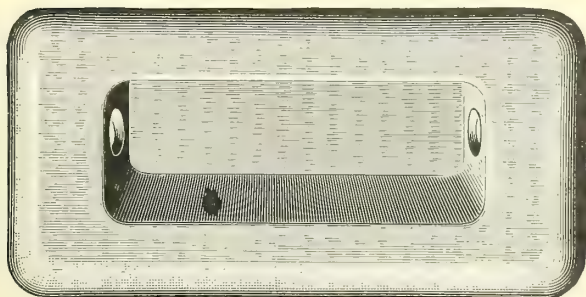
SINCE
1848

HAMMACHER SCHLEMMER & CO.

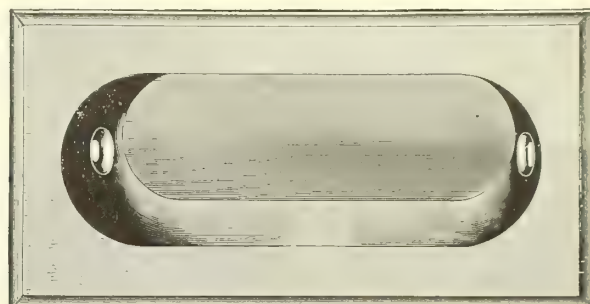
NEW
YORK

Flush Sash Lifts

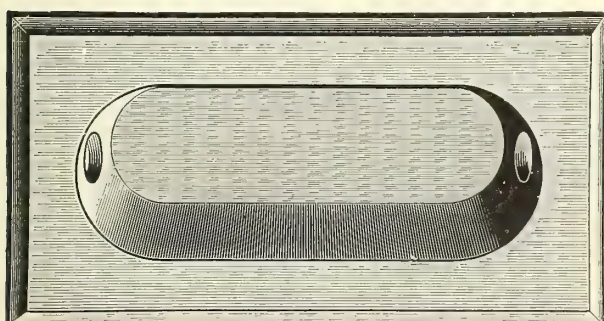
Full Size Cuts



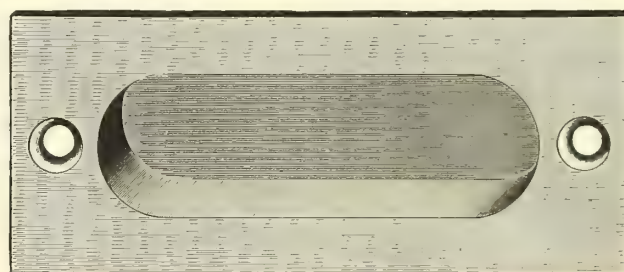
No. 2254 Wrought bronze, polished, gross \$8.00
No. 2254½ Wrought steel, bronze-plated, gross 5.30



No. 2215 Wrought bronze, polished, gross \$12.00
No. DA2215 Wrought brass, old brass finish, gross 12.00
No. R2215 Wrought bronze, antique copper finish, gross 12.00
No. E2215 Wrought bronze, nickel-plated, gross 12.00



No. 1887 Cast bronze, polished, dozen \$4.60



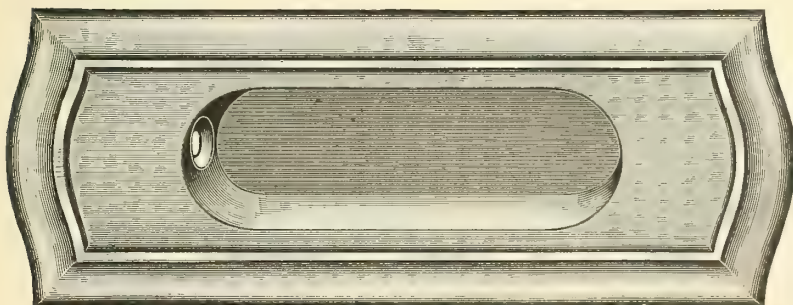
No. 2219 Cast bronze, polished, dozen \$3.75
No. KA2219 Cast brass, old brass finish, dozen 4.29
No. LB2219 Cast bronze, statuary bronze finish, dozen 4.29



No. 150 With concealed lip, cast bronze, polished, dozen \$4.20

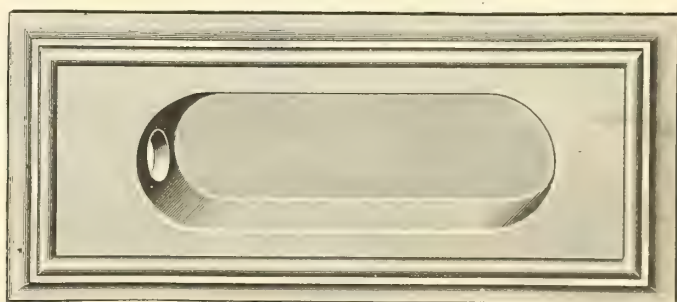


No. 1887½MR Cast bronze, polished, dozen \$6.90



Design Wakefield

No. KA 72675 Wrought brass, old brass finish, dozen \$2.90

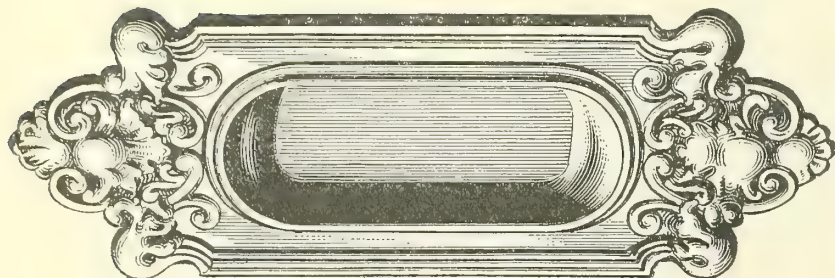


Design Victor

No. KA61875 Wrought steel, old brass finish, dozen \$1.50

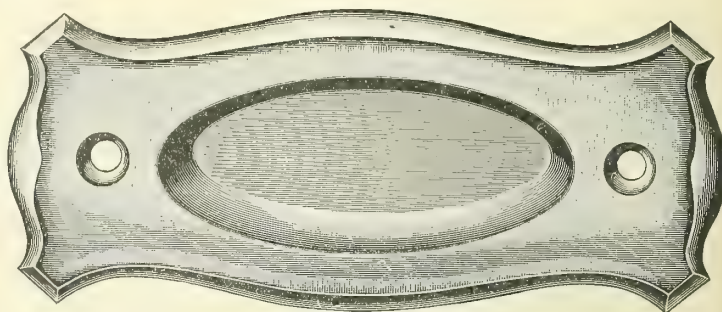
Flush Sash Lifts

Full Size Cuts



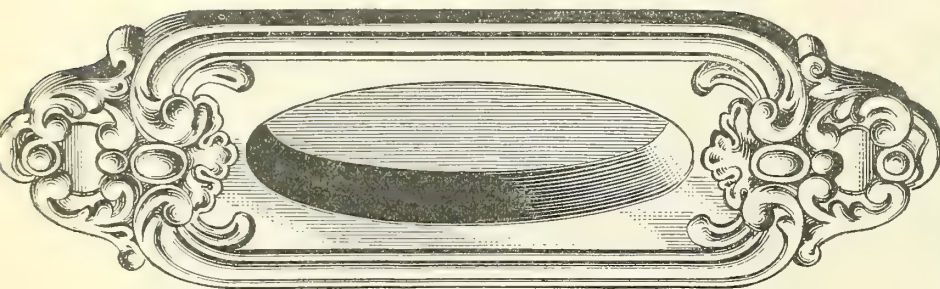
Design Truro

No. AB1487TG Cast iron, antique copper finish, dozen..... \$1.20



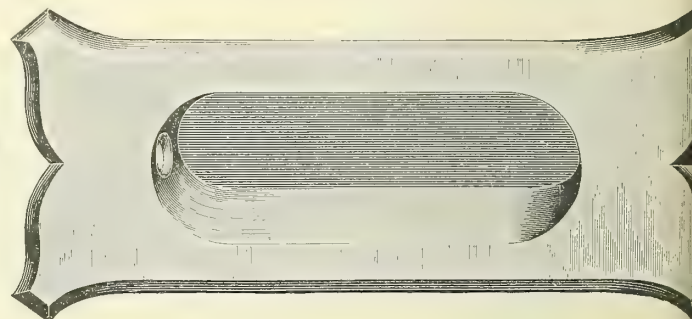
Design Princeton

No. SKA62175 Wrought steel, sand blast, old brass finish, dozen..... \$1.50



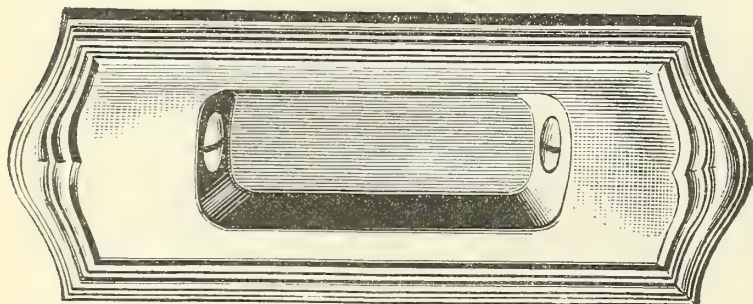
Design Haven

No. OE1487HF Wrought steel, old brass finish, with depressed surface oxidized and relieved, dozen..... \$.96



Design Albany

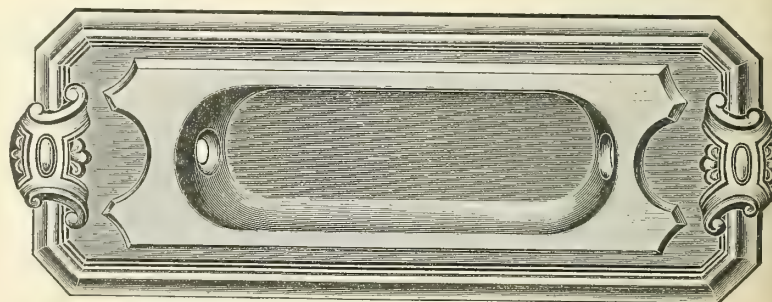
No. LB76475 Cast bronze, statuary bronze finish, dozen..... \$11.52



Design Hudson

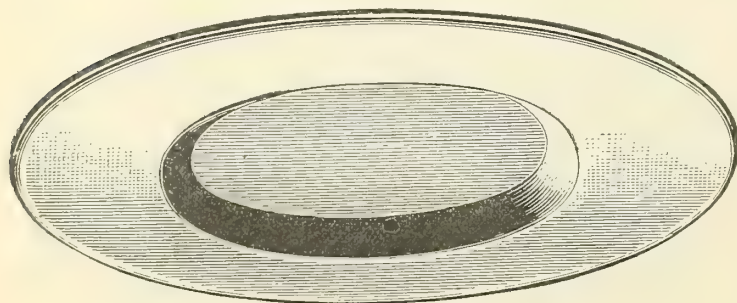
No. R7D1487TH Wrought steel, sand blast, antique brass finish with edges highly polished, dozen..... \$.96

No. 1887TH Wrought bronze, polished, dozen..... 1.92



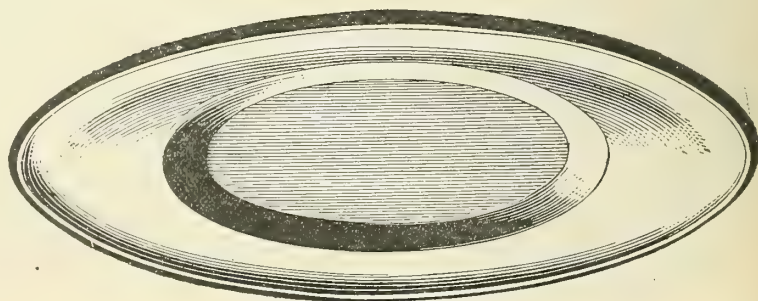
Design Anvers

No. S2KA72375 Wrought brass, sand blast antique brass shaded finish, with edges highly polished, dozen..... \$2.88



Design Portsmouth

No. 1887PC Wrought bronze, polished, dozen..... \$1.80

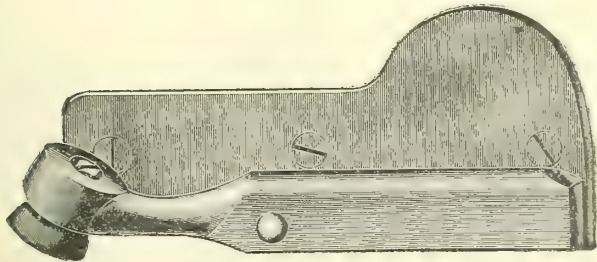


Design Fairfax

No. OB1887FC Wrought brass, old brass finish, dozen..... \$1.80

Door Holders

Half Size Cuts



The lever swings on a strong pin which passes through both lever and plate and is riveted at the back. Spring is of round wire, compression type. Back plate acts as a guard to prevent the door being scraped by the toe.

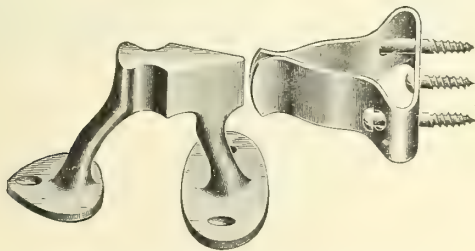
- No. 142 Cast bronze, polished, dozen. \$21.90
 No. 42 Cast iron, amber bronzed, dozen 5.70
 No. 042 Cast iron, bronze-plated, dozen 11.35



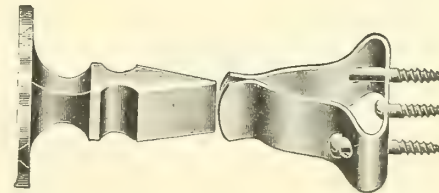
This Holder is only 4½ inches in length and is a practical holder for light doors.

Packed with screws

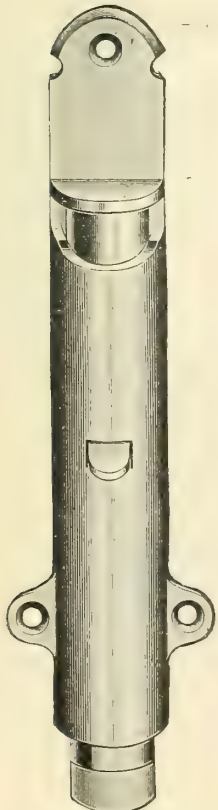
- No. YT5224 Iron, bronze-plated, dozen. \$9.15
 No. OT5224 Iron, old brass finish, dozen. 10.00
 No. 5228P Cast bronze, polished, dozen. 14.20



- No. 118 Height 2 inches, projection on door 2 inches. Iron, bronze-plated. Packed with screws. Dozen..... \$5.60

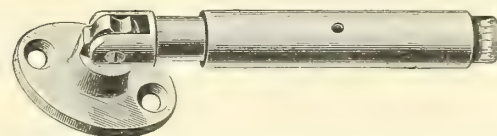


- No. 119 Projection on door 2 inches, on base-board 2 inches. Iron, bronze-plated. Packed with screws. Dozen \$5.60



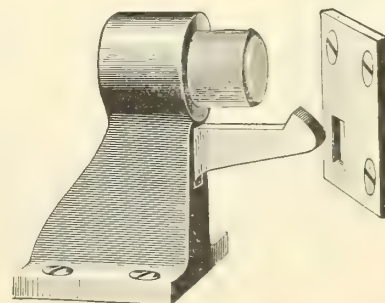
Packed with screws

- No. 2860 Cast bronze, polished, dozen. . \$34.56
 No. 3860 Cast iron, amber bronzed, dozen..... 10.56
 No. N3860 Cast iron, bronze-plated, dozen..... 14.88
 No. LB3860 Cast iron, statuary bronze, finish, dozen..... 17.04
 No. KA3860 Cast iron, old brass finish, dozen..... 17.04



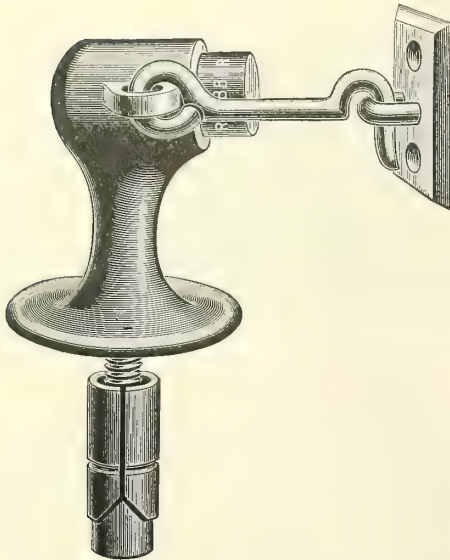
- No. 4288P Cast bronze, polished. Packed with screws. Dozen. \$20.00

Door Stop and Holder

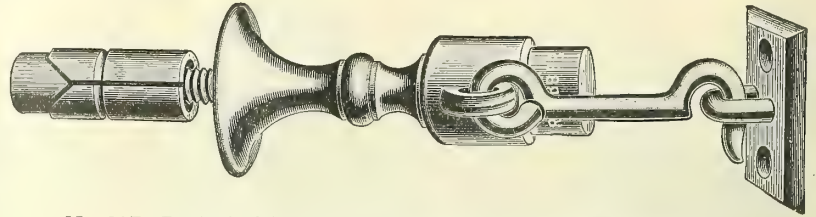


- No. 828 Cast bronze. Base 1¾ x 1¾ inches; height 2¾ inches; strike 1¾ x 1¾ inches; hook 1⅝ x ¼ inches. Attached by wood screws. Dozen..... \$40.20

Door Stops and Holders



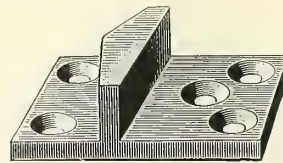
No. 30P Packed with screws. 3 inches high, with expansion bolt. Made of cast bronze, polished, dozen \$41.70



No. 29P Packed with screws. Projection $3\frac{3}{4}$ inches, with expansion bolt. Made of cast bronze, polished, dozen \$41.70

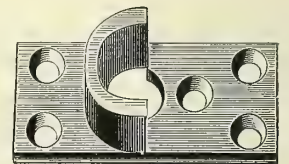
Sliding Door Stops

Made of cast iron, Pekin finish. Packed with screws.
Dozen \$.65



No. 36

For plain front Base, $1\frac{3}{8} \times 2\frac{1}{2}$ inches



No. 37

For Astragal front. Base, $1\frac{3}{8} \times 2\frac{3}{4}$ inches

Closet Door Strikes

Half Size Cuts



For face of door
Packed with screws

- No. 1070 Wrought bronze, polished, dozen \$4.80
No. 1070 N Wrought brass, nickel-plated, dozen 4.80
No. 1070 OB Wrought brass, old brass finish, dozen 5.28



Reversible, for edge of door or partition wall. Packed with screws.

- No. 1072 Wrought bronze, polished, dozen \$4.80
No. 1072 N Wrought brass, nickel-plated, dozen 4.80
No. 1072 OB Wrought brass, old brass finish, dozen 5.28

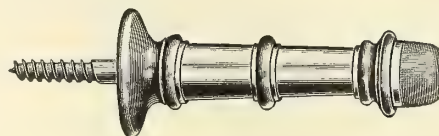
Door Stops



- No. 3 $2\frac{1}{2}$ inches projection. Packed with screws. Wrought steel, bronze-plated, dozen \$2.00

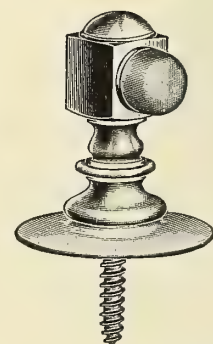


- No. Y200 $2\frac{1}{2}$ inches projection, cast iron, bronze-plated, dozen \$1.40



$3\frac{1}{8}$ Inches Projection

- No. 365 Cast bronze, polished, dozen \$10.80
No. KA365 Cast brass, old brass finish, dozen 13.50
No. LB365 Cast bronze, statuary bronze finish, dozen 13.50

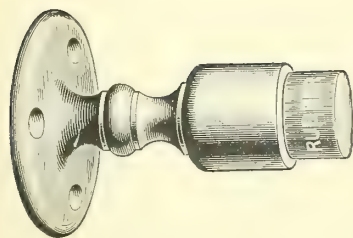


- No. 366 $2\frac{3}{8}$ inches high, cast bronze, polished, dozen \$16.20

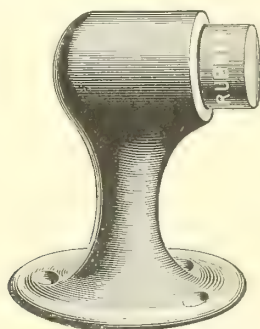
See next page for remainder of listing of Door Stops

Door Stops

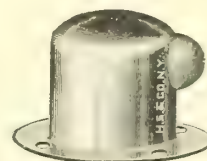
See preceding page or remainder of listing of Door Stops



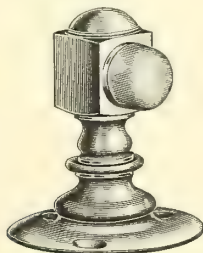
No. 27P 3 1/8 inches projection, cast bronze, polished. Packed with screws. Dozen..... \$18.50



No. 32P 3 inches high, cast bronze, polished. Packed with screws. Dozen..... \$28.00

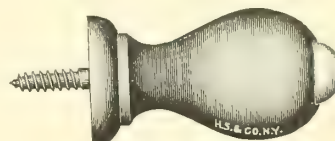


No. 1 1 3/8 inches high. Packed with screws. Wrought steel, bronze-plated, dozen..... \$1.70

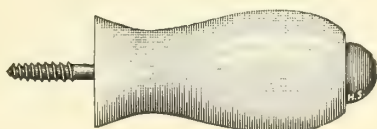


2 3/8 inches high. Packed with screws

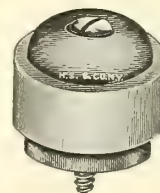
No. 366 1/2 Cast bronze, polished, dozen..... \$16.20
No. LB366 1/2 Cast bronze, statuary bronze finish, dozen..... 18.90



No. 100 Length 2 1/2 inches, ash, gross..... \$2.50
No. 100 Length 3 inches, ash, gross 2.70
No. 150 Length 2 1/2 inches, polished cherry, gross..... 12.00
No. 150 Length 2 1/2 inches, polished antique oak, gross..... 12.00



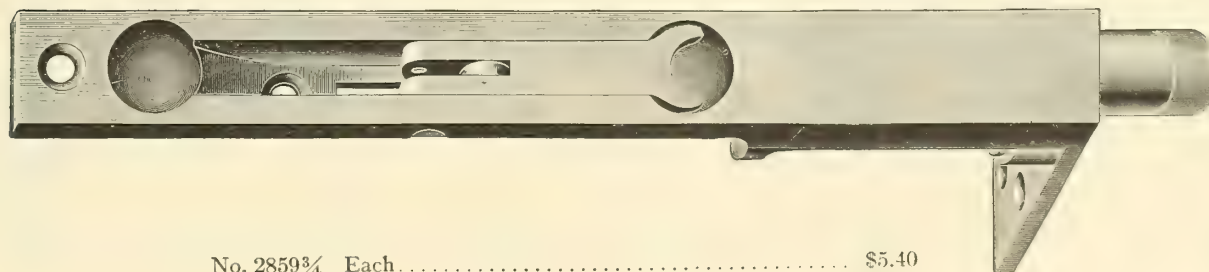
No. 200 2 3/4 inches long, covered with white celluloid, dozen... \$3.60



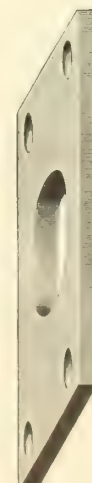
No. 10 1 1/4 inches diameter, polished oak, rubber band 3/4 inch wide, 1 1/2 inches outside diameter, 2-inch oval head, nickel-plated screws, dozen..... \$2.40

Door Holders

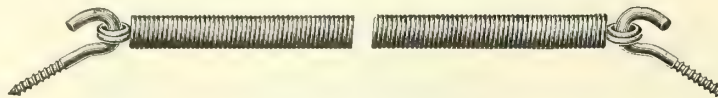
Cast Bronze, Polished
Rubber Tips on Bolt Heads



No. 2859 3/4 Each..... \$5.40



Coil Door Springs

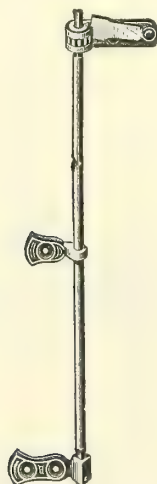


16 inches long, $\frac{13}{32}$ inch diameter. Made of best music spring wire, japanned. Packed with screw eyes.

No. 54 Dozen..... \$1.55

Rod Door Springs

Torrey



The tension of this spring can be instantly adjusted by means of the slide shown in the top fixture. The rod is set directly over, and parallel with, the crack between the door and frame, thus eliminating wear and tear and insuring long life to the spring. The spring is of best steel and the fixtures are malleable iron. A special wrench is furnished with each set for adjusting the tension.

Packed with screws

No. 39 Japanned, dozen..... \$2.00 Dozen..... \$8.00

Screen Door Check

No-Slam



Rubber ball, nickel-plated trimmings. May be used on a screen door. Fitted with any door spring or spring hinge.

Packed with screws

Door Springs

Bommer

Extra Heavy Wrought Steel, Planished

These Springs are exceptionally strong and durable, with a lasting finish. They are convenient for the carpenter and user to handle and apply. Being sold completely assembled, the parts cannot become separated and lost. The coil springs are made of high-grade steel wire, with an adjustable tension which can be regulated (with the aid of a wire nail or rod) after the spring is in place.

Japanned, Bright Black

Number.....	2400	2410	2420	2430
Length over all, inches....	9	11	12	13
Gross.....	\$19.80	25.20	36.00	50.40

Bronze-plated

Number.....	2401	2411	2421	2431
Length over all, inches....	9	11	12	13
Dozen.....	\$5.00	6.30	9.00	10.50

Dull Brass Finish

Number.....	2403	2413	2423	2433
Length over all, inches....	9	11	12	13
Dozen.....	\$5.50	6.90	9.90	11.50

Japanned, Bright Black

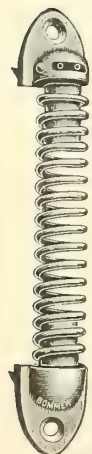
Number.....	2500	2510	2520
Length over all, inches....	7	8	10
Gross.....	\$24.00	32.40	50.40

Bronze-plated

Number.....	2501	2511	2521
Length over all, inches....	7	8	10
Dozen.....	\$6.00	8.10	12.60

Dull Brass Finish

Number.....	2503	2513	2523
Length over all, inches....	7	8	10
Dozen.....	\$6.60	8.90	13.90



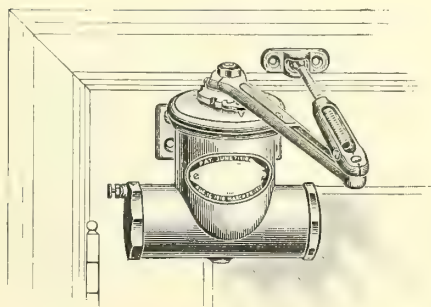
Style of all
2400
Numbers



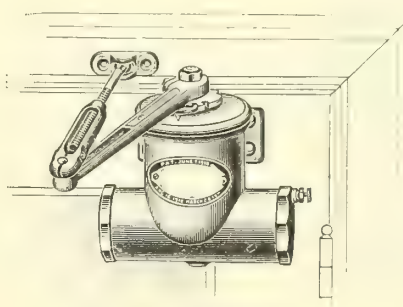
Style of all
2500
Numbers

Door Checks and Springs

Illustrations showing hands of doors and methods of installation



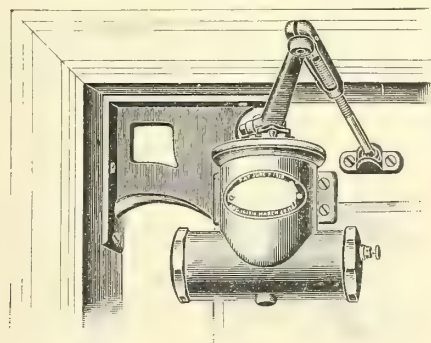
Right-hand Door with Right-hand Check and Spring



Left-hand Door with Left-hand Check and Spring

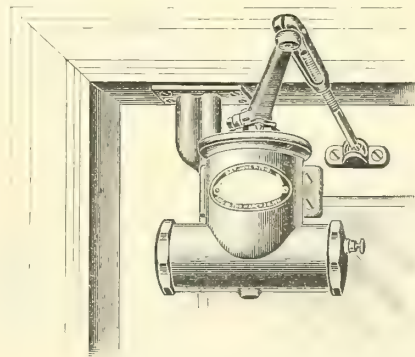
Special Application by Means of Brackets

The following illustrations show four styles of brackets for applying door checks. They can all be furnished for application the reverse of those shown.



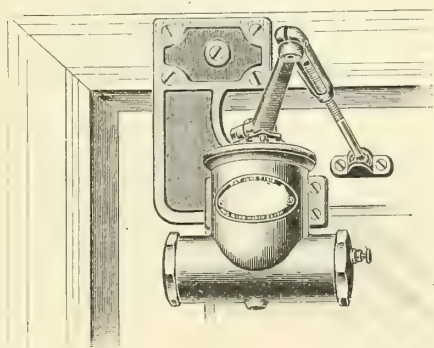
Corner Bracket

Left-hand Door with Right-hand Check and Spring



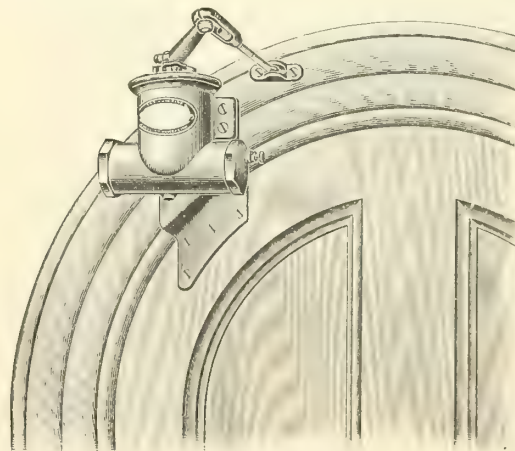
Overhead or Soffit Bracket

Left-hand Door with Right-hand Check and Spring



Flush Bracket

Left-hand Door with Right-hand Check and Spring



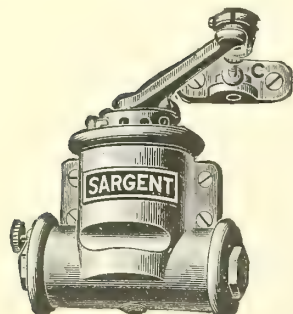
Circular Top Bracket

Right-hand Door with Right-hand Check and Spring

For Door Checks and Brackets, see next four pages

Door Checks and Springs

Sargent Liquid



Made of cast iron, gold bronzed. Suitable for either right or left-hand doors without changing any of the parts.

Spring is adjustable tension, very compact and powerful, and is made from extra heavy clock-spring steel of finest quality.

Check can be instantly varied for light or heavy draft by means of a thumb-screw.

Packed with screws to match.

Prices are for Check and Spring complete.

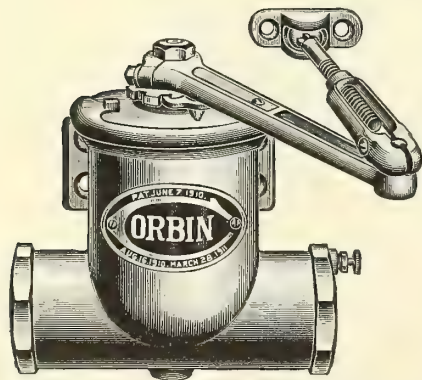
No. 321	For screen doors and light narrow inside doors, each.....	\$3.25
No. 322	For heavy screen doors, light inside doors, pantry doors, etc., each.....	4.25
No. 323	For medium size doors, each.....	5.00
No. 324	For general use on inside doors and medium outside doors, each.....	6.00
No. 325	For heavy and wide outside doors, each.....	8.00
No. 326	For extra heavy and wide outside doors, each.....	10.00

Door Check Brackets for Above

See page 1013 for illustrations

Numbers.....	321	322	323	324	325	326
Corner, each.....	\$.50	\$.60	\$.65	\$.70	\$.75	\$.85
Soffit, each.....	.15	.20	.30	.35	.40	.45
Flush, each.....	.30	.30	.35	.50	.55	.55
Circular, each.....	1.00	1.00	1.20	1.30	1.40	1.50

Above can be furnished in all standard finishes, also polished bronze when specially ordered.



Corbin Liquid—Model of 1911

Made of cast iron, gold bronzed.

Suitable for either right or left hand without changing any of its parts. Spring is adjustable tension made of steel wire and very powerful.

The checking chamber is controlled by a thumb-screw which adjusts the closing of the door.

Packed with screws to match.

Prices are for Check and Spring, complete.

No. 1	For screen doors and light narrow inside doors, each.....	\$3.25
No. 2	For heavy screen doors, light inside doors, pantry doors, etc., each.....	4.25
No. 3	For medium size doors, each.....	5.00
No. 4	For general use on inside doors and medium outside doors, each.....	6.00
No. 5	For heavy and wide outside doors, each.....	8.00
No. 6	For extra heavy and wide outside doors, each.....	10.00

Door Check Brackets for Above

See page 1013 for illustrations

Number.....	1	2	3	4	5	6
Corner, each.....	\$.50	\$.60	\$.65	\$.70	\$.75	\$.85
Soffit, each.....	.15	.20	.30	.35	.40	.45
Flush, each.....	.30	.30	.35	.50	.55	.55
Circular, each.....	1.00	1.00	1.20	1.30	1.40	1.50

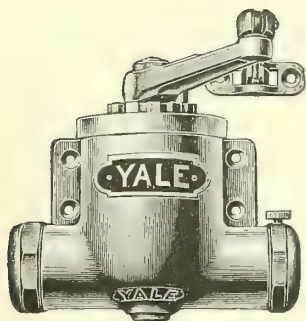
Above can be furnished in all standard finishes, also polished bronze, when specially ordered.

See preceding page for illustrations of Hands of Doors and methods of installation

Door Checks and Springs

Yale Liquid—Model Y

Made of Cast Iron, Gold Bronzed



The check combines a powerful coil spring and a metallic piston moving in a metallic cylinder against a non-freezing liquid, the one operating to close the door and the other to check or control it. A simple regulating valve furnishes the necessary adjustment, so that any desired action may be given to the door, whereby it will always be positively closed, but under a control which prevents slamming. The working parts are immersed in a lubricating fluid, so that the wear from continued use is very slight.

Packed with screws to match.

Prices are for Check and Spring complete

No. 11	For screen and other very light doors, each.....	\$3.25
No. 12	For light inside doors not exceeding 7 feet high and 2½ feet wide, each.....	4.25
No. 13	For inside doors of medium size not exceeding 7 feet high and 3 feet wide, each.....	5.00
No. 14	For heavy inside and ordinary outside doors not exceeding 7½ feet high and 3 feet wide, each.....	6.00
No. 15	For heavy outside doors 8½ feet high by 4 feet wide, each.....	8.00

Door Check Brackets for Above

See page 1013 for illustrations

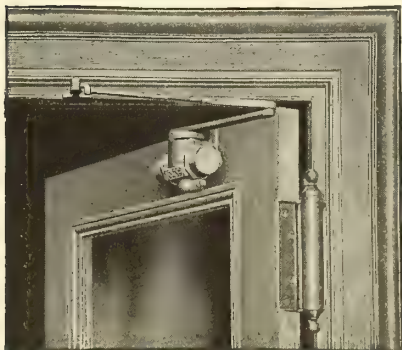
	No. 11 Each	No. 12 Each	No. 13 Each	No. 14 Each	No. 15 Each
Corner.....	\$.50	\$.60	\$.65	\$.70	\$.75
Soffit.....	.15	.20	.30	.35	.40
Flush.....	.30	.30	.35	.50	.55
Circular.....	1.00	1.00	1.20	1.30	1.40

Above can be furnished in all standard finishes, also polished bronze when specially ordered.

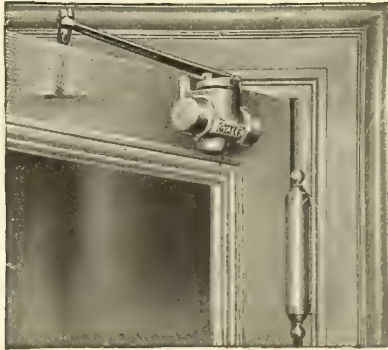
See page 1013 for illustrations of Hands of Doors and methods of installation

Double Acting Door Check

Yale—Model C



Check on door opened in



Check on door opened out

Note that door has been made transparent to show the position of arms—which rise to permit the door to open out.

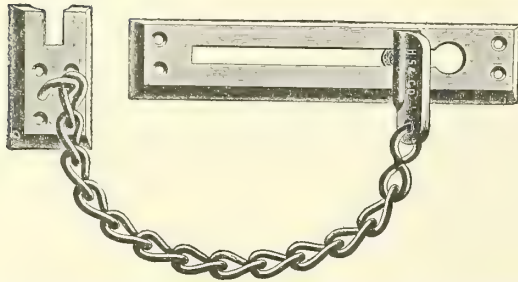
This Check is designed for use on doors hung on double-acting spring hinges, which permit the door to swing in both directions. As the hinges provide the necessary spring to close the door this article is a checking device only. The door is free to swing in both directions, the arms dropping below the soffit of the door frame when the door swings to the side opposite to that on which the check is attached, and passing over the top of the door when the latter is moved in the contrary direction.

The Check brings the door quietly to rest on the center without any of the flapping which is otherwise inevitable with such doors.

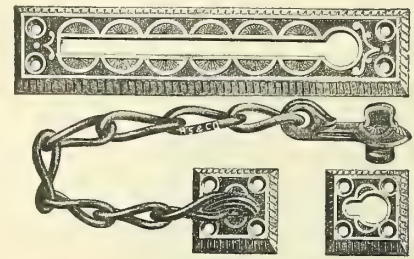
Finished in gold bronze, each.....	\$7.00
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Chain Door Fast

One Third Size Cuts



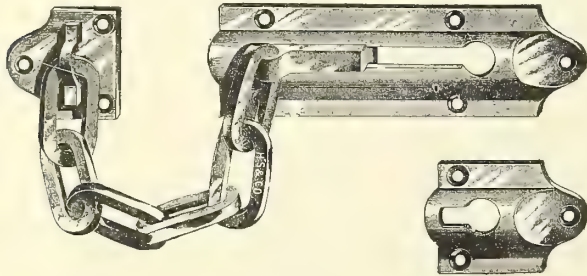
- No. Y156 Cast iron, bronze-plated, length of slide over all 6 inches.
Packed with screws. Dozen..... \$8.30
No. 188P Cast bronze, polished, length of slide over all 4 inches.
Packed with screws. Dozen..... 15.40
No. OB188 Cast brass, old brass finish, length of slide over all
4 inches. Packed with screws. Dozen..... 17.60



Packed with screws

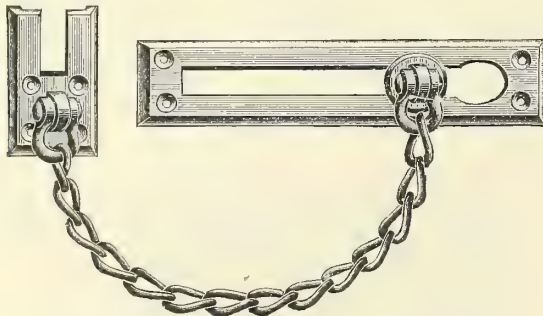
Length of Slide overall 6 inches. Made of Cast Iron

- No. 3264 Amber bronzed finish, dozen..... \$4.60
No. N3264 Bronze-plated, dozen..... 7.40

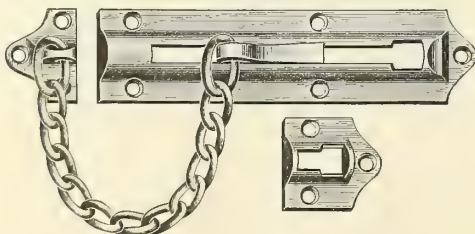


Length of Slide overall 6 inches. Heavy Chain. Packed with screws

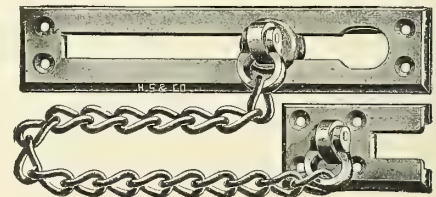
- No. 1500 Cast bronze, polished, dozen..... \$30.70
No. OB1500 Cast brass, old brass finish, dozen..... 33.50



- No. OB166 Cast brass, old brass finish, length of slide over all
6 inches. Packed with screws. Dozen..... \$25.40



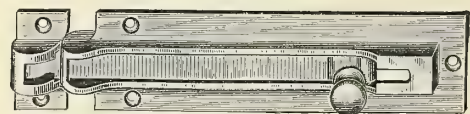
- No. 466 Cast Brass, Polished. Packed with Screws
Length of slide over all 4 inches, dozen..... \$14.00
Length of slide over all 6 inches, dozen..... 19.20



- No. 2264 1/2 Cast bronze, polished, length of slide over all
6 inches. Packed with screws. Dozen..... \$30.00

- No. LB2264 1/2 Cast bronze, statuary bronze finish, length of
slide over all 6 inches. Packed with screws. Dozen..... 32.88

Combination Bolt and Fast



Showing Used as a Bolt

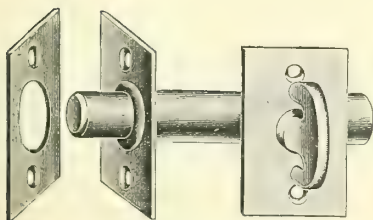


Showing Used as a Door Fast

- No. 2263 Cast bronze, polished, length of slide over all 5 5/8 inches.
Packed with screws. Dozen..... \$24.00

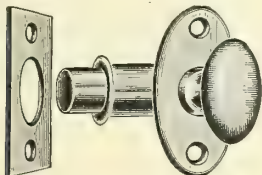
Mortise Door Bolts

Half Size Cuts



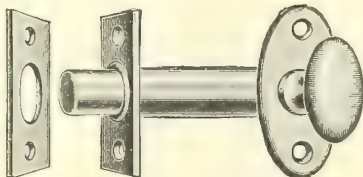
Backset 1 3/4 Inches

- No. 0654 1/2 Wrought bronze, polished, steel bolt. Packed with screws. Dozen..... \$5.10
- No. DA0654 1/2 Wrought brass, old brass finish, steel bolt. Packed with screws. Dozen..... 5.55



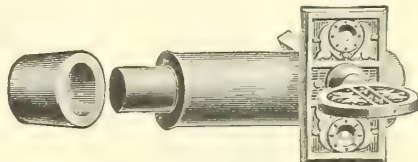
Backset 7/8 Inch

- No. N3657 1/4 Wrought steel, iron knob, bronze-plated. Packed with screws. Dozen..... \$4.20
- No. DA3657 1/4 Wrought steel, iron knob, old brass finish. Packed with screws. Dozen 4.50



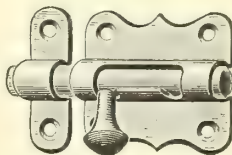
Backset 1 3/4 Inches

- No. 0657 1/2 Wrought bronze plate and case, cast bronze knob, polished, iron bolt. Packed with screws. Dozen..... \$5.55
- No. LB0657 1/2 Wrought bronze plate and case, cast bronze knob, statuary bronze finish, iron bolt. Packed with screws. Dozen.... 6.00
- No. E0657 1/2 Wrought bronze plate and case, cast bronze knob, nickel-plated, iron bolt. Packed with screws. Dozen..... 6.00
- No. N3657 1/2 Wrought steel plate and case, iron knob, bronze-plated, iron bolt. Packed with screws. Dozen..... 4.65
- No. R3657 1/2 Wrought steel plate and case, iron knob, antique copper finish, polished, iron bolt. Packed with screws. Dozen.... 4.95
- No. DA3657 1/2 Wrought steel plate and case, iron knob, old brass finish, iron bolt. Packed with screws. Dozen..... 4.95



- No. T294A Case 3/4x2 1/2 inches, thumb knob plate 7/8x1 3/8 inches, backset 2 inches; cast iron, amber bronzed. Packed with screws. Dozen..... \$2.20

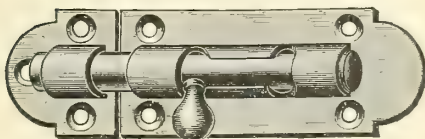
Cellar Window Bolts



Wrought Steel, 2 1/2 Inches

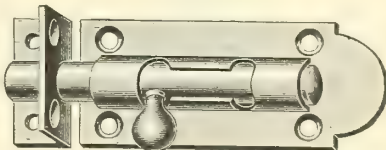
- No. 364 Japanned, polished bolt and knob, dozen..... \$1.70
- No. YT364 Bronze-plated, bright finish, unpolished. Packed with screws. Dozen..... 1.40

Barrel Bolts



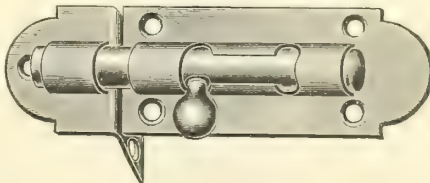
Wrought Steel

Size, Inches	No. 1084 Japanned Plate Polished Bolt Brass Knob Dozen	No. 408A Bronze-plated Dozen Packed with Screws	No. 408F Old Brass Finish Dozen Packed with Screws
3	\$2.15	\$1.70	\$1.95
4	2.45	1.85	2.10
5	3.00	2.15	2.40
6	3.40	2.60	2.85



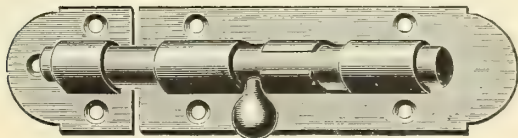
- No. 1081 Wrought steel, necked staples, japanned plates, polished bolts, brass knobs.

Size, inches.....	3	4	5	6 1/2
Dozen.....	\$2.25	2.60	3.15	3.60

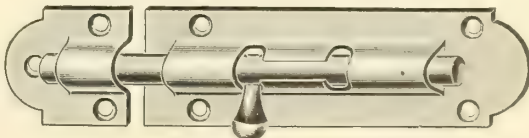


No. 1108. Wrought Brass, Polished, packed with screws

Size, inches.....	3	4	5	6
Dozen.....	\$7.60	9.70	11.50	13.00



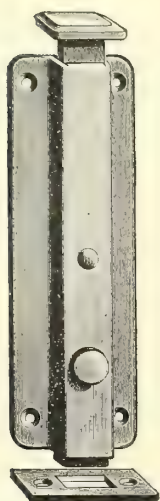
- No. 3367 Wrought steel, 4 inches, galvanized. Packed with screws. Dozen..... \$3.50



No. 1922. Wrought Brass, Polished, packed with screws

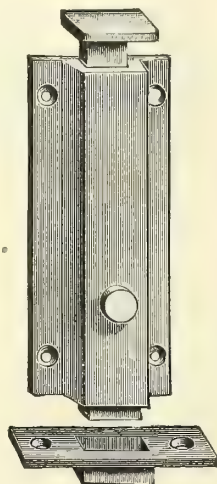
Size, inches.....	2 1/2	3
Dozen.....	\$2.25	3.00

Foot Bolts

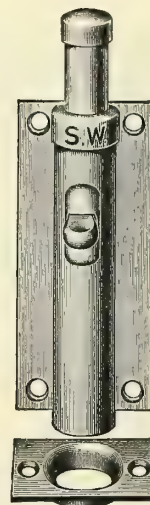


No. T2491 Made of wrought steel, Tuscan bronzed
Length, inches..... 6 8
Dozen..... \$5.90 7.40

No. OT2491 Old brass finish, unpolished.
Length, inches..... 6 8
Dozen..... \$12.80 15.00

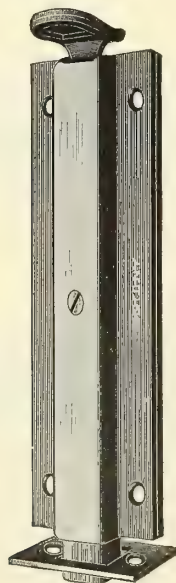


No. 1891P Cast bronze, polished, 6 inches long Packed with screws,
Dozen..... \$22.20



No. 356A Wrought steel, bronze-plated, 6 inches long. Packed with screws. Dozen..... \$8.00

Bottom Bolts



Extra heavy for garage and warehouse doors.

Made of heavy pressed steel with stiff back-plate to prevent binding. The bolt is released by a slight pressure against the toe-piece at the top, doing away for the necessity of the central or kick spring.

No. 440 Pressed steel, japanned. 12 inches long. Packed with screws. Dozen..... \$47.00



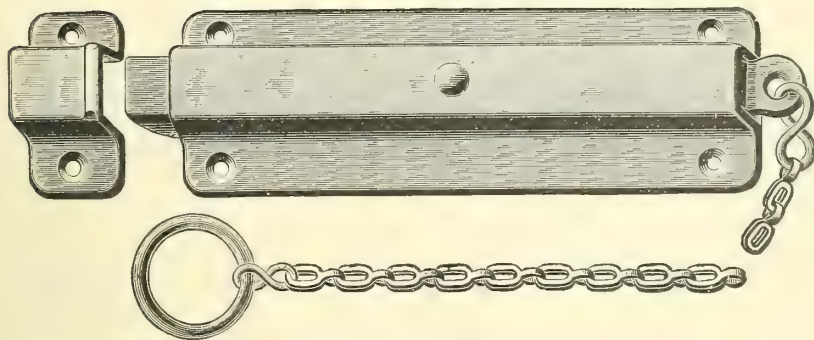
Extra heavy for garage and warehouse doors.

No. 450 Wrought iron keepers, japanned, steel bolts hot galvanized, $\frac{3}{4}$ inch diameter, 24 inches long. Packed with screws.

Dozen..... \$39.00

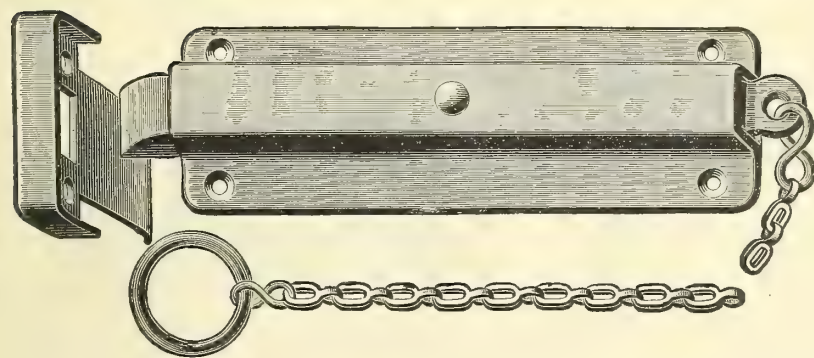
Chain Bolts

Packed With Screws



No. T2481	Wrought steel, Tuscan bronzed.			
Length, inches.....	3	4	6	8
Dozen.....	\$4.50	5.60	7.00	8.90

No. OB2481	Wrought steel, old brass finish, unpolished.			
Length, inches.....	3	4	6	8
Dozen.....	\$9.30	10.40	14.00	16.00

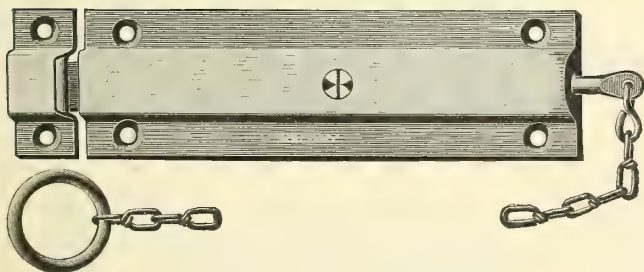


With Reverse Bevel

No. T2482	Wrought steel, Tuscan bronzed.			
Length, inches.....	3	4	6	8
Dozen.....	\$4.50	5.60	7.00	8.90

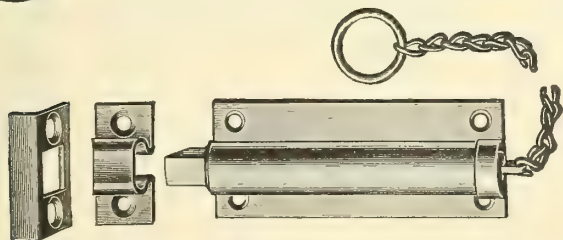
No. OT2482	Wrought steel, old brass finish, unpolished.			
Length, inches.....	3	4	6	8
Dozen.....	\$9.30	10.40	14.00	16.00

Extra Heavy, for Garage and Warehouse Doors



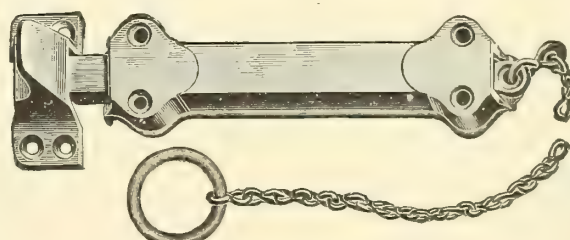
Made of heavy pressed steel, with stiff back-plate to prevent binding. Reversible for doors opening out by removing central screw and turning bolt around.

No. 430	Pressed steel, japanned. Packed with screws. 12 inches long.			
Dozen.....	\$47.00			

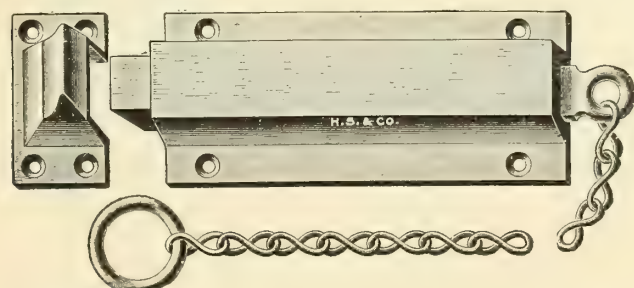


Wrought steel. Reversible by simply pulling the bolt out and turning it around. 6 inches long. Packed with screws.

No. 355A	Bronze-plated, dozen.....			
	\$10.00			

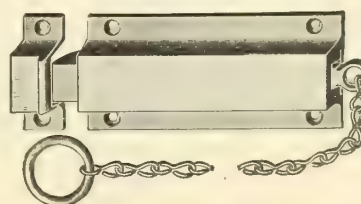


No. 381 Cast iron, japanned, polished bolt.					
Length, inches.....	3	4	5	6	8
Dozen.....	\$1.25	1.50	1.90	2.70	3.80



No. 1883P Extra heavy cast bronze, polished, 6 inches long. Packed with screws. Dozen.....

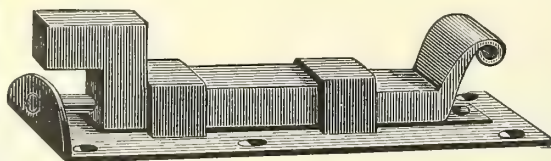
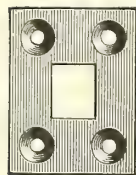
	\$22.40			
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No. 158	Cast brass, polished. Packed with screws.			
Length, inches.....	2	3		
Dozen.....	\$8.64	10.80		

Cut shows plain bevel. Reverse bevel furnished at same price.

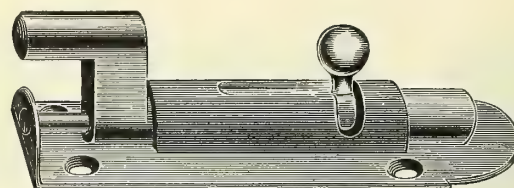
Neck Bolts



No. 1102

Wrought Steel, Japanned Plate, Polished Bolt

Length, inches.....	4	6	8
Dozen.....	\$2.90	4.30	5.50



No. 1100

Wrought Steel, Japanned Plate, Polished Bolt

Length, inches.....	4	6	8
Dozen.....	\$3.65	3.85	4.10



No. 141

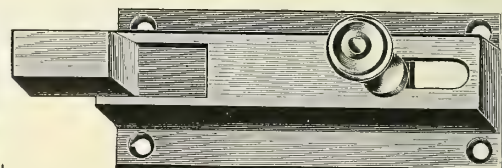
Cast Brass, Polished. Packed with Screws

Length, inches.....	3	4
Dozen.....	\$6.00	7.50

DA141

Cast Brass, Old Brass Finish. Packed with Screws

Length, inches.....	3	4
Dozen.....	\$8.70	10.20



No. 2442½

No. 2442½ Cast bronze, polished. Packed with screws. 4 inches long, dozen.....	\$12.60
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Surface Bolts



Wrought Steel. Extra Heavy

Length Inches	No. 1050 1¾-inch Plate ¾-inch Square Bolt Dozen	No. 1054 1¾-inch Plate ½-inch Square Bolt Dozen
8	\$7.15	\$6.40
10	7.60	6.80
12	8.10	7.40
15	8.80	7.80
18	9.25	8.15
24	9.80	8.90

No. 1178P

Cast Bronze, Polished. Packed with Screws

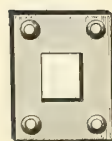
Length 6 inches, dozen.....	\$17.00
Length 12 inches, dozen.....	23.20

No. OB1178

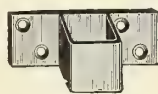
Cast Brass, Old Brass Finish. Packed with Screws

Length 6 inches, dozen.....	\$19.70
Length 12 inches, dozen.....	26.00

Above bolts are packed with regular strikes as illustrated on top of bolt. No. 3 Strikes will be supplied at same price when specially ordered.



No. 1 Staple



No 2, Staple

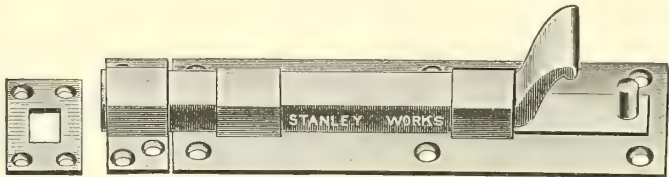


Strike No. 3

8, 10 and 12 inch bolts have No. 1 Staple; larger sizes No. 2.

Square Bolts

Half Size Cuts



No. 1088

Wrought Steel, Plain Staples, Japanned Plates, Polished Bolts

Length, inches.....	3	4	5	6	7	8	9	10	12
Dozen.....	\$2.00	2.50	2.65	2.85	3.75	4.00	4.35	6.50	7.00

No. 1090

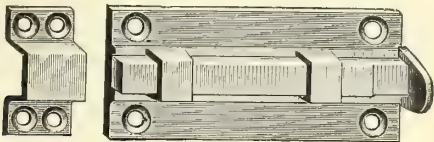
With Floor Plates

Wrought Steel, Japanned Plates, Polished Bolts

Length, inches.....	3	4	5	6	7	8	9	10	12
Dozen.....	\$2.00	2.50	2.65	2.85	3.75	4.00	4.35	6.50	7.00

Extra Staples and Floor Plates for Above

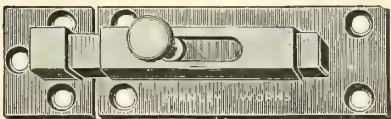
Staples		Floor Plates	
For 3 inch bolts, dozen.....	\$.40	For 3 inch bolts, dozen.....	\$.40
For 4, 5 and 6 inch bolts, dozen.....	.45	For 4, 5 and 6 inch bolts, dozen.....	.60
For 7, 8 and 9 inch bolts, dozen.....	.60	For 7, 8 and 9 inch bolts, dozen.....	.60
For 10 and 12 inch bolts, dozen.....	.75	For 10 and 12 inch bolts, dozen.....	.75



No. 145

No. 145 Cast Brass, Polished. Packed with Screws

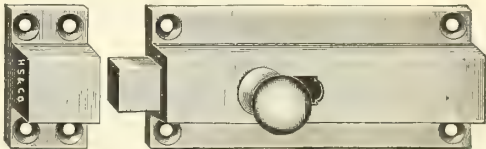
Length, inches.....	3	4	5	6
Dozen.....	\$5.76	8.10	9.90	11.70



Packed with Screws

Wrought Steel, Light. 3 Inches Long

No. 414A	Bronze-plated, dozen.....	\$3.80
No. 414F	Old brass finish, dozen.....	4.30



No. 149

Cast Brass, Polished. Packed with Screws

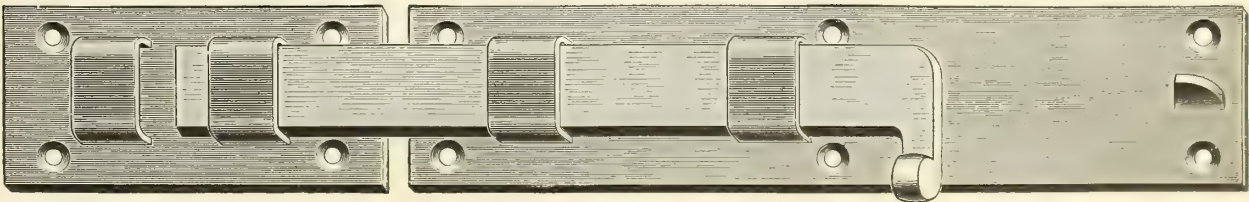
Length, inches.....	2½	3	4
Dozen.....	\$6.30	8.10	10.80

No. 2144½

Cast Bronze, Polished. Packed with Screws

Length, inches.....	2½	3	4
Dozen.....	\$8.10	9.90	12.60

Shutter Bolts



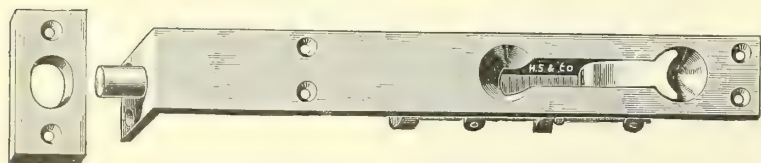
No. 334

Wrought Steel. All Galvanized

Length, inches.....	6	7	8	10	12
Dozen.....	\$3.75	4.15	4.50	5.75	6.75

Flush Bolts

Packed with Strikes and Screws



No. 2362 Cast bronze, polished.

No. DA2362 Cast brass, old brass finish.

1 1/4 Inches Wide

Length, inches.....	10	12	18
No. 2362 Dozen.....	\$36.00	45.00	63.00
No. DA2362 Dozen.....	40.32	49.32	67.32



No. P1867

Cast Bronze, Polished. 1 1/8 Inches Wide

Length, inches.....	8	12	18
Dozen.....	\$17.55	22.42	26.55

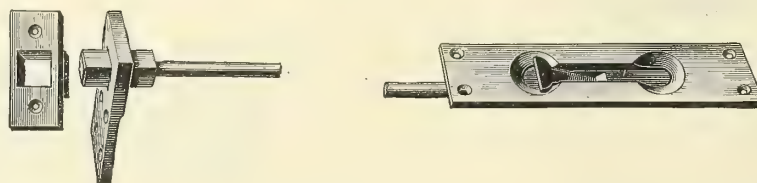
Extension Flush Bolts



Packed with screws. 1 1/4 x 6 1/2-inch plate. 1 1/8 x 2 3/8-inch guide. 1/2-inch square bolt. 9, 12, 18 and 24 inches long. Specify which wanted.

No. 385A Steel, bronze-plated, with bronze lever, dozen..... \$18.00

No. 385F Steel, old brass finish, with bronze lever, dozen..... 18.00



Packed with screws.

1 1/4 x 6 3/4-inch plate. 1 3/8 x 2 3/8-inch guide. 1/2-inch square bolt.

Cast Bronze, Polished

No. 1116P Cast bronze, polished.

No. A3B1116 Cast bronze, statuary bronze finish.

No. OB1116 Cast brass, old brass finish.

Length, inches.....	12	18	24
No. 1116P Dozen.....	\$25.90	25.90	25.90
No. A3B1116 Dozen.....	29.60	29.60	29.60
No. OB1116 Dozen.....	29.60	29.60	29.60

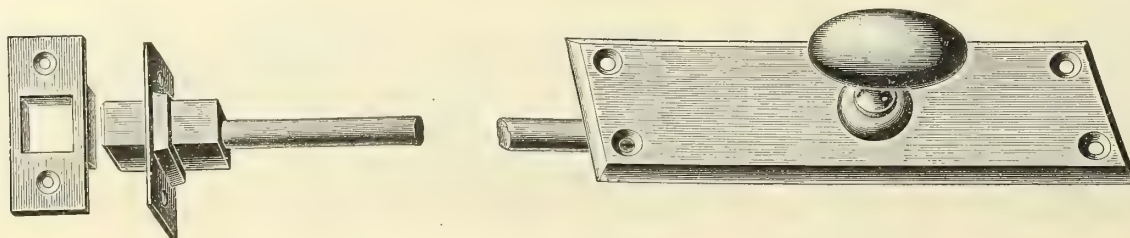
7/8 x 6-inch plate. 1 5/8 x 1 7/8-inch guide. 3/8-inch square bolt.

No. 1126P Cast bronze, polished.

No. A3B1126 Cast bronze, statuary bronze finish.

No. OB1126 Cast brass, old brass finish.

Length, inches.....	12	18
No. 1126P Dozen.....	\$25.90	25.90
No. A3B1126 Dozen.....	29.60	29.60
No. OB1126 Dozen.....	29.60	29.60



Packed with screws. 1 1/2 x 5 5/8-inch plate. 1/2-inch square bolt. Turning of oval knob controls the movement of bolt. 12, 18 and 24 inches long. Specify which desired.

No. OB1129 Cast brass, old brass finish, polished, dozen..... \$27.80

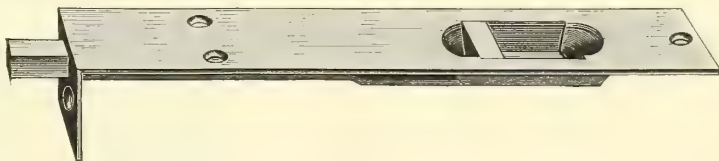
No. 1129P Cast bronze, natural color, highly polished, dozen..... 24.10

Flush Bolts



Packed with screws
Plates $\frac{3}{4}$ inch wide. Bolts $\frac{1}{4}$ inch diameter

Length, inches.....			6	9	12	15	18
No. 393 $\frac{1}{2}$ A	Wrought Steel.	Polished light bronze, dozen.....	\$5.00	5.75	6.50	7.15	7.90
No. 393 $\frac{1}{2}$ F	Wrought Steel.	Polished dull brass, dozen.....	5.65	6.40	7.15	7.80	8.55

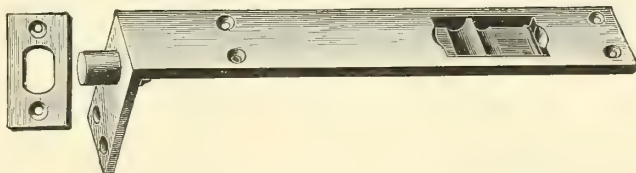


Plates $1\frac{1}{4}$ inches wide. $\frac{1}{2}$ -inch square bolts.

Plates 1 inch wide. $\frac{3}{8}$ -inch square bolt

Length Inches	No. 1026 Plain Steel Polished Plates. Dozen	No. 396A Wrought Steel Polished Light Bronze Dozen Packed with screws	No. 396F Wrought Steel Polished Old Brass Dozen Packed with screws
9	\$4.05	\$8.20	\$8.90
12	4.60	9.25	10.00
18	5.50	11.25	12.00

Length Inches	No. 1028 Plain Steel Polished Plates Dozen	No. 400A Wrought Steel Polished Light Bronze Dozen Packed with screws	No. 400D2 Wrought Steel Polished Antique Copper Dozen Packed with screws	No. 400F Wrought Steel Polished Old Brass Dozen Packed with screws
9	\$5.10	\$9.50	\$10.20	\$10.20
12	5.70	10.50	.....	11.20
18	6.90	12.50	13.20	13.20
24	8.10	14.50	.....	15.20



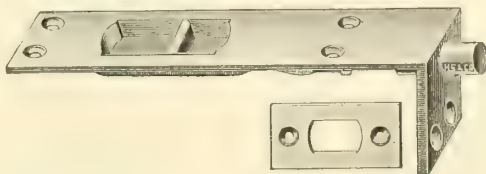
1 inch wide. Packed with strikes and screws

No. 0131 $\frac{1}{2}$ Wrought bronze, polished, with brass bolt.

Length, inches.....	6	8	10	12
Dozen.....	\$8.55	10.50	12.90	15.90

No. DA0131 $\frac{1}{2}$ Wrought brass, old brass finish.

Length, inches.....	6	8	10	12
Dozen.....	\$12.15	14.10	17.22	20.22



$1\frac{1}{8}$ inches wide. Packed with strikes and screws

No. 2356 Cast bronze, polished.

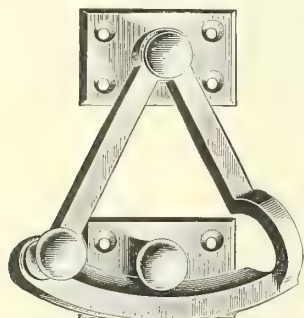
Length, inches.....	8	12	15	18
Dozen.....	\$18.90	24.75	26.70	29.70

No. DA2356 Cast brass, old brass finish.

Length, inches.....	8	12	15	18
Dozen.....	\$22.50	29.07	31.02	34.02

Dutch Door Quadrant Fasteners

One-Third Size Cut



Made Right and Left Hand. State which wanted.
Illustration shows Left Hand.

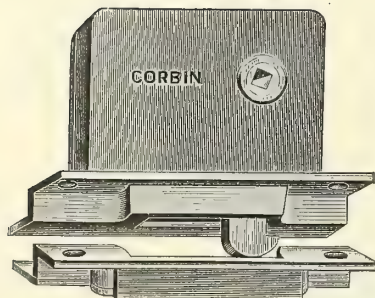
4 $\frac{3}{4}$ Inches. Packed with Screws

No. 175 Cast bronze, polished, dozen..... \$37.50
No. OB175 Cast brass, old brass finish, dozen..... 37.50

Dutch Door Bolts

Flush

One-Third Size Cuts



For knobs and lever handles, see Index.

Case 3 $\frac{1}{4}$ x 2 $\frac{5}{8}$ x $\frac{5}{8}$ inches. Front to center of hub $\frac{7}{8}$ and 1 $\frac{3}{8}$ inches. Front 1 x 5 inches. $\frac{1}{2}$ -inch rabbet. $\frac{5}{16}$ -inch hub.

No. 169 $\frac{3}{4}$ B Bolt and front, cast bronze, polished, each..... \$6.20
No. DA169 $\frac{3}{4}$ Bolt and front, cast brass, old brass finish, each 6.32



Made Right and Left Hand. State which wanted.
Illustration shows right hand.

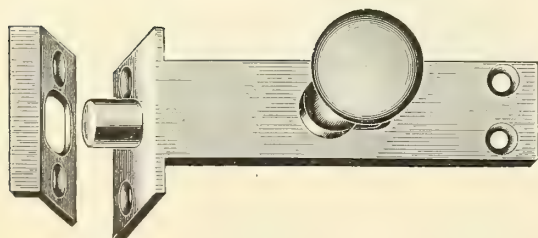
1 $\frac{1}{4}$ Inches Wide. 8 Inches Long

Packed with Screws

No. 2357 Cast bronze, polished, each..... \$3.75
No. DA2357 Cast brass, old brass finish, each..... 4.05
No. LB2357 Cast bronze, statuary bronze finish..... 1.00

Half Mortise

Half Size Cut



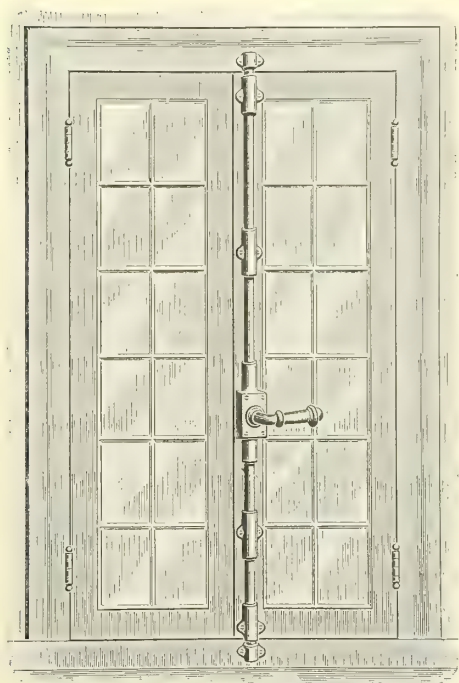
1 Inch Wide.. 4 Inches Long

Packed with Screws

No. 1399 $\frac{1}{2}$ Cast brass, polished, dozen..... \$13.86
No. DA1399 $\frac{1}{2}$ Cast brass, old brass finish, dozen..... 14.46

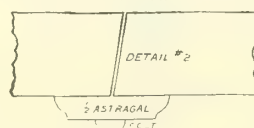
Cremorne or French Window Bolts

Showing the Hand of Cremorne or French Window Bolts



Cut showing double French Windows with Right Hand Cremorne Bolt

Showing Bolt Attached to Rabbetted Window



Showing Bolt Attached to 1/2 inch Astragal



Cremorne Bolts are always used on the inside of a casement or French window. If the bolt is placed on the leaf of the window to the right of a person facing it, a right-hand bolt is required, whether the window opens in or out. If placed on the leaf to the left, a left-hand bolt is required.

For Casement or French Windows



No. 1



No. 2



No. 3



No. 4

For doors opening in or out.

Plates 1 3/8 inches wide, bolts 5/8 inch half round.

Bolts are regularly packed with two No. 2 strikes and one No. 1 strike. No. 3 or No. 4 Staples will be substituted when ordered.

Furnished regularly in 8-foot lengths with handle in center, so that they can be cut to suit.

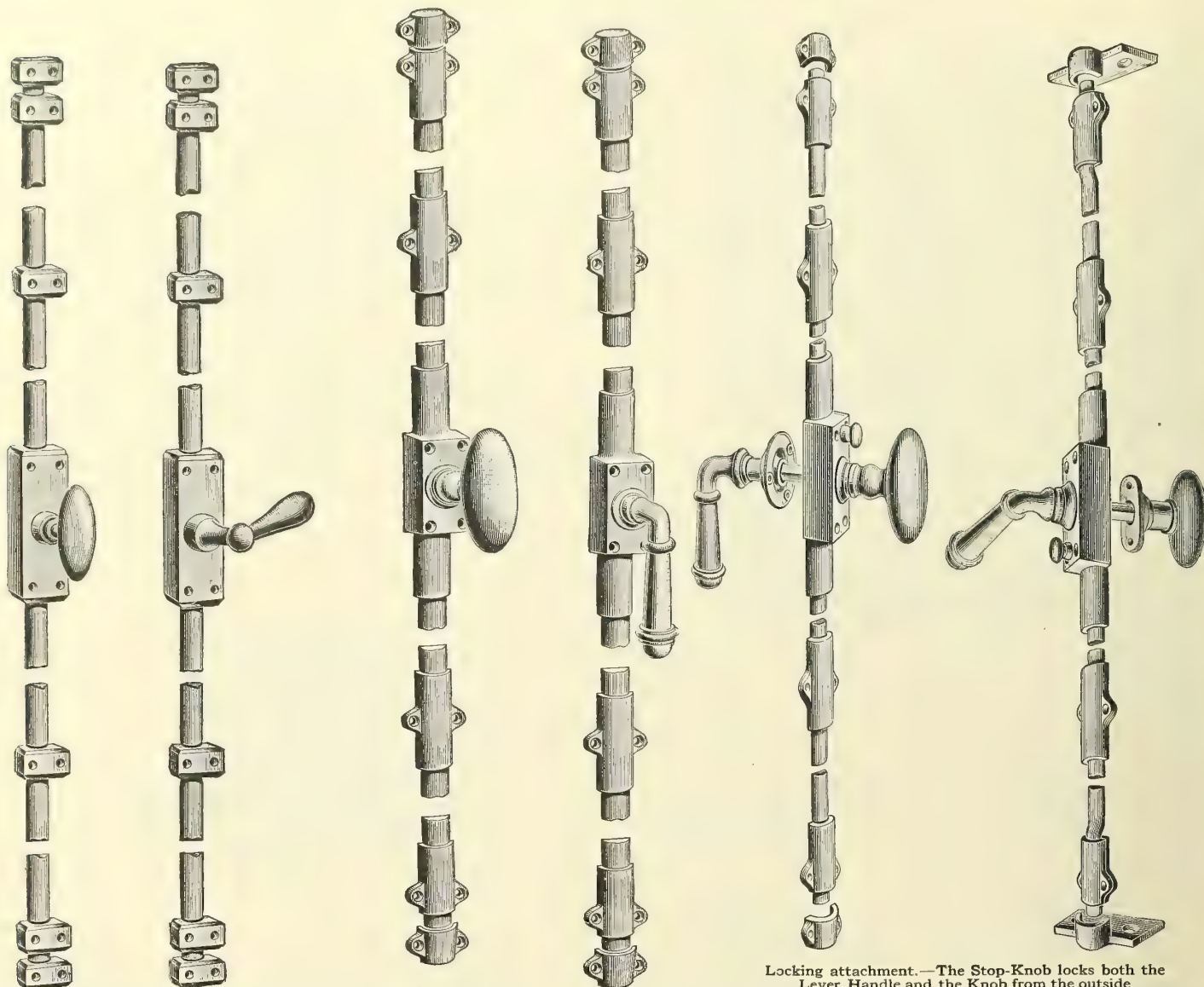
No. 373A Wrought steel, bronze-plated, dozen \$50.00

No. 373F Wrought steel, old brass finish. dozen 55.00

For other Cremorne Bolts, see next page

Cremorne or French Window Bolts

For Casements or French Windows



No. 3158P
No. OB3158
For Sash Opening In

No. 3158½P
No. OB3158½
For Sash Opening Out

No. 4158P
No. OB4158
For Sash Opening In

No. 4158½P
No. OB4158½
For Sash Opening Out

Locking attachment.—The Stop-Knob locks both the
Lever Handle and the Knob from the outside

No. 4158¼P
No. OB4158¼
For Sash Opening In

No. 4158¾P
No. OB4158¾
For Sash Opening Out

Handle Case 1½ x 3⅝ inches. End Guides
1⅛ x ¾ inches. Rod ½ inch half round

No. 3158P Cast bronze, polished,
each..... \$7.70

No. OB3158 Cast brass, old brass
finish, each..... 8.50

No. 3158½P Cast bronze, polished,
each..... 7.70

No. OB3158½ Cast brass, old brass
finish, each..... 8.50

Handle Case No. 4158P and No. OB4158
1⅝ x 5⅞ inches. Handle Case No. 4158½P
and No. OB4158½, 1½ x 5⅞ inches. End
Guides 1⅝ x 1¾ inches. Rod ⅝ inch half
round

No. 4158P Cast bronze, polished, each. \$11.60

No. OB4158 Cast brass, old brass
finish, each..... 12.30

No. 4158½P Cast bronze, polished,
each..... 12.30

No. OB4158½ Cast brass, old brass
finish, each..... 13.10

Handle Case 1½ x 5⅞ inches. End Guides
1⅝ x 1¾ inches. Rod ⅝ inch half Round

No. 4158¼P Cast bronze, polished,
each..... \$18.50

No. A3B4158¼ Cast bronze, statuary
bronze finish, each 20.00

No. OB4158¼ Cast brass, old brass
finish, each..... 20.00

No. 4158¾P Cast bronze, polished,
each..... 18.50

No. A3B4158¾ Cast bronze statuary
bronze finish, each 20.00

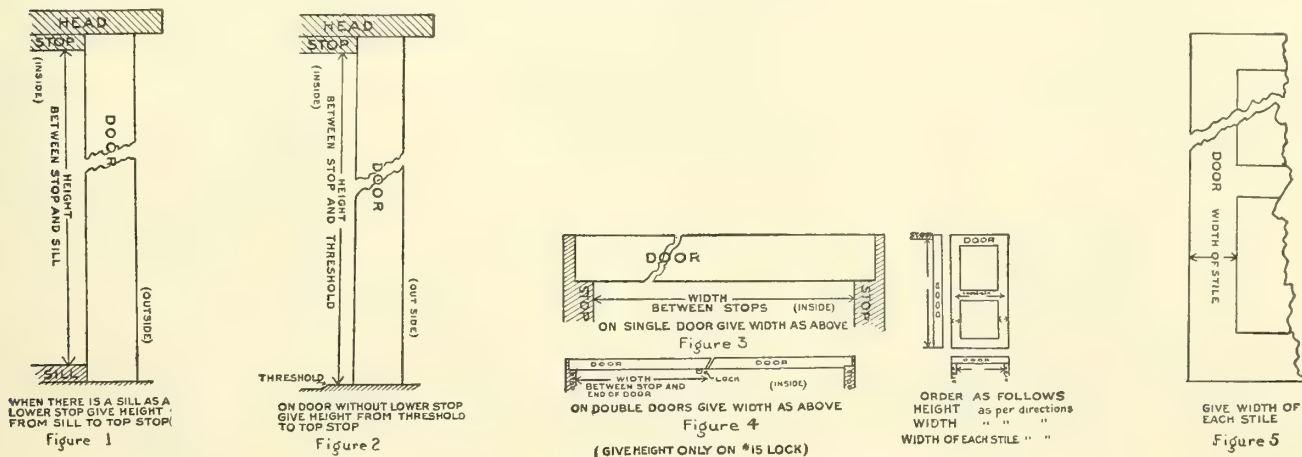
No. OB4158¾ Cast brass, old brass
finish, each..... 20.00

These bolts are furnished regularly in 8-foot lengths, so that they can be cut and arranged to suit length and hand of windows. They are furnished with one nosing, as shown on Bolt No. 4158¼P above, and one universal strike, as shown on Bolt 4158¾P above, or two of either, but if construction of trim will not allow the use of these, special strikes will be sent on receipt of detail.

Panic Exit Bolts

These Panic Exit Bolts do not operate through the action of springs. They are instantly released by a slight touch at any point on the cross-bar or handle which extends across the door. This principle makes them the ideal fastening for outer doors of schools, theatres, churches, public buildings, factories and all other buildings where many people gather, as any jamming of exits is impossible.

Directions for Ordering



State whether right or left-hand door on inside. Right-hand door inside is left-hand reverse bevel outside. Left-hand door inside is right-hand reverse bevel outside.

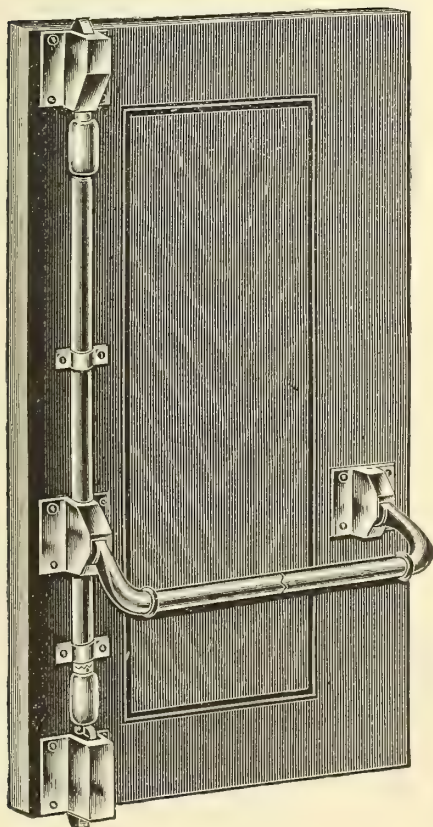
Style 25

Rod is $\frac{1}{2}$ inch diameter. Cross-bar is $\frac{3}{4}$ inch diameter

Style 75

Extra heavy, for use on large doors. Rod is $\frac{9}{16}$ inch diameter. Cross-bar is 1 inch diameter.

Prices include entire equipment for a single door, with screws, ready for installation.

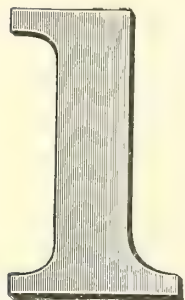


	Style 25		Style 75	
	No.	List	No.	List
Steel Rod Plated to Match Finish				
Not Polished				
Brass, natural finish	2510S	\$8.00	7410S	\$14.00
Bronze, natural finish	2511S	8.20	7411S	14.40
Brass, antique copper	257 $\frac{1}{2}$ S	8.80	747 $\frac{1}{2}$ S	15.00
Brass, Bower-Barff (imitation)	2547	8.80	7447	15.60
Highly Polished				
Brass, natural finish	2510	9.80	7410	16.60
Bronze, natural finish	2511	10.00	7411	17.00
Brass, nickel-plated	254	10.40	744	17.80
Brass, antique copper	257 $\frac{1}{2}$	10.80	747 $\frac{1}{2}$	18.00
Brass, dull finish	259	10.80	749	18.00
Solid Brass or Bronze Rod				
Not Polished				
Brass, natural finish	2610S	9.60	7510S	16.00
Bronze, natural finish	2611S	9.80	7511S	16.40
Brass, antique copper	267 $\frac{1}{2}$ S	10.40	757 $\frac{1}{2}$	17.00
Brass, Bower-Barff (imitation)	2647	10.40	7547	17.60
Highly Polished				
Brass, natural finish	2610	11.00	7510	18.00
Bronze, natural finish	2611	11.20	7511	18.40
Brass, nickel-plated	264	11.60	754	19.20
Brass, antique copper	267 $\frac{1}{2}$	12.00	757 $\frac{1}{2}$	19.60
Brass, dull finish	269	12.00	759	19.60

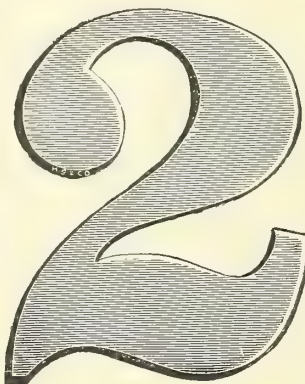
We are in position to furnish other types of panic bolts to meet the varied conditions

Metal Numbers and Letters

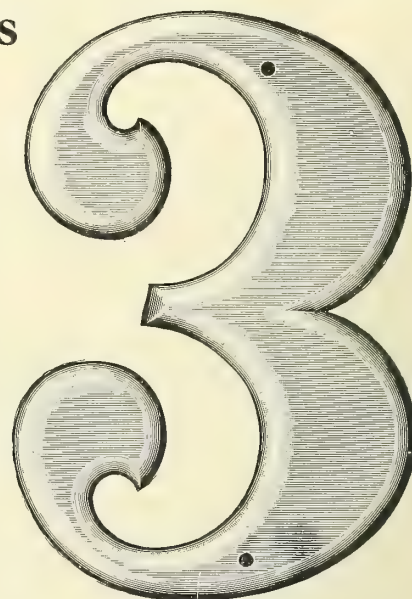
Full Size Cuts



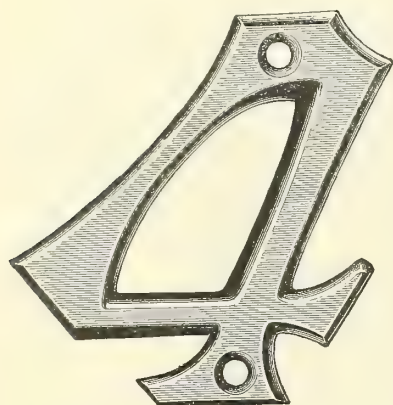
Regular, 1½ inches, with Pins cast in
Cast brass, polished, dozen..... \$.90
Cast brass, nickel-plated, dozen..... 1.00



Regular, 2 inches, with Pins cast in
Cast brass, polished, dozen..... \$1.20



Niagara, 3 inches
Sheet aluminum, polished. Packed
with pins. Dozen..... \$1.00



Sixteenth Century, 2 inches
Cast bronze, polished. Packed with
pins. Dozen..... \$1.80



Sixteenth Century, 1 inch
Cast bronze, polished. Packed with
pins. Dozen..... \$1.20



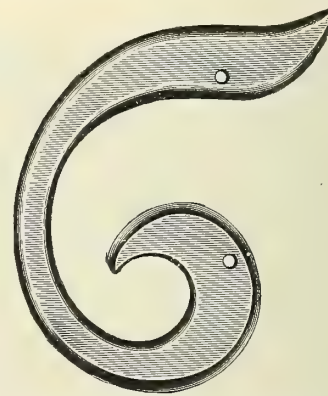
Sixteenth Century, ½ inch
Cast bronze, polished. Packed with
pins. Dozen..... \$.96



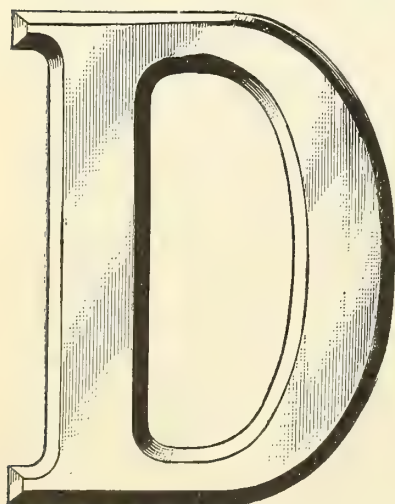
Sixteenth Century, ½ inch
Cast bronze, polished. Packed with
pins. Dozen..... \$.96



Sixteenth Century, 1 inch
Cast bronze, polished. Packed with
pins. Dozen..... \$1.20



Sixteenth Century, 2 inches
Cast bronze, polished. Packed with
screws. Dozen..... \$1.80



No. 380P 2½ inches, cast
bronze, polished.
Packed with screws.
Dozen..... \$3.48



Numbered Thumb Tacks

Brass, Black Figures

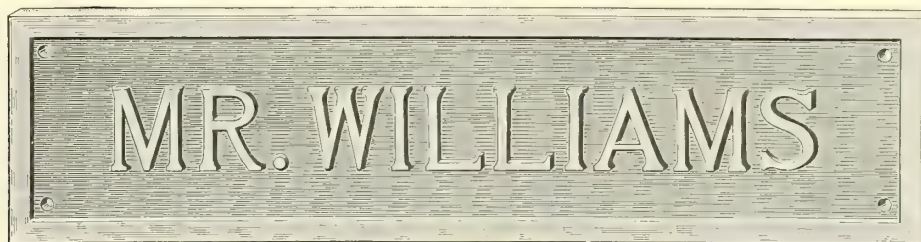
In sets of 1 to 10 inclusive.. \$2.20
In sets of 1 to 25 inclusive.. 5.50
In sets of 1 to 40 inclusive.. 8.80
In sets of 1 to 50 inclusive.. 11.00
In sets of 1 to 99 inclusive.. 22.00
We do not sell less than full sets.

SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Name Plates



No. 802P

Cast bronze, highly polished surface, shaded background. Standard size is $3\frac{1}{2}$ x 16 inches, with $1\frac{1}{4}$ -inch letters. All names furnished to order. Prices on application

Sign Plates



No. 702

Iron, white enamel background, blue enamel letters, size $2\frac{1}{2}$ x 10 inches. Lettered as follows: "No Admittance," "Cashier," "Janitor," "Ladies," "Gentlemen," "No Smoking," "Toilet," "Office," "Private," "Book-keeper." Dozen \$8.00



No. 602



No. 603



No. 604

Conform with New York City Requirements

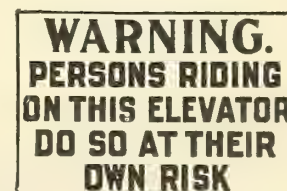
No. 602 Tin, red enamel background, white enamel letters, size $3\frac{1}{2}$ x 14 inches. Lettered "No Smoking." Dozen \$5.00
No. 603 36-gauge, cold rolled steel, red enamel background, white embossed letters, 4 x 14 inches. Lettered "To the Fire Escape." Dozen . . . 5.00
No. 604 36-gauge, cold rolled steel, red enamel background, white embossed letters, 4 x 14 inches. Lettered "To the Fire Escape." Dozen . . . 5.00



Nos. 402 and 502

No. 402 Tin, red enamel background, white enamel letters, size $9\frac{1}{2}$ x $11\frac{3}{4}$ inches. Letters 9 inches high. Lettered "Exit." Dozen \$5.00

No. 502 Iron, red enamel background, white enamel letters, size 10 x 14 inches. Letters 8 inches high. Lettered "Exit." Dozen 15.00

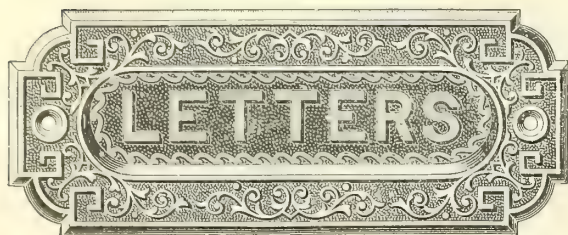


No. 302

36-gauge, cold rolled steel, blue ground, white letters, 7 x 10 inches. Dozen \$5.00

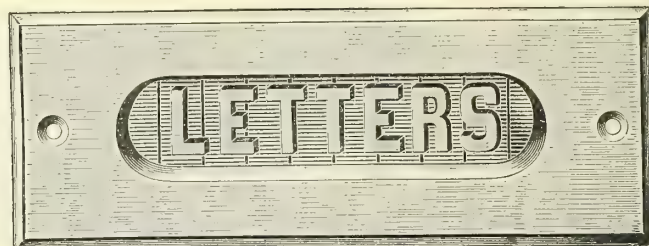
Conforms with New York City and State Requirements

Letter-Box Plates



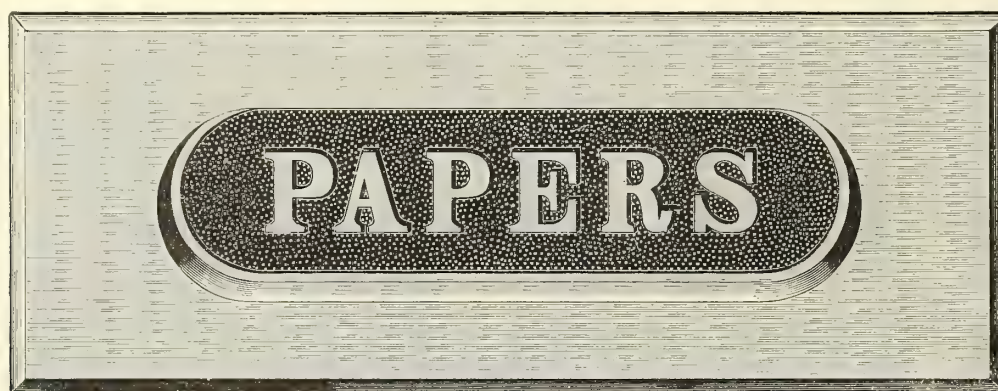
No. 26

No. 26 $2\frac{3}{8} \times 5\frac{7}{8}$ inches over all, opening $1\frac{1}{8} \times 4\frac{3}{8}$ inches.
Cast iron, amber bronzed, dozen..... \$4.50



No. X2246

No. Y2246 $2\frac{1}{2} \times 6\frac{3}{4}$ inches over all, opening $1 \times 4\frac{3}{8}$ inches.
Wrought steel, bronze-plated, dozen..... \$7.70



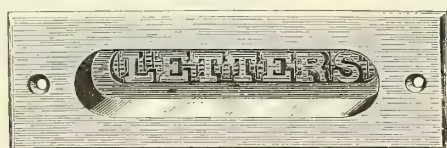
$4 \times 10\frac{1}{2}$ inches over all. Opening 2×7 inches. Opening is large enough to take magazines and newspapers.

Cast Iron, Bronze-plated, Polished

Cast Bronze, Polished

No. N3424 $\frac{1}{2}$ Without back-plate, each..... \$1.65
No. NO3424 $\frac{1}{2}$ With back-plate, each..... 1.90

No. 2424 $\frac{1}{2}$ Without back-plate, each..... \$4.50
No. O2424 $\frac{1}{2}$ With back-plate, each..... 5.70



$2\frac{1}{8} \times 7$ Inches Over All. Opening $1 \times 4\frac{3}{4}$ Inches

Inside plate for Nos. P1334 and P1334-37.

No. P1334 Without inside plate, cast bronze, polished, dozen.. \$12.50
No. P1344 With inside plate, as shown opposite, cast bronze, polished, dozen..... 16.25
No. P1344-37 With inside plate, cast brass, old brass finish, dozen..... 16.25

Dozen..... \$4.50

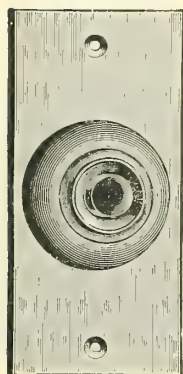
Letter-Box Hoods



No. PH1338 $2\frac{3}{8} \times 7$ inches over all, opening 5 inches wide.
Made of polished cast bronze, dozen..... \$12.50

Push Buttons

Half Size Cuts



No. 1256 $\frac{3}{4}$

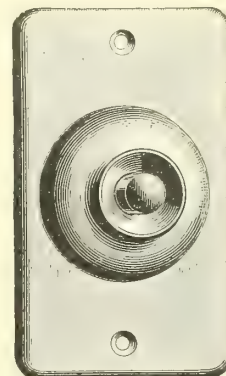
Cast Bronze, Polished

No. 43 $2\frac{1}{2} \times 1$ inches over all, dozen. \$9.60

No. 1256 $\frac{3}{4}$ $3\frac{3}{4} \times 1\frac{3}{4}$ inches over all, dozen 7.20



No. 9 $4\frac{5}{8} \times 2\frac{3}{8}$ inches over all, cast bronze, polished, dozen \$6.90



4 x $2\frac{3}{8}$ inches over all

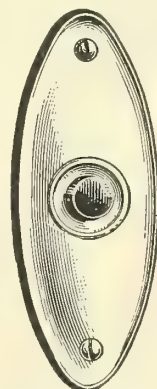
No. 9184MR Wrought bronze, polished, dozen \$10.80

No. AB9184 Wrought bronze, antique copper finish, dozen 12.25



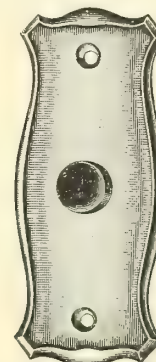
Design Tarlton

No. OB9184TC $1\frac{5}{8} \times 3\frac{3}{4}$ inches over all, wrought brass, old brass finish, dozen \$7.20



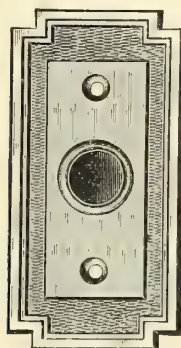
Design Fairfax

No. OB9184FC $1\frac{2}{16} \times 3\frac{7}{8}$ inches over all, wrought brass, old brass finish, dozen \$7.20



Design Princeton

No. SKA72161 $1\frac{1}{2} \times 3\frac{3}{4}$ inches over all, wrought brass, old brass finish, sand blast, dozen \$10.80



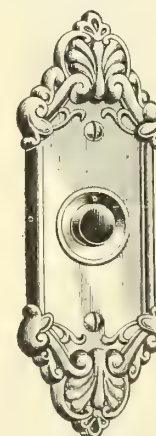
Design Corfu

No. LB82361 $2\frac{5}{8} \times 3\frac{5}{8}$ inches over all, cast bronze, statuary bronze finish, dozen \$40.32



Design Hudson

No. 9184TH $1\frac{5}{8} \times 4$ inches, wrought bronze, polished, dozen \$7.20



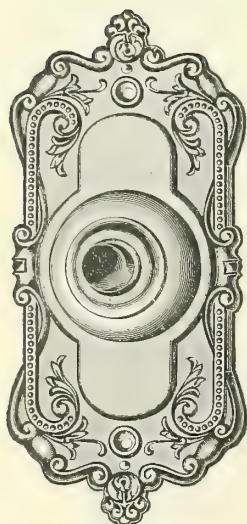
Design Dunkirk

No. R5D9184DF $1\frac{1}{2} \times 4\frac{3}{8}$ inches over all, wrought brass, antique brass, sand finish, depressed surfaces oxidized and relieved, dozen. \$7.20

For other Push Buttons, see Index

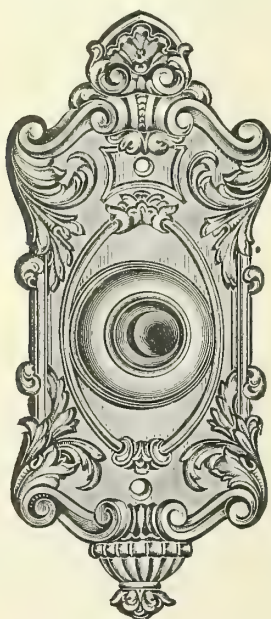
Push Buttons

Half Size Cuts



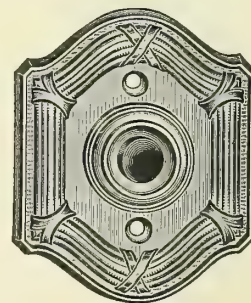
Design Holland

No. ERxRR 71760 $2\frac{1}{2} \times 5\frac{3}{8}$ inches
over all, wrought bronze, royal
copper finish, depressed surfaces
in antique copper finish, dozen... \$10.80



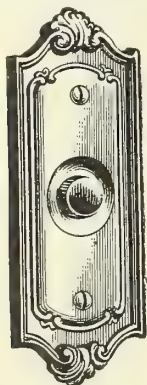
Design Marseilles

No. KA89160 $2\frac{3}{4} \times 6\frac{3}{8}$ inches over
all, cast brass, old brass finish,
dozen..... \$27.00



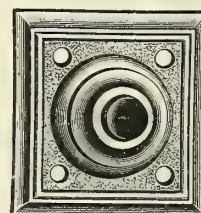
Design Navarre

No. KA90160 $2\frac{1}{2} \times 3$ inches over all,
cast brass, old brass finish, dozen 60.48



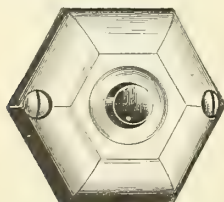
Design Vernon

No. R7D 9184VF $1\frac{1}{2} \times 3\frac{7}{8}$ inches
over all, cast brass, antique brass
finish, sand blast, with edges
highly polished, dozen..... \$14.40



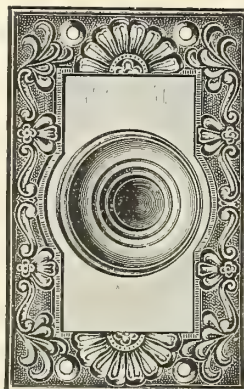
Design Victor

No. KA71860 $2 \times 2\frac{1}{8}$ inches over all,
wrought brass, old brass finish,
dozen..... \$10.80



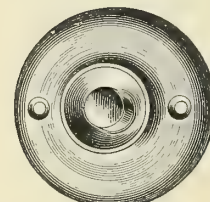
Design Deerfield

No. OB9184DC $2\frac{5}{8} \times 2$ inches, cast
brass, old brass finish, dozen... \$19.80



Design Parthenon

No. R81060 $2\frac{3}{8} \times 3\frac{3}{4}$ inches over all,
cast bronze, antique copper finish,
dozen..... \$34.56

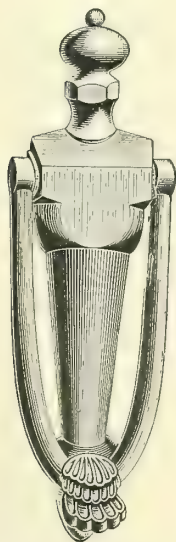


Design Round

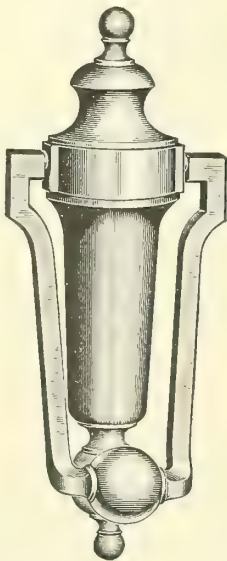
No. 9138P Cast bronze, polished,
dozen..... \$8.00

For other Push Buttons, see Index

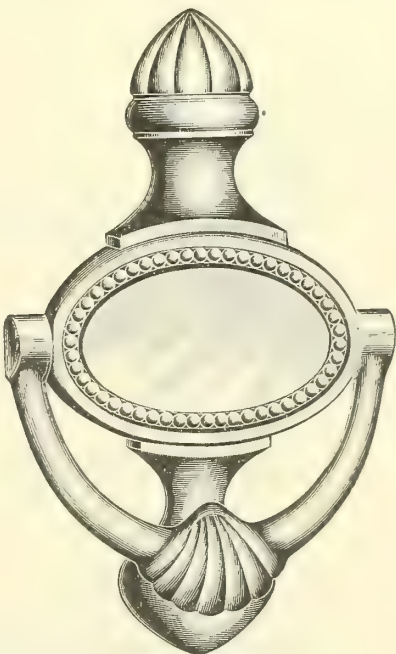
Door Knockers



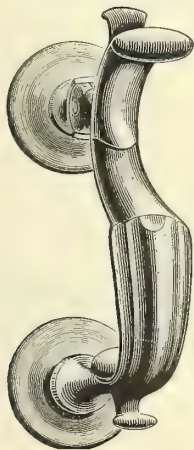
No. 5P 2⅝ x 8¼ inches over all,
cast bronze, polished, each..... \$3.20



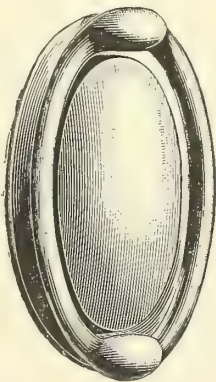
3½ x 8¾ Inches Over All
No. KA1909½ Cast brass, old brass
finish, each..... \$4.50
No. LB1909½ Cast bronze, statuary
bronze finish, each..... 4.50



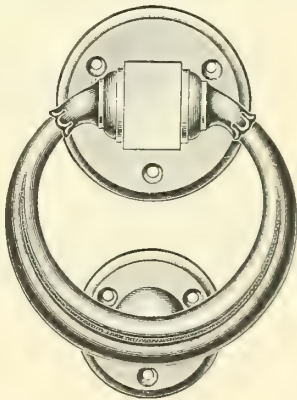
4 x 6¾ Inches Over All
No. 1893 Cast Bronze, polished, each. \$4.35
No. KA1893 Cast brass, old brass
finish, each..... 4.70



No. OB12 2x6½ inches over all, cast
brass, old brass finish, each \$5.54

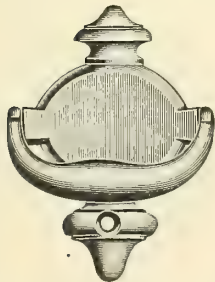


No. OB8 3¼ x 5¾ inches over all,
cast brass, old brass finish, each.. \$5.94



No. 1911½ 4½ x 6 inches over all,
cast bronze, polished, each..... \$20.00

For Chamber and Guest-Room Doors



2⅞ x 2½ Inches Over All
No. 1912 Cast bronze, polished,
each..... \$3.12
No. OB1912 Cast brass, old brass
finish, each..... 3.48



7⁄8 x 3¼ Inches Over All
No. 35 Cast bronze, polished, each.. \$1.67
No. OB35 Cast Brass, old brass finish,
each..... 1.67



1⅝ x 4¼ Inches
Made of Cast Bronze
No. 2909½ Polished, each..... \$3.75
No. LB2909½ Statuary bronze, each. 3.90

Knob Spindles

Standard—Plain



No.	Length Inches	Extension Inches	For Knobs	Dozen
1	3 1/4	1 to 2	Mortise 5/16 inch	\$.75
2	3 5/8	1 1/4 to 2 1/4	Mortise 5/16 inch	.75
4	4 3/4	1 1/4 to 2 3/4	Mortise 5/16 inch	.75
6	3 3/4	1 3/4 to 2 1/2	Rim 5/16 inch	.75
7	4	1 3/4 to 2 1/2	Rim 5/16 inch	.75
20	5	1 1/2 to 3 1/4	Rim 5/16 inch	.75

Standard-Swivel



No.	Length Inches	Extension Inches	For Knobs	Dozen
10	4 1/2	1 1/4 to 2 3/4	Mortise 5/16 inch	\$1.50
11	5 1/4	1 1/2 to 3	Mortise 3/8 inch	1.50
12	5 1/2	1 1/2 to 3 1/4	Mortise 3/8 inch	1.75

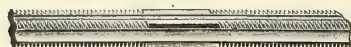
Standard-Swivel Reducing



These Spindles are made to permit the use of a knob with 5/16-inch shank in connection with locks having 3/8-inch hub.

No. 37 3/4 For knobs with standard shanks, dozen \$2.52

Screwless-Plain



No. 056 Corbin P. Y. Model, wrought steel, 5/16-inch, dozen . . \$1.50

No. 156 Sargent F Model, wrought steel, 5/16-inch, dozen 1.00



No. 056 1/2 Corbin P. Y. Model, wrought steel, 5/16-inch, dozen . . \$1.50

No. 156 1/2 Sargent F. Model, wrought steel, 5/16-inch, dozen . . . 1.00

Standard Mortise Bolt Spindles



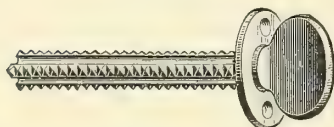
No. 55 Wrought steel, 5/16-inch, dozen \$.75

Standard Closet Spindles

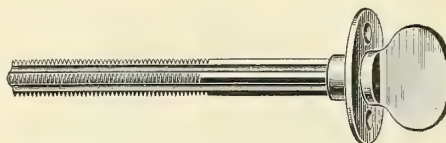


No. 15 Wrought steel, 5/16-inch, dozen \$1.50

Screwless Closet Spindles



No. 23D Cast bronze thumb-piece and rose, screwless, Sargent F model, 5/16-inch wrought steel spindle, dozen \$5.30

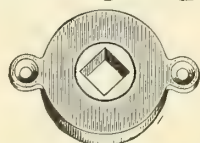


No. 046 1/2 Cast bronze thumb-piece and rose, 1 3/8 inch diameter, screwless, Corbin P. Y. model, 5/16-inch wrought steel spindle, dozen \$7.20



No. 40 Wrought steel, 5/16-inch, dozen \$4.20

Auxiliary Spring

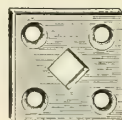


For Lever Handles

This Auxiliary Spring when placed on the spindle under the rose will hold the lever handle firmly in position—the levers are too heavy for the spring in the ordinary lock.

For 5/16-inch spindle, each \$.30
For 3/8-inch spindle, each35

Knob Plates



Applied to door under rose or escutcheon to hold knob rigid.

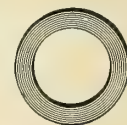
Made of Cast Iron

No. 20 For 5/16-inch spindle, dozen . . \$.40
No. 21 For 3/8-inch spindle, dozen40

Knob Screws and Washers



Screws.



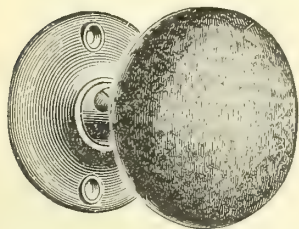
Size 3/8 x 9 inches, blued iron, gross . . . \$.60
Size 3/8 x 9 inches, polished bronze, gross . 1.12

Washers

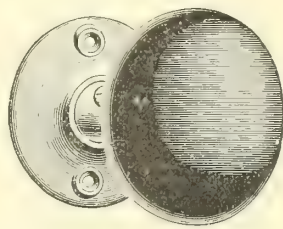
Size 5/16 inch, pound \$.60
Size 3/8 inch, pound40

Door Knobs

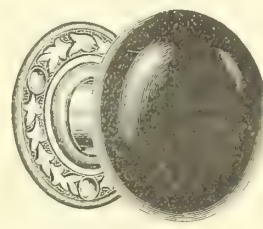
Half Size Cuts



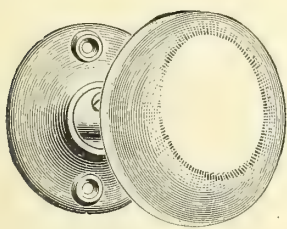
Mineral, round type. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Japanned mountings.
No. 500 Mortise. Dozen pairs..... \$1.65
No. 505 Rim. Dozen pairs..... 1.65



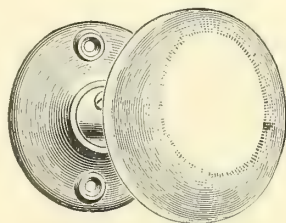
Ebony, round type. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Japanned mountings.
No. 512 Mortise. Dozen pairs..... \$1.90
No. 517 Rim. Dozen pairs..... 1.90



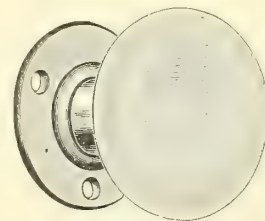
Jet, round type. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Bronze-plated mountings.
No. N3700 Mortise. Dozen pairs... \$4.20
No. N3700 $\frac{1}{2}$ Rim. Dozen pairs... 4.20



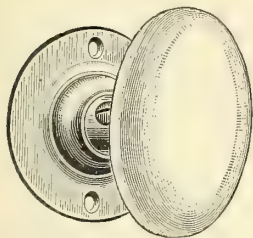
Porcelain, round type. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Japanned mountings.
No. 510 Mortise. Dozen pairs..... \$1.90
No. 515 Rim. Dozen pairs..... 1.90



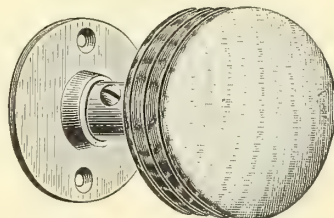
Porcelain, round type. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Porcelain mountings.
No. 550 Mortise. Dozen pairs..... \$4.80
No. 555 Rim. Dozen pairs..... 4.80



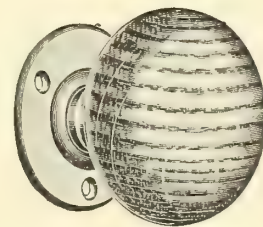
Porcelain, round type. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Wrought bronze mountings, polished.
No. 2851 Mortise. Dozen pairs.... \$7.65
No. DA2851 Mortise. Wrought brass, old brass finish, Dozen pairs.... 9.30



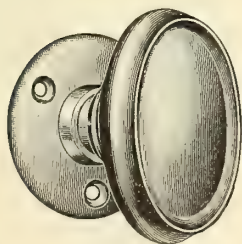
No. 1818P Mortise. Porcelain, oval type. $2\frac{1}{4}$ inches diameter. Polished wrought bronze mountings. $\frac{5}{16}$ -inch spindle. Dozen pairs... \$6.60



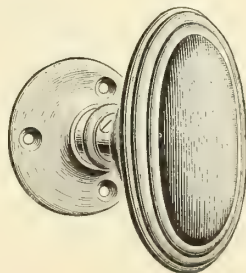
Ash or Natural Cherry, box type. Wrought bronze mountings. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle.
No. 231 Mortise. With roses, dozen pairs..... \$5.00
No. 231 Mortise. Without roses, dozen pairs..... 3.20



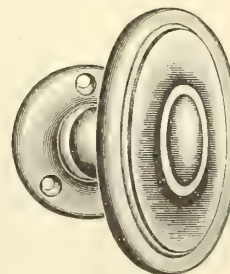
No. DA6001 $\frac{1}{4}$ Mortise. Oak, cherry or cypress, round type. Wrought brass, old brass finish mountings. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. With roses, dozen pairs... \$11.64



*No. 1612 Mortise. Cast bronze, polished. Oval type. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle.
With roses, dozen pairs..... \$58.50
Without roses, dozen pairs..... 54.00



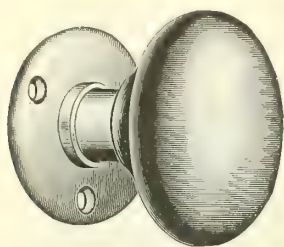
*No. A3B1982 Mortise. Cast bronze, statuary bronze finish. Oval type. $2\frac{5}{8}$ inches diameter. $\frac{5}{16}$ -inch spindle. With roses, dozen pairs. \$37.20



No. KA1616 Mortise. Cast brass, old brass finish. Oval type. $2\frac{3}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle.
With roses, dozen pairs..... \$57.20
Without roses, dozen pairs..... 51.80

*Can be furnished with screwless spindles which allow for close adjustment, avoids rattle and prevents knob working loose from spindle. Add \$2.70 to lists.

Design Knobs are listed under Lock Sets, see Index

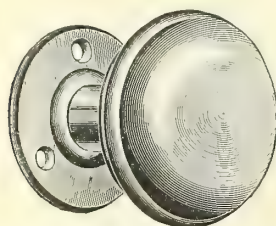


No. 01508 Mortise. Cast bronze, polished, oval type. $1\frac{3}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle.

With roses, dozen pairs. \$29.70
Without roses, dozen pairs. 25.20

No. 1508 Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle.

With roses, dozen pairs. \$29.70
Without roses, dozen pairs. 25.20



Round Type

No. 01583 Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Wrought bronze, polished.

With roses, dozen pairs. \$12.90
Without roses, dozen pairs. 10.50

No. R01583 Mortise. Same dimensions as above. Wrought bronze, antique copper finish.

With roses, dozen pairs. \$15.60
Without roses, dozen pairs. 12.30

No. 1523 $\frac{1}{2}$ Mortise. Same dimensions as above. Wrought steel, bronze-plated.

With roses, dozen pairs. \$6.90
Without roses, dozen pairs. 6.00

For above knobs equipped with $\frac{5}{16}$ -inch swivel spindles, add to lists.

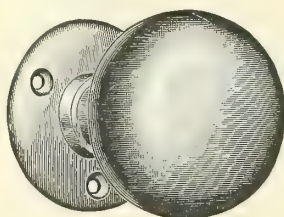
For above knobs equipped with $\frac{3}{8}$ -inch swivel spindles, add to lists.

For above knobs equipped with $\frac{3}{8}$ -inch straight spindles, add to lists.

Design Knobs are listed under Lock Sets, see Index.

Door Knobs

Half Size Cuts



No. 1511 Mortise. Cast bronze, polished, ball type. $2\frac{1}{2}$ inches diameter. $\frac{5}{16}$ -inch spindle.

With roses, dozen pairs. \$36.90
Without roses, dozen pairs. 32.40

No. 1512 Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle.

With roses, dozen pairs. \$29.70
Without roses, dozen pairs. 25.20

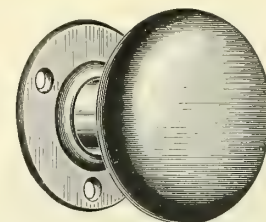
Above knobs can be furnished with screwless spindles, which allow for close adjustment, avoids rattle and prevents knob working loose from spindle. Add \$2.70 per dozen pairs to lists.



Canton Design, Round Type

No. 60022 Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Wrought steel, bronze-plated.

With roses, dozen pairs. \$6.90
Without roses, dozen pairs. 6.00



Round Type

No. 1919 Mortise. $1\frac{3}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Cast bronze, polished.

With roses, dozen pairs. \$22.50
Without roses, dozen pairs. 18.00

No. 1419 $\frac{1}{2}$ Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle. Wrought bronze, polished.

With roses, dozen pairs. \$15.15
Without roses, dozen pairs. 12.75

No. DA1419 $\frac{1}{2}$ Mortise. Same dimensions as above. Wrought brass, old brass finish.

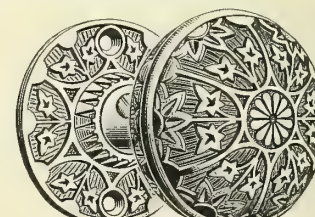
With roses, dozen pairs. \$17.85
Without roses, dozen pairs. 14.55

No. 1519 $\frac{1}{2}$ Mortise. Same dimensions as above. Cast bronze, polished.

With roses, dozen pairs. \$22.50
Without roses, dozen pairs. 18.00

No. 1518 $\frac{1}{2}$ Mortise. $2\frac{1}{2}$ inches diameter. $\frac{5}{16}$ -inch spindle. Cast bronze, polished.

With roses, dozen pairs. \$29.70
Without roses, dozen pairs. 25.20



Round Type

No. 1442A Mortise. $2\frac{1}{2}$ inches diameter. $\frac{5}{16}$ -inch spindle. Cast iron, amber bronzed.

With roses, dozen pairs. \$4.60
Without roses, dozen pairs. 4.00

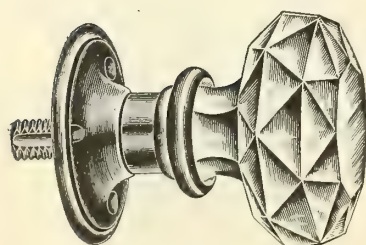
For above knobs equipped with $\frac{5}{16}$ -inch swivel spindles, add to lists.

For above knobs equipped with $\frac{3}{8}$ -inch swivel spindles, add to lists.

For above knobs equipped with $\frac{3}{8}$ -inch straight spindles, add to lists.

Glass Door Knobs

Half Size Cuts

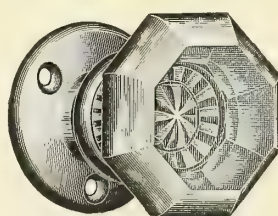


Cut Glass

Cast Brass, Old Brass Finish Mountings

No. OB7694 Mortise. 2 inches diameter. $\frac{5}{16}$ -inch spindle, screwless type, with roses, dozen pairs. . . . \$43.00

No. OB7695 Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle, screwless type, with roses, dozen pairs. . . . 48.00

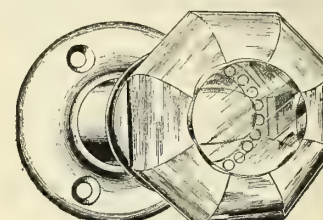


Pressed Glass, Ground Top

No. O240 $\frac{1}{2}$ Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle, screwless type. Polished cast bronze mountings, with roses. Dozen pairs. . . \$36.00

No. DA0240 $\frac{1}{2}$ Mortise. $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle, screwless type. Cast brass, old brass finish mountings, with roses. Dozen pairs. 41.40

No. E0240 $\frac{1}{2}$ Mortise $2\frac{1}{4}$ inches diameter. $\frac{5}{16}$ -inch spindle, screwless type. Cast brass, nickel-plated mountings, with roses. Dozen pairs . . . 41.40



Pressed Glass, Silver Center

$2\frac{1}{4}$ Inches Diameter. $\frac{5}{16}$ -inch Spindle, Screwless Type

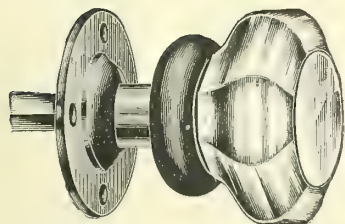
No. 3010P Mortise. Polished wrought bronze mountings, with roses. Dozen pairs. \$30.00

No. OB3010 Mortise. Wrought brass, old brass finish mountings, with roses. Dozen pairs. 33.60

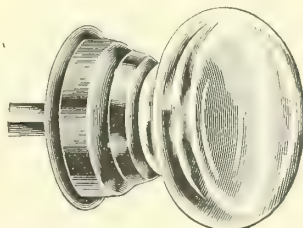
No. N3010P Mortise. Wrought bronze, nickel-plated mountings, with roses. Dozen pairs. 33.60

Glass Door Knobs

Half Size Cuts



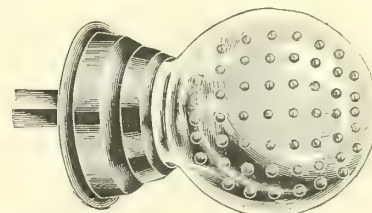
No. 4 1/4 Mortise. Pressed glass, 2 1/4 inches diameter. 5/16-inch spindle. Polished cast bronze mountings. With roses. Dozen pairs..... \$15.00



Pressed Glass, 2 1/4 Inches Diameter. 5/16-inch Spindle

No. 1 Mortise. Polished wrought bronze mountings, with roses. Dozen pairs..... \$15.00

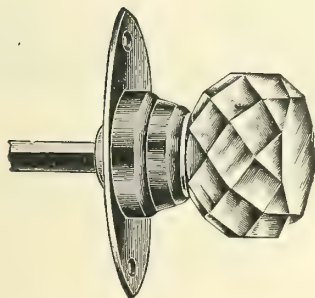
No. OB1 Mortise. Wrought brass, old brass finish mountings, with roses. Dozen pairs..... 15.00



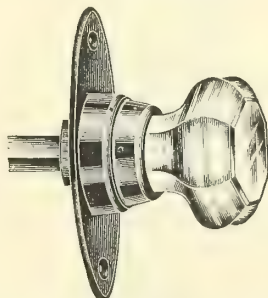
No. SB32 Mortise. Pressed glass, flecked. Wrought bronze, statuary bronze finish, mountings, 2 1/4 inches diameter. 5/16-inch spindle, with roses. Dozen pairs..... \$62.00

Glass Mortise Bolt Knobs

Half Size Cuts

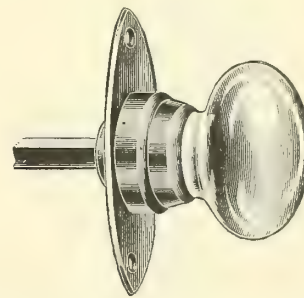


No. OB22MB Cut glass. Wrought brass, old brass finish mountings, 5/16-inch spindle. Dozen..... \$42.00



No. 4MB Pressed glass. Polished wrought bronze mountings, 5/16-inch spindle, dozen..... \$13.50

No. OB4MB Pressed glass. Wrought brass, old brass finish mountings, 5/16-inch spindle. Dozen..... 13.50

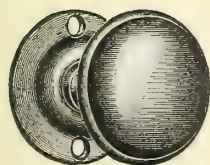


No. 1MB Pressed glass. Polished wrought bronze mountings, 5/16-inch spindle. Dozen..... \$13.50

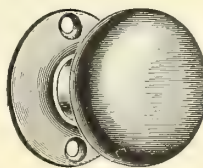
No. OB1MB Pressed glass. Wrought brass, old brass finish mountings, 5/16-inch spindle. Dozen..... 13.50

Mortise Bolt Knobs

Half Size Cuts



No. 1584 5/16-inch spindle. Polished wrought bronze. Dozen..... \$6.45

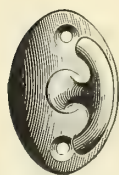


No. 1919 5/16-inch spindle. Polished cast bronze. Dozen..... \$11.25

No. KA1919 5/16-inch spindle. Cast brass, old brass finish. Dozen.... 12.60

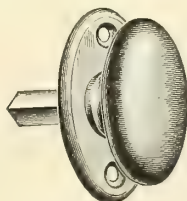
Thumb Knobs

Half Size Cuts



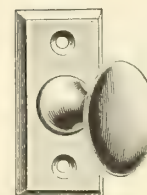
No. 118P 3/8-inch spindle. Plate 1 1/8 x 1 1/8 inches. Polished wrought bronze. Dozen..... \$2.40

No. OB118 3/8-inch spindle. Plate 1 1/8 x 1 1/8 inches. Wrought brass, old brass finish. Dozen..... 2.40



No. 02148 1/4 5/16-inch spindle. Plate 1 1/8 x 2 7/8 inches. Polished cast bronze. Dozen..... \$9.60

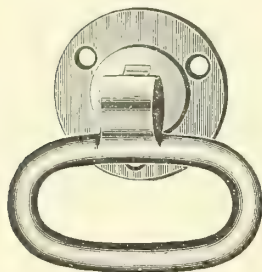
No. LB02148 1/4 5/16-inch spindle. Plate 1 1/8 x 2 7/8 inches. Cast bronze, statuary bronze finish. Dozen... 9.60



No. 1047P 5/16-inch spindle. Plate 7/8 x 1 7/8 inches. Polished cast bronze. Dozen..... \$3.20

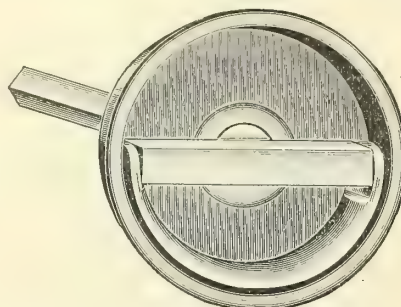
No. OB1047 5/16-inch spindle. Plate 7/8 x 1 7/8 inches. Cast brass, old brass finish. Dozen..... 3.60

Drop Handles

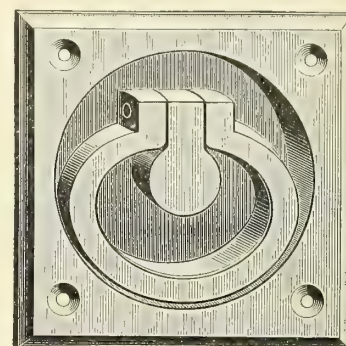


No. P1431 Plate 1 $\frac{5}{8}$ inches diameter, $\frac{5}{16}$ -inch spindle, cast bronze, polished, dozen pairs..... \$39.00

Flush Cup Handles

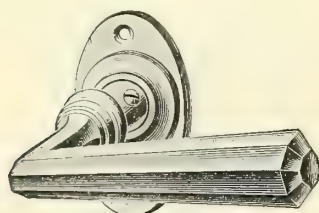


No. 515 Plate 3 inches diameter, $\frac{5}{16}$ -inch spindle, polished cast bronze, dozen..... \$14.00
No. OB515 Plate 3 inches diameter, $\frac{5}{16}$ -inch spindle, cast brass, old brass finish, dozen..... 15.40

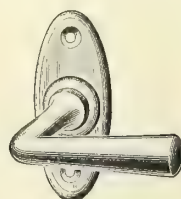


No. 86P Plate 3 $\frac{1}{2}$ inches square, $\frac{5}{16}$ -inch spindle, polished cast bronze, dozen..... \$24.00

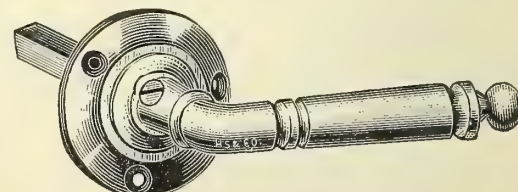
Lever Handles



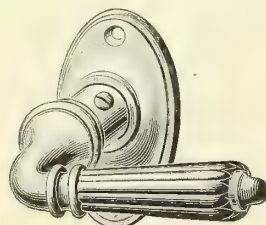
Lever 3 Inches Long, Rose 1 $\frac{1}{8}$ x 2 $\frac{1}{8}$ Inches
No. A3B1131 Cast bronze, statuary bronze finish, dozen..... \$20.00
No. OB1131 Cast brass, old brass finish, dozen..... 20.00



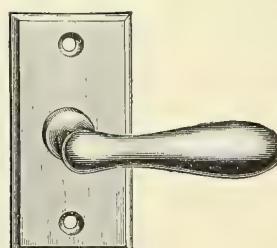
Lever 1 $\frac{3}{4}$ Inches Long, Plate $\frac{7}{8}$ x 2 $\frac{3}{8}$ Inches
No. 1039P Cast bronze, polished, dozen..... \$7.00
No. A3B1039 Cast bronze, statuary bronze finish, dozen..... 8.60



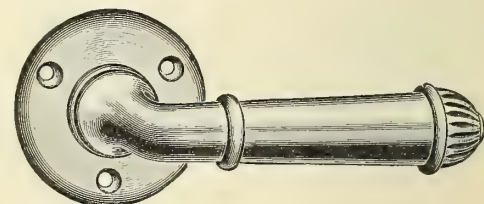
No. 3 Lever 3 $\frac{1}{8}$ inches long, rose 1 $\frac{3}{4}$ inches diameter, cast bronze, polished, dozen..... \$12.00



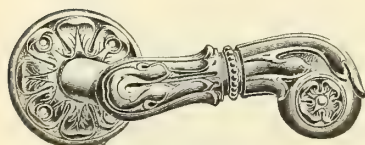
No. 1143P Lever 2 $\frac{5}{8}$ inches long, rose 1 $\frac{3}{4}$ x 2 $\frac{1}{8}$ inches. Cast bronze, polished, dozen..... \$18.00



Lever 1 $\frac{3}{4}$ Inches Long, Plate 1 $\frac{1}{4}$ x 2 $\frac{1}{2}$ Inches
No. 2117 $\frac{1}{4}$ Cast bronze, polished, dozen..... \$11.34
No. KA2117 $\frac{1}{4}$ Cast brass, old brass finish, dozen..... 13.68



3 $\frac{3}{8}$ Lever Inches Long, Rose 2 $\frac{1}{8}$ Inches Diameter
No. 1002 Cast bronze, polished, dozen..... \$25.56
No. KA1002 Cast brass, old brass finish, dozen..... 28.08

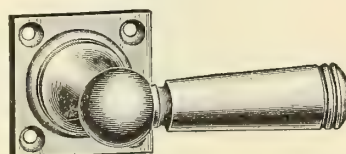


Courtray

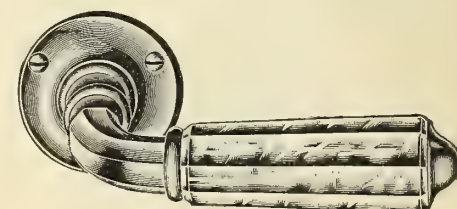
Lever 4 Inches Long, Roses 2 $\frac{1}{8}$ Inches Diameter
State hand Cut shows right hand

No. 2566 Polished cast bronze, dozen \$42.75
No. 2566-87 Cast iron, Bower-Barff finish, dozen..... 32.45

This type of lever handle is used generally for iron grill doors.



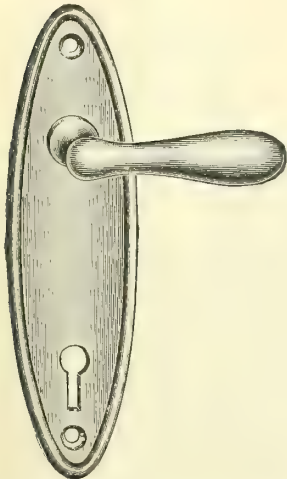
Lever 2 $\frac{1}{2}$ Inches Long, Plate 1 $\frac{1}{2}$ Inches Square
No. 02115 $\frac{1}{2}$ Cast bronze, polished, dozen..... \$20.88
No. KA02115 $\frac{1}{2}$ Cast brass, old brass finish, dozen..... 23.40



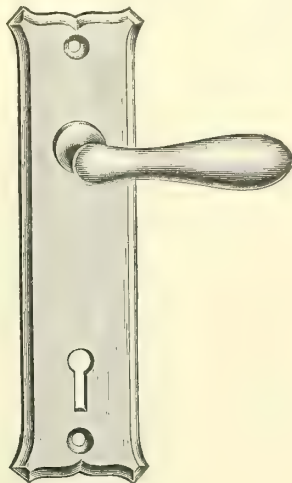
With glass grip

No. S8020 Lever 4 $\frac{1}{4}$ inches long, rose 1 $\frac{3}{4}$ inches diameter. Crystal glass grip, with brass, old brass finish, mountings, each..... \$3.00

Escutcheons and Lever Handles



Pilgrim Design
Plate $1\frac{3}{8}$ x 5 Inches. Center of spindle to center of keyhole $2\frac{5}{8}$ inches.
No. 76947 Cast bronze, polished, dozen..... \$25.20
No. KA76947 Cast brass, old brass finish, dozen. 27.72



Albany Design
No. LB76447 Plate $1\frac{3}{8}$ x 5 inches. Center of spindle to center of keyhole $2\frac{5}{8}$ inches. Cast bronze, statuary bronze finish, dozen... \$24.00

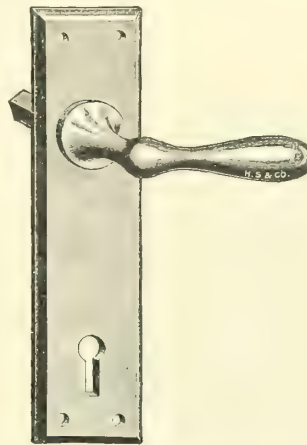


Plate $1 \times 3\frac{3}{8}$ Inches. Center of spindle to center of keyhole $2\frac{1}{4}$ inches.
No. P1510 x P1518 Polished cast bronze, dozen \$8.80
No. 1510 x 1518-37 Cast brass, old brass finish, dozen..... 10.00

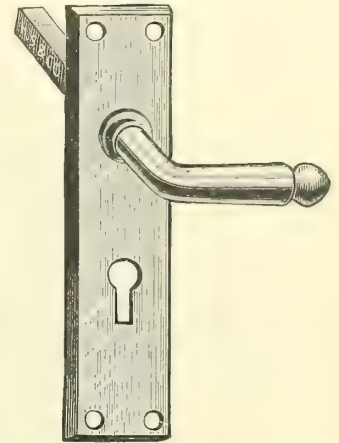
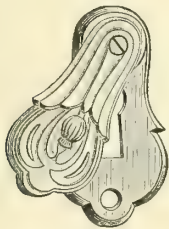


Plate $1 \times 4\frac{1}{2}$ Inches. Center of spindle to center of keyhole $1\frac{9}{16}$ inches.
No. 2117 Polished cast bronze, dozen..... \$12.36
No. OB2117 Cast brass, old brass finish, dozen. 14.70

Drop Escutcheons

Half Size Cuts



No. 131 $1\frac{1}{8} \times 2\frac{1}{4}$ inches, white porcelain drop, nickel-plated base, dozen..... \$1.70



No. 2663 $\frac{3}{4} \times 2$ inches, cast bronze, polished, dozen..... \$7.20



$\frac{7}{8} \times 2$ Inches
No. 811P Cast bronze, polished, dozen..... \$3.40
No. OB811 Cast brass, old brass finish, dozen..... 3.80

Plate Escutcheons

Half Size Cuts



$1\frac{1}{8} \times 2\frac{1}{4}$ Inches
No. OB870FC Wrought brass, old brass finish, dozen..... \$1.20
No. N870FC Wrought bronze, nickel-plated, dozen..... 1.20



$1\frac{1}{8} \times 1\frac{3}{4}$ Inches
No. 2560 Wrought bronze, polished, dozen. \$1.80
No. DA2560 Wrought brass, old brass finish, dozen..... 1.80



No. LB2660 $\frac{1}{2} \times 1\frac{1}{8} \times 2\frac{1}{8}$ inches. Cast bronze, statuary bronze finish, dozen..... \$4.14



No. N60040 $1\frac{1}{8} \times 1\frac{3}{4}$ inches. Wrought steel, bronze-plated, dozen.. \$.72



$1\frac{1}{4} \times 1\frac{3}{4}$ Inches
No. 2596 $\frac{1}{2}$ Wrought bronze, polished, dozen \$.90
No. R2596 $\frac{1}{2}$ Wrought bronze, antique copper finish, dozen..... 1.20



No. 2590 $\frac{1}{2} \times 1\frac{1}{2} \times 2$ inches, wrought bronze, polished, dozen..... \$1.08



No. 1354 $1\frac{1}{4} \times 2\frac{1}{4}$ inches, cast bronze, polished, dozen..... \$1.50



$1\frac{1}{4} \times 1\frac{3}{4}$ Inches
No. 2596 $\frac{1}{4}$ Wrought bronze, polished, dozen \$.90
No. DA2596 $\frac{1}{4}$ Wrought brass, old brass finish, dozen..... 1.20

Other Escutcheons are listed with Lock Sets, see Index

SINCE
1848

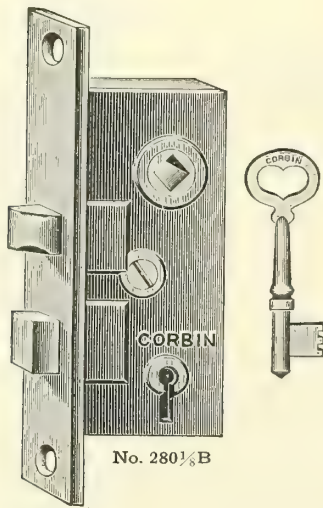
HAMMACHER SCHLEMMER & CO.

NEW
YORK

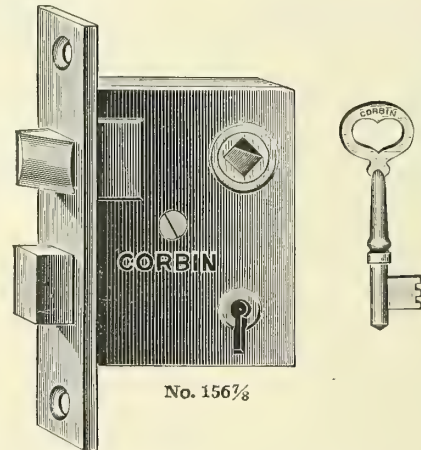
Mortise Knob Locks

Reversible

Half Size Cuts



No. 280 1/8 B

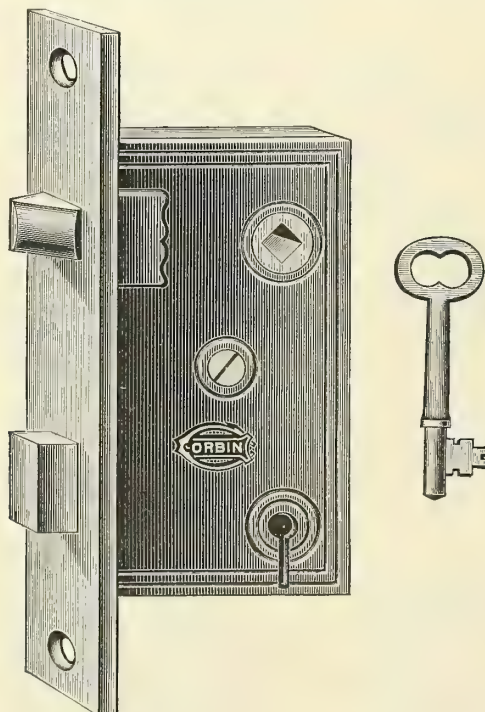


No. 156 7/8

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inches	Number of Tumblers	Number of Key Changes	Front and Bolts		Dozen
								Material	Finish	
0101 1/2 Reading	3 1/2 x 1 1/2 x 1 1/2	1	1 9/16	3 x 3/4	5/16	1	6	Cast Brass	Polished	\$13.50
280 1/8 B Corbin	3 5/8 x 1 5/8 x 1 1/2	1	2 1/4	5 x 3/4	5/16	1	12	Cast Bronze	Polished	16.20
01365 1/2 B Corbin	4 1/4 x 2 1/4 x 5/8	1 1/2	2 5/8	6 1/8 x 1 1/16	5/16	1	120	Cast Bronze	Polished	27.00
DA01365 1/2 Corbin	4 1/4 x 2 1/4 x 5/8	1 1/2	2 5/8	6 1/8 x 1 1/16	5/16	1	120	Cast Brass	Old Brass	28.80
LB01365 1/2 Corbin	4 1/4 x 2 1/4 x 5/8	1 1/2	2 5/8	6 1/8 x 1 1/16	5/16	1	120	Cast Bronze	Statuary Bronze	28.80

No. 156 7/8

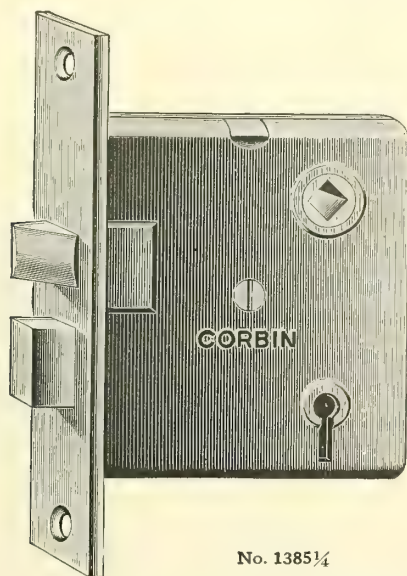
156 7/8 Corbin	2 7/8 x 2 1/4 x 1 1/2	1 1/16	1 9/16	4 3/8 x 1 1/16	5/16	2	8	Cast Brass	Polished	\$16.20
DA156 7/8 Corbin	2 7/8 x 2 1/4 x 1 1/2	1 1/16	1 9/16	4 3/8 x 1 1/16	5/16	2	8	Cast Brass	Old Brass	17.40



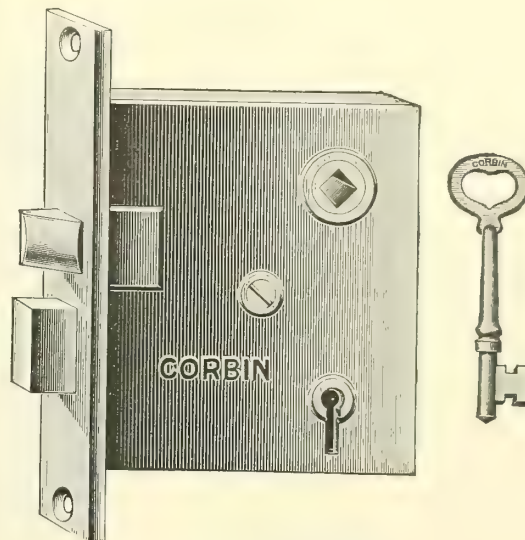
Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inches	Number of Tumblers	Number of Key Changes	Front and Bolts		Dozen
								Material	Finish	
281 Corbin	4 3/4 x 2 3/4 x 5/8	2	3 1/8	7 1/8 x 1 1/8	3/16	3	36	Cast Brass	Polished	\$28.80

Mortise Knob Locks

Reversible
Half Size Cuts



No. 1385 1/4



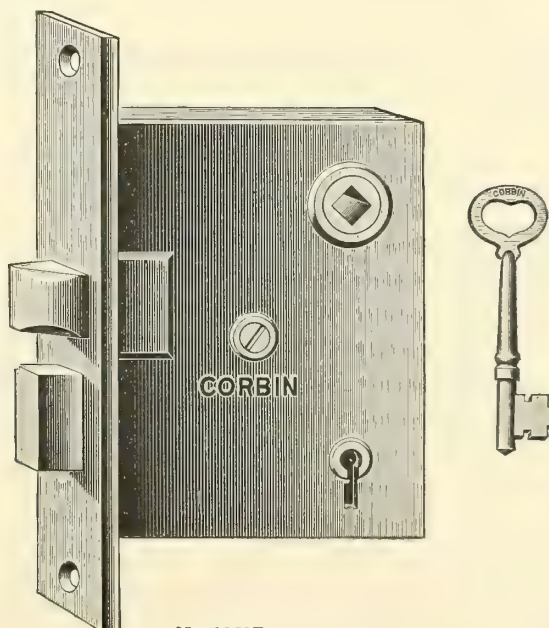
No. 1085 1/4

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Key Changes	Front and Bolts		Dozen
								Material	Finish	
*5234P Sargent	3 1/2 x 3 1/4 x 5/8	2 1/2	2 3/16	5 3/8 x 1 5/16	5/16	1	24	Cast Bronze	Polished	\$7.50
*OB5234 Sargent	3 1/2 x 3 1/4 x 5/8	2 1/2	2 3/16	5 3/8 x 1 5/16	5/16	1	24	Cast Brass	Old Brass	8.30
1385 3/4 Corbin	3 3/4 x 3 3/8 x 9/16	2 1/2	2 3/16	5 3/8 x 1 5/16	5/16	3	36	Cast Brass	Polished	14.85

No. 1085 1/4, Etc.

1285 Corbin	3 3/4 x 3 1/8 x 1/2	2 3/8	2 3/16	5 1/4 x 7/8	5/16	1	12	Cast Brass	Polished	7.50
1085 1/4 Corbin	3 3/4 x 3 1/2 x 9/16	2 5/8	2 3/16	5 3/8 x 7/8	5/16	1	12	Cast Brass	Polished	9.00
1287 Corbin	4 1/2 x 3 1/2 x 9/16	2 5/8	2 5/8	5 7/8 x 7/8	5/16	1	12	Cast Brass	Polished	15.00
OB5744 Sargent	4 1/2 x 3 1/2 x 5/8	2 5/8	2 7/8	6 5/8 x 1	5/16	1	24	Cast Brass	Old Brass	15.20

* Nos. 5234P and OB5234 are equipped with easy spring latch bolts.



No. 1363B

Equipped with easy Spring Latch Bolts

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Key Changes	Front and Bolts		Dozen
								Material	Finish	
*1363B Corbin	4 1/4 x 3 1/2 x 5/8	2 3/4	2 5/8	6 1/8 x 1	5/16	1	24	Cast Bronze	Polished	\$27.00
†1365B Corbin	4 1/4 x 3 1/2 x 5/8	2 3/4	2 5/8	6 1/8 x 1	5/16	3	48	Cast Bronze	Polished	30.60

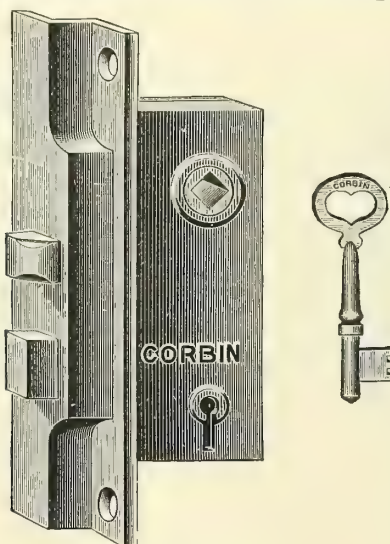
Master Keying. Prices on application.

*No. 1363B master keyed in three sets of 40 each, the 120 all different, with master keys to pass each set.

†No. 1365B master keyed in one set of 640, all different, with a master key to pass, or in sixteen sets of 40 each, the 640 all different, with master keys to pass each set and a grand master key to pass all.

Rabbeted Mortise Knob Locks

Not Reversible State Hand Required



No. 290B, Etc.

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Key Changes	Front and Bolts Material Finish	Dozen
290B Corbin	$3\frac{5}{8} \times 2\frac{1}{8} \times \frac{1}{2}$	$1\frac{5}{8}$	$2\frac{1}{4}$	$5\frac{3}{4} \times 1$	$\frac{5}{16}$	1	9	Cast bronze, polished	\$33.30
DA290 Corbin	$3\frac{5}{8} \times 2\frac{1}{8} \times \frac{1}{2}$	$1\frac{5}{8}$	$2\frac{1}{4}$	$5\frac{3}{4} \times 1$	$\frac{5}{16}$	1	9	Cast brass, old brass finish	34.50
†*01367 $\frac{1}{4}$ B Corbin	$4\frac{1}{4} \times 2\frac{1}{4} \times \frac{5}{8}$	$1\frac{5}{8}$	$2\frac{5}{8}$	$6\frac{1}{2} \times 1\frac{3}{16}$	$\frac{5}{16}$	1	120	Cast bronze, polished	45.00
††5264P Sargent	$3\frac{1}{2} \times 3\frac{1}{4} \times \frac{5}{8}$	2	$2\frac{3}{16}$	$5\frac{1}{2} \times 1$	$\frac{5}{16}$	1	50	Cast bronze, polished	13.50
†1367 $\frac{1}{2}$ B Corbin	$4\frac{1}{4} \times 3\frac{1}{2} \times \frac{5}{8}$	$2\frac{3}{4}$	$2\frac{5}{8}$	$6\frac{1}{2} \times 1\frac{3}{16}$	$\frac{5}{16}$	3	640	Cast bronze, polished	52.50

*Master keyed in 3 sets of 40 each, the 120 all different, with master keys to pass each set. Prices on application.

†Master keyed in 1 set of 200, all different, with a master key to pass, or in 4 sets of 50 each, the 200 all different, with master keys to pass each set. Prices on application.

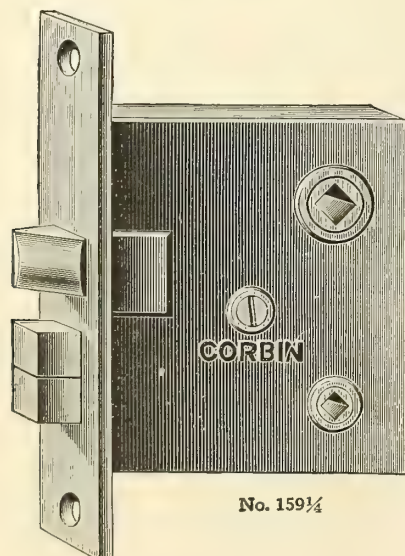
††Equipped with Easy Spring Latch Bolt.

Mortise Communicating Door Locks

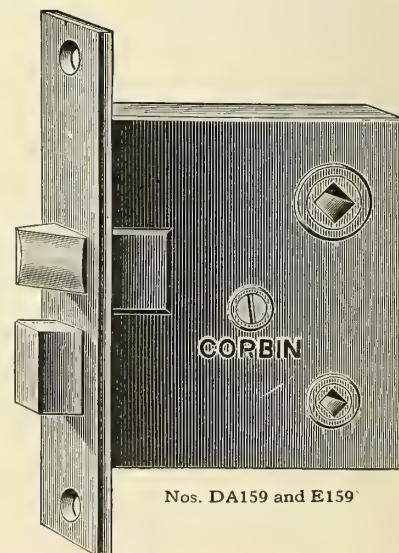
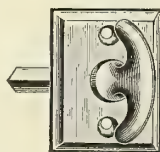
Reversible

Case $3\frac{5}{8} \times 3\frac{1}{4} \times \frac{9}{16}$ inches; front to center of hub $2\frac{5}{8}$ inches; distance between centers of hubs $2\frac{3}{16}$ inches; front $5\frac{1}{2} \times 1\frac{5}{16}$ inches; hubs $\frac{3}{16}$ and $\frac{5}{16}$ inch. Easy spring latch bolt.

Operates: Latch bolt by knobs from either side. Dead bolts by thumb knobs from one side only, locking against opposite side.



No. 159 $\frac{1}{4}$

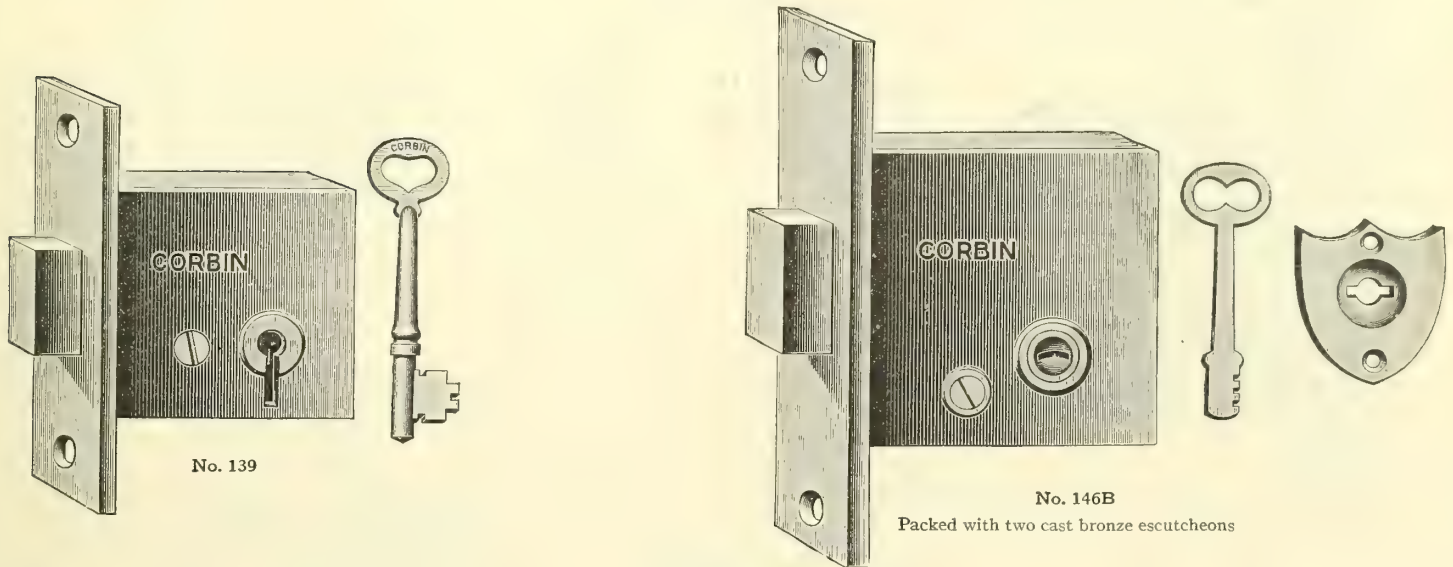


Nos. DA159 and E159

- No. DA159 Corbin Cast brass front and bolts, old brass finish, with one cast brass thumb-piece No. DA2149, old brass finish, dozen..... \$18.30
- No. E159 Corbin Cast bronze, nickel-plated, front and bolt, with one cast bronze, nickel-plated thumb-piece No. 22149, dozen..... 18.30
- No. 159 $\frac{1}{4}$ B Corbin Cast bronze, polished, front and bolts, with two cast bronze, polished, thumb-pieces No. E2149, dozen..... 25.20

Mortise Dead Locks

Reversible

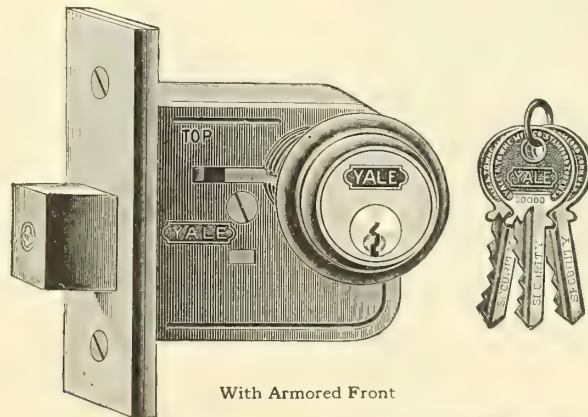


No. 139, Etc.

Number	Size Case Inches	Front to Center of Keyhole Inches	Size Front Inches	Number of Tumblers	Number of Changes	Front and Bolts		Dozen
						Material	Finish	
115 Corbin	1 7/8x2 5/8x5/8	1 7/8	3 1/4x 1 3/16	1	12	Cast brass, polished		\$10.65
116 Corbin	1 7/8x2 5/8x5/8	1 7/8	3 1/4x 1 3/16	3	36	Cast brass, polished		13.35
136B Corbin	2 1/4x3 1/4x5/8	2 9/16	3 3/4x 7/8	3	36	Cast bronze, polished		15.45
139 Corbin	2 3/8x2 3/4x3/4	2	4 1/4x1 1/16	3	18	Cast brass, polished		27.00

No. 146B, Etc.

Number	Size Case Inches	Front to Center of Hub Inches	Size Front Inches	Number of Tumblers	Number of Changes	Front and Bolts		Dozen
						Material	Finish	
205 Bohannon	3x2 1/2x5/8	1 3/4	5 x 7/8	4	36	Cast bronze, polished		\$33.00
146B Corbin	3x3 1/2x1/8	2 3/8	5 1/2x1 5/16	5	75	Cast bronze, polished		39.60



With Armored Front

Number	Size Case Inches	Front to Center of Keyhole Inches	Size Front Inches	Number of Pin Tumblers	Number of Changes	For Thickness Doors Inches	Front and Bolts		Dozen
							Material	Finish	
322 Yale	2 3/8x3 1/8x3/4	2 1/4	4x1	5	Practically unlimited	1 1/4 to 2 1/8	Bronze, polished		\$58.35
322 1/4 Yale	2 3/8x3 1/8x3/4	2 1/4	4x1	5	Practically unlimited	1 1/2 to 1 7/8	Bronze, polished		83.35
324 Yale	2 3/8x3 3/8x3/4	2 3/4	4x1	5	Practically unlimited	1 1/4 to 2 1/8	Bronze, polished		58.35
324 1/4 Yale	2 3/8x3 3/8x3/4	2 3/4	4x1	5	Practically unlimited	1 1/2 to 1 7/8	Bronze, polished		83.35

Operation

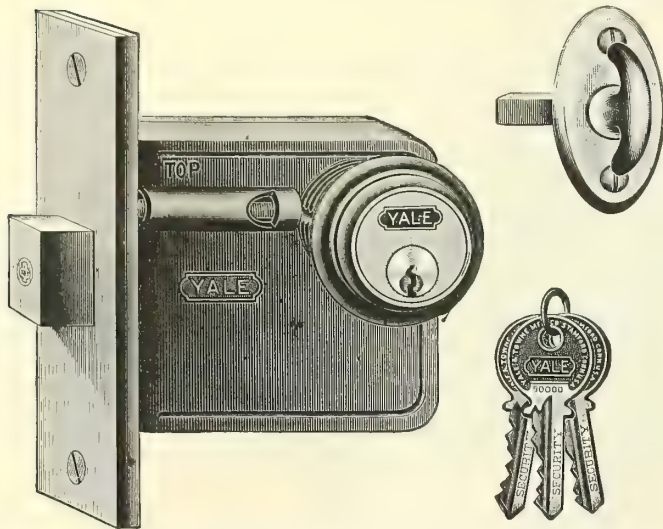
Nos. 322 and 324 with one cylinder locked by key from one side. Nos. 322 1/4 and 324 1/4 with two cylinders locked by key from either side.

Master Keying

In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices on application.

Mortise Lead Locks

Half Size Cuts



Operation

For doors $1\frac{3}{8}$ to $1\frac{7}{8}$ inches thick.

With one cylinder locked by key from outside and one thumb knob locked from inside.

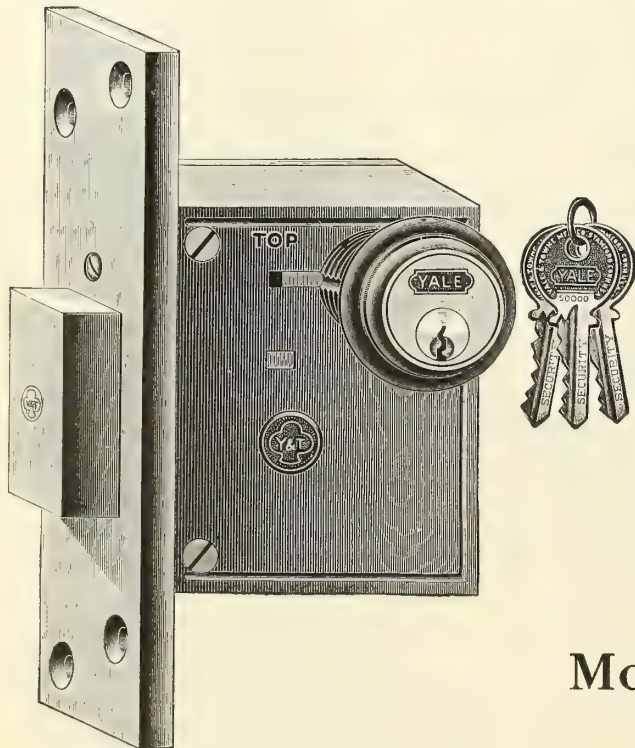
Armored fronts. Each lock has one bronze cylinder and one bronze thumb-piece.

Number	Size Front Inches	Front to Center of Cylinder Inches	Size Front Inches	Number Pin Tumblers	Number of Changes	Front and Bolt		Dozen
						Material	Finish	
*325 Yale	$2\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{4}$	$2\frac{3}{4}$	4x1	5	Practically unlimited	Bronze	Polished	\$68.35
†328 Yale	$3 \times 3\frac{5}{8} \times \frac{3}{4}$	$2\frac{3}{4}$	5x1	5	Practically unlimited	Bronze	Polished	76.70

* Reversible.

† Not reversible, state hand wanted.

Master keyed same as Lock No. 322, etc., on preceding page.



Size case, $4 \times 3\frac{7}{8} \times 1\frac{1}{4}$ inches.

Front to center of cylinder, $2\frac{3}{4}$ inches.

Size front, $7\frac{1}{4} \times 1\frac{3}{4}$ inches.

Five pin tumblers with practically unlimited changes.

Polished bronze fronts and cylinders.

No. 318 Yale, 1 cylinder; for doors 2 to $3\frac{1}{4}$ inches thick. Locked from one side. Dozen..... \$116.40

No. 318 $\frac{1}{4}$ Yale, 2 cylinders, for doors 2 to $2\frac{3}{4}$ inches thick. Locked from two sides. Dozen..... 143.65

Master keyed same as Lock No. 322, etc., on preceding page.

Mortise Bolts

Reversible

Half Size Cuts

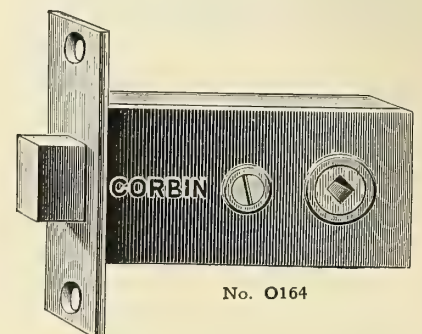
Size case, $1\frac{1}{2} \times 3\frac{1}{2} \times \frac{1}{2}$ inches. Front to center of hub, $2\frac{5}{8}$ inches. Size front, $3\frac{1}{4} \times \frac{7}{8}$ inches. Size hub, $\frac{5}{16}$ inch.

No. 0164 Corbin Wrought brass front, cast brass bolt, dozen..... \$9.75

Size case, $2\frac{1}{8} \times 3\frac{1}{4} \times \frac{5}{8}$ inches. Front to center of hub, $2\frac{9}{16}$ inches. Size front, $4\frac{1}{8} \times 1\frac{1}{16}$ inches. Size hub, $\frac{5}{16}$ inch.

No. 0168 $\frac{1}{2}$ Corbin Cast brass front and bolt, polished, dozen..... \$19.80

No. LB0168 $\frac{1}{2}$ Corbin Cast bronze front and bolt, statuary bronze finish, dozen..... 21.00



No. 0164

Mortise Bolts

Reversible

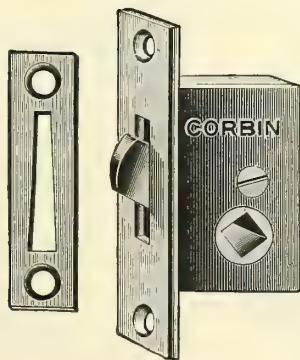


Size case, $1\frac{1}{4} \times 3\frac{1}{2} \times 1\frac{1}{2}$ inches.
Front to center of hub, $2\frac{1}{2}$ inches.
Size front, $2\frac{1}{2} \times 1\frac{3}{8}$ inches.
Size hub, $\frac{3}{16}$ inch.

No. 4934 Ives. Cast bronze, polished, front and bolt, dozen. . . . \$6.65
No. 4951 Ives. Cast brass front and bolt, old brass finish, dozen. . . 7.20

Mortise Turnbuckles

Reversible

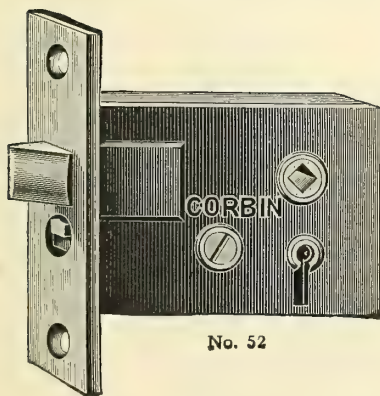


Size case, $1\frac{3}{8} \times 2\frac{1}{8} \times 1\frac{1}{2}$ inches.
Front to center of hub, $\frac{3}{4}$ inch.
Size front, $3\frac{1}{2} \times 1\frac{3}{16}$ inches.
Size hub, $\frac{5}{16}$ inch.

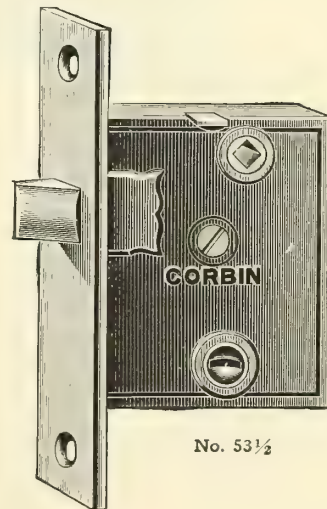
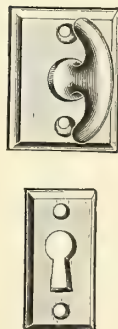
No. 76 Corbin. Cast brass front, with iron bolt, dozen. \$10.80

Mortise Night Latches

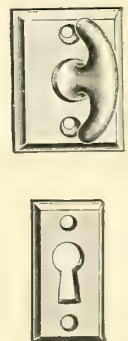
Reversible



No. 52



No. 53 1/2



No. 52

No. 52 Corbin. Size case, $2\frac{1}{4} \times 3\frac{1}{4} \times 5\frac{5}{8}$ inches. Front to center of keyhole, $2\frac{3}{8}$ inches. Size front, $3\frac{3}{4} \times 7\frac{7}{8}$ inches. Size hub, $\frac{5}{16}$ inch. One tumbler, six changes.

Operates by key from outside and by thumb knob from inside. Latch bolt is fastened back by stop in face.

Cast brass front and bolt with cast brass thumb knob and wrought brass escutcheon, dozen. \$13.50

No. 53 1/2

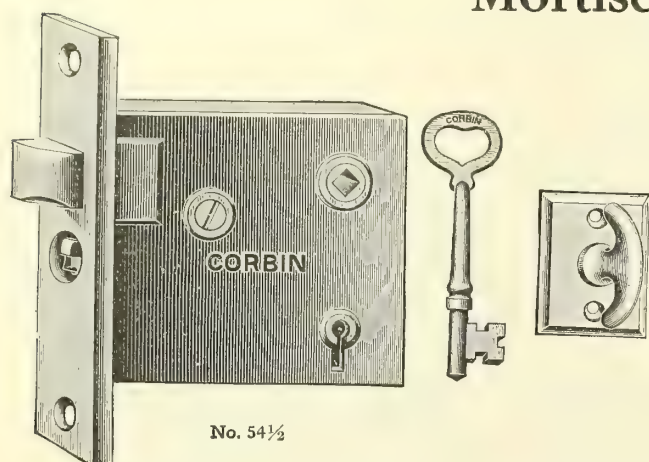
No. 53 1/2 Corbin. Size case, $2\frac{3}{4} \times 3\frac{3}{8} \times 5\frac{5}{8}$ inches. Front to center of keyhole, $2\frac{3}{4}$ inches. Size front, $4\frac{1}{2} \times 1\frac{5}{8}$ inches. Size hub, $\frac{5}{16}$ inch. Three tumblers, 27 changes.

Operates by key from outside and by thumb knob from inside. Latch bolt is fastened back by thumb knob.

Cast brass front and bolt, with cast brass thumb knob and escutcheon, dozen. \$24.00

Mortise Night Latches

Reversible



No. 54 1/2

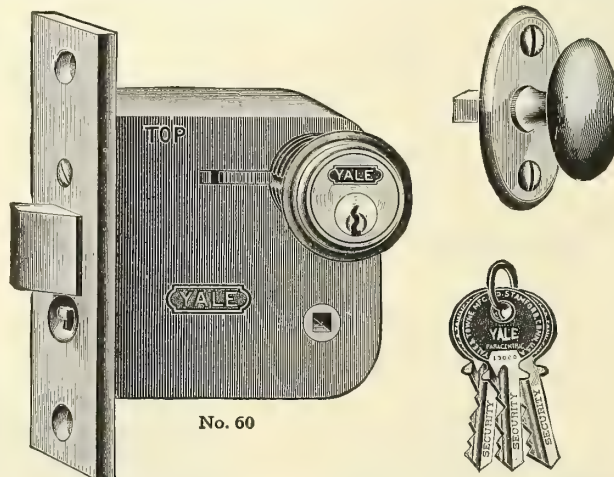
Operates by key from outside and by thumb-knob from inside.

Number	Size Case Inches	Front to Center of Keyhole Inches	Size Front Inches	Size Hub Inch	Number of Tum- blers	Number of Changes	Front and Bolt		Thumb-piece	Escutcheon	Dozen
							Material	Finish			
*54 1/2 Corbin	3 x 2 5/8 x 1 1/2	1 1/2	5 x 1 5/16	3/16	3	18	Cast Brass	Polished	Cast Brass	Wrought Brass	\$19.20
†175 Bohannon	2 5/8 x 3 x 1 1/2	2 1/8	4 1/4 x 1 7/8	3/16	3	15	Cast Bronze	Polished	Cast Bronze	Cast Bronze	20.00

* Latch Bolt is fastened back by stop in face.

† Latch bolt is fastened back by stop in face.

Bronze front and bolt with one bronze cylinder and one bronze thumb-knob.



No. 60

Operation

With one cylinder unlocked by key from outside and one thumb-knob unlocked from inside. Latch bolt is fastened back by stop in face.

Number	Size Case Inches	Front to Center of Cylinder Inches	Front		Size Hub Inch	Number of Pin Tumblers	Number of Changes	For Thickness Doors, Inches	Dozen
			Style	Size, Inches					
*60 Yale	2 7/8 x 3 1/8 x 5/8	2 1/2	Cast	4 1/2 x 7/8	5/16	4	1500	1 1/8 to 1 3/4	\$74.10
†64 Yale	3 1/2 x 2 3/4 x 3/4	2	Armored	5 3/8 x 1	5/16	5	Practically unlimited	1 1/4 to 2 1/8	74.10
†66 Yale	3 1/2 x 2 3/4 x 3/4	2 3/4	Armored	5 x 1	5/16	5	Practically unlimited	1 1/4 to 2 1/8	74.10

Master keying as follows: Prices on application.

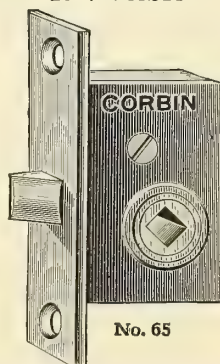
* No. 60 in one set of any number of changes up to 1500, usually required all different with a master key to pass all, or in sets alike, each set different from the other, with a master key to pass all locks.

† Nos. 64 and 66 in one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set and a grand master key to pass all the locks.

Mortise Knob Latches

Reversible

No. 4609P Sargent. Size case 2 1/4 x 1 1/2 x 5/16 inches; front to center of hub 1 inch; size front 3 1/2 x 3/4 inches; size hub 5/16 inch. Cast bronze front and bolt, polished, dozen... \$5.00

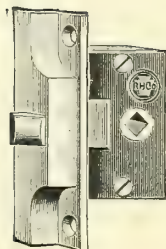


No. 65

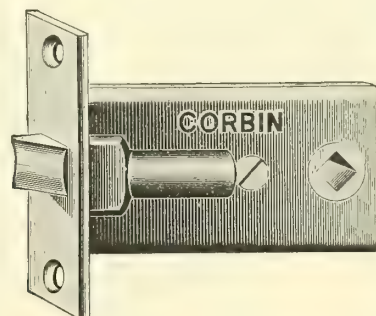
No. 65 Corbin. Size case 1 3/8 x 1 1/2 x 1 3/32 inches; front to center of hub 1 3/16 inches; size front 2 7/16 x 9/16 inches; size hub 5/16 inch. Cast brass front and bolt, polished, dozen... \$9.00

Mortise Knob Latches

Reversible

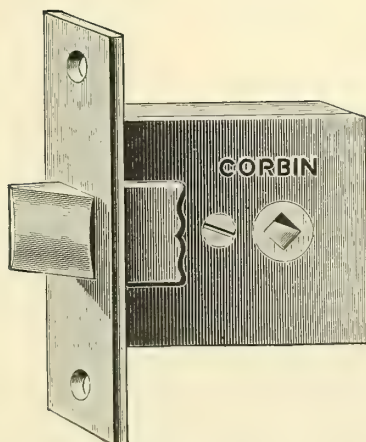


No. 1015 1/2 Reading. Size case 2 1/2 x 1 1/2 x 1/2 inches; front to center of hub 1 inch; size front (1/2 inch rabbet) 3 1/2 x 7/8 inch; size hub 5/16 inch. Cast bronze, polished front and bolts.
Dozen..... \$15.00



No. 12 1/4 Corbin. Size case 1 1/4 x 3 1/8 x 1/2 inches; front to center of hub 2 1/2 inches; size hub 5/16 inch; size front 3 x 7/8 inches.
Wrought brass front, cast brass bolt, polished, dozen..... \$2.75

No. 25 Corbin. Size case 1 3/4 x 3 1/2 x 3/8 inches; front to center of hub 2 7/8 inches; size hub 5/16 inch; size front 3 x 1 3/8 inches.
Cast brass front, cast brass bolt, polished, dozen..... 5.40



No. 89 Corbin. Size case 2 3/8 x 2 3/4 x 1 1/16 inches; front to center of hub 1 7/8 inches; size front (beveled 1/8 to 2 inches) 4 1/4 x 1 1/16 inches; size hub 5/16 inch. Cast brass, polished, front and bolt. Dozen..... \$16.20

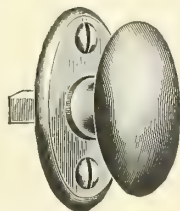
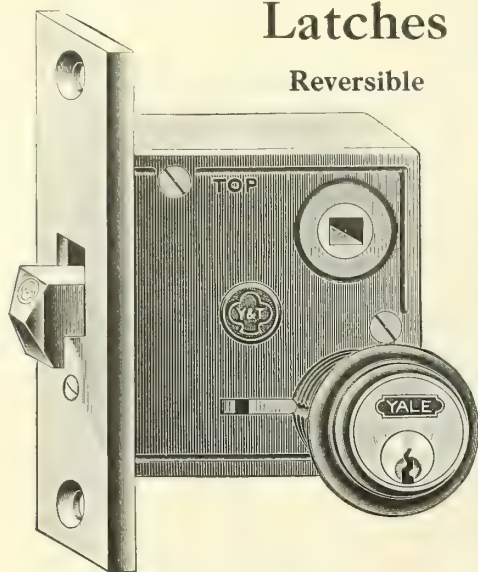
Mortise Sliding Door Latches



No. 1060 1/2 Reading. Size case 1 3/4 x 3 3/8 x 5/8 inches; front to center of hub 2 3/4 inches; size front 3 x 1 inch; size hub 5/16 inch.
Operates by knobs or flush cup handles from either side.
Cast bronze, polished, front and bolt. Dozen..... \$9.00

Mortise Sliding Door Latches

Reversible



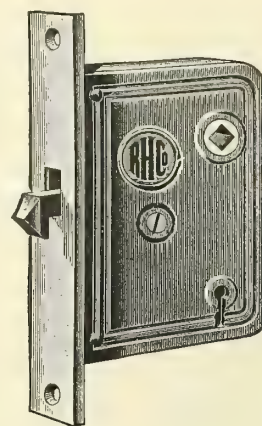
Size case, $3\frac{1}{4} \times 3\frac{1}{2} \times \frac{3}{4}$ inches.
Front to center of cylinder, $2\frac{3}{4}$ inches.
Size front (cast), $1 \times 5\frac{1}{4}$ inches.
Size hub, $\frac{5}{16}$ inch.
Operates with one cylinder unlocked by key from outside and one thumb-knob unlocked from inside.
No. 1730 Yale. Bronze front and bolt, with one bronze cylinder and one bronze thumb-knob. For doors $1\frac{1}{4}$ to $2\frac{1}{8}$ inches thick. Dozen..... \$101.85

Master Keying

In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices upon application.

Mortise Sliding Door Locks

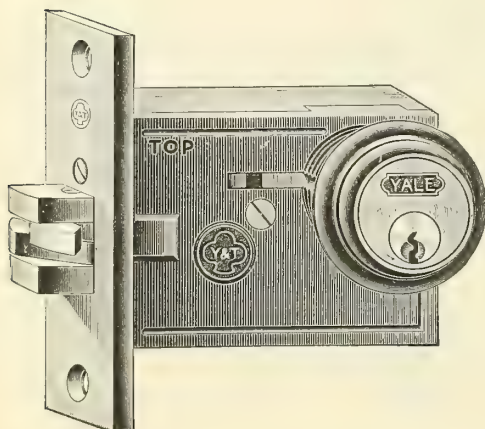
Reversible



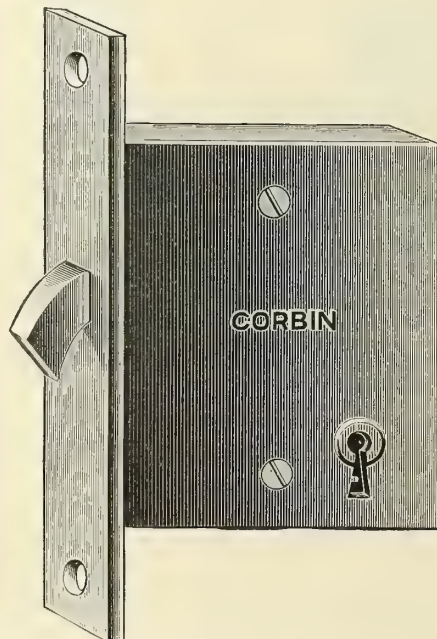
Size case, $3\frac{1}{4} \times 4\frac{1}{2} \times \frac{9}{16}$ inches.
Front to center of keyhole, $2\frac{1}{2}$ inches.
Size front, $6\frac{3}{8} \times 1\frac{5}{8}$ inches.
Size hub, $\frac{5}{16}$ inch.
Operates by knobs or flush cup handles from either side, or by key from either side.
No. 307 Reading. Cast brass front, polished, with iron bolt bronze-plated, dozen..... \$19.50

Mortise Sliding Door Dead Locks

Reversible



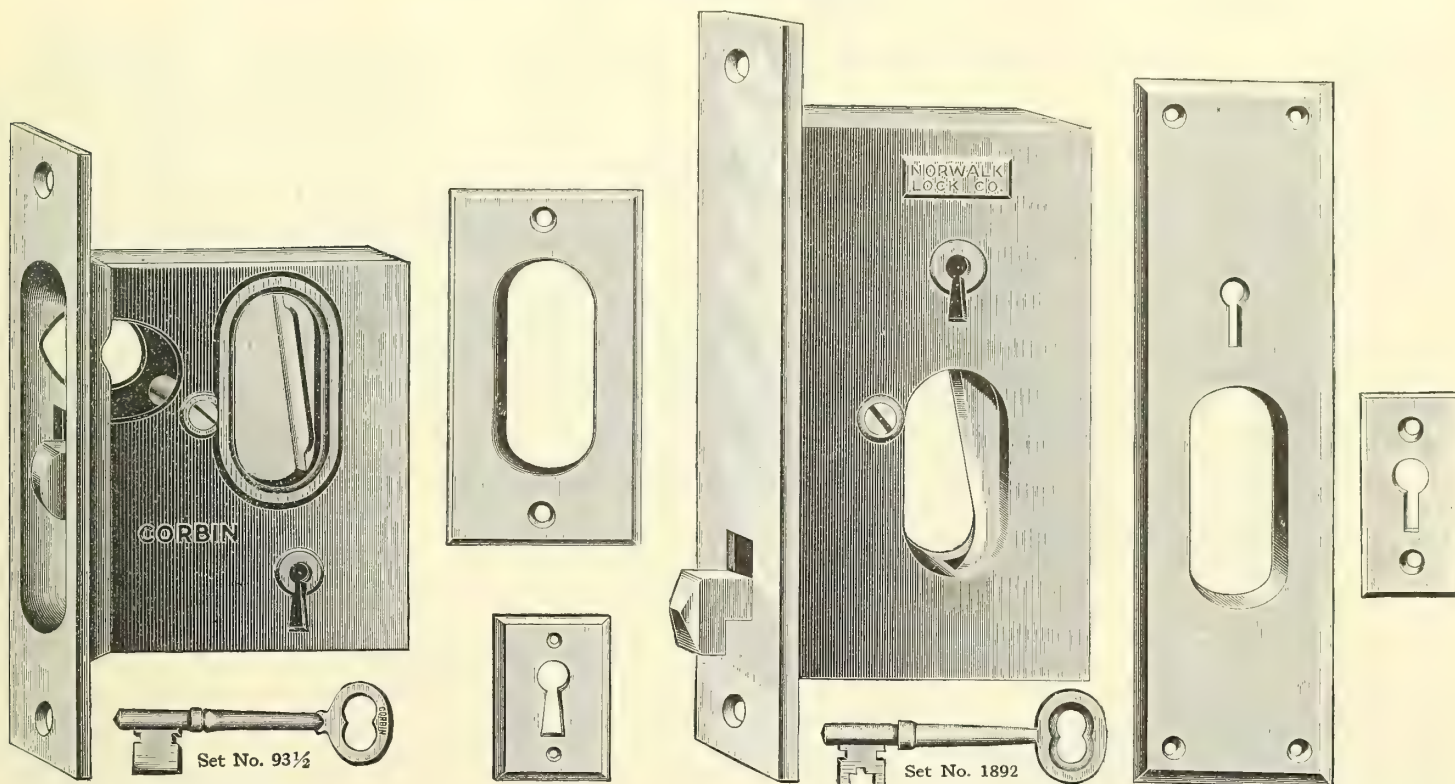
Size case, $2\frac{3}{8} \times 3\frac{5}{8} \times \frac{7}{8}$ inches.
Front to center of cylinder, $2\frac{3}{4}$ inches.
Size front (cast), 4×1 inches.
No. 1732 Yale. With one bronze cylinder locked by key from one side, bronze front and bolt. For doors $1\frac{1}{4}$ to $2\frac{1}{8}$ inches thick. Dozen..... \$75.00
No. 1732 $\frac{1}{4}$ Yale. With two bronze cylinders, locked by key from either side, bronze front and bolt. For doors $1\frac{1}{2}$ to $1\frac{7}{8}$ inches thick. Dozen..... 100.00
Master keyed same as No. 1730 listed above. Prices upon application.



Size case, $4 \times 3\frac{1}{2} \times \frac{5}{8}$ inches.
Front to center of keyhole, $2\frac{5}{8}$ inches.
Size front, $6\frac{1}{8} \times 1\frac{5}{8}$ inches.
No. 284 Corbin. Cast brass, polished, front and bolt, dozen... \$18.00

Mortise Elevator Sliding Door Locks

In Sets—Reversible



Size case, $4 \times 3\frac{3}{4} \times 5\frac{1}{8}$ inches.
 Front to center of keyhole, $2\frac{1}{2}$ inches.
 Size cast bronze front, $6\frac{3}{8} \times 1\frac{3}{16}$ inches.
 Cast bronze bolt.
 Size wrought bronze cup escutcheon, $2 \times 2\frac{3}{4}$ inches.
 Size wrought bronze escutcheon, $1\frac{1}{4} \times 1\frac{3}{4}$ inches.

Size case, $3\frac{3}{8} \times 5\frac{3}{8} \times 5\frac{1}{8}$ inches.
 Size cast bronze front, $7\frac{7}{8} \times 1\frac{1}{16}$ inches.
 Cast bronze bolt.
 Size cast bronze cup escutcheon, $7\frac{1}{4} \times 2$ inches.
 Size escutcheon, $2\frac{1}{16} \times 1\frac{1}{16}$ inches.

Set \$2.70 Set \$4.00

Mortise Stable or Garage Sliding Door Locks

Reversible

Operated from both sides by the Drop Handles. When locked by the Key the Drop Handles will not operate the Latch Bolt.

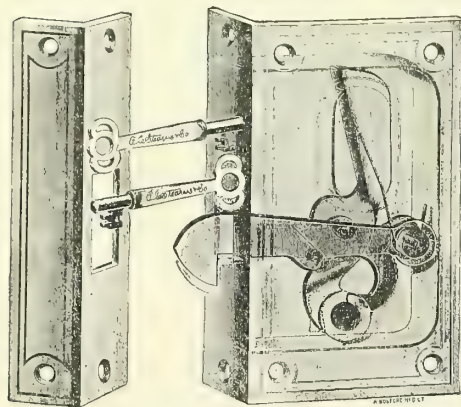


Set No. 5000

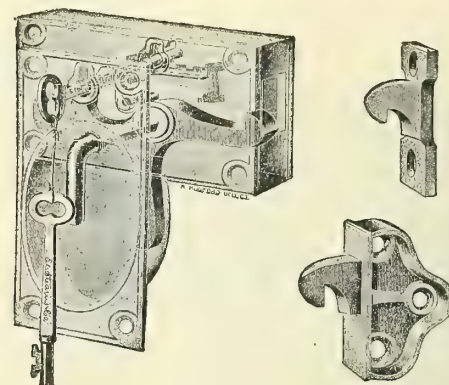
Size case, $5 \times 4 \times 3\frac{3}{4}$ inches.
 Front to center of keyhole, 3 inches.
 Size cast bronze front, $8 \times 1\frac{1}{2}$ inches.
 Cast bronze bolt.
 Size hub, $\frac{5}{16}$ inch.
 Size cast bronze cup escutcheon, $3\frac{1}{2} \times 3\frac{1}{2}$ inches.
 Size cast bronze escutcheon, $3\frac{1}{4} \times 7$ inches.
 3 tumblers, 200 changes.
 Set \$16.00

Two Keys

Barn or Garage Sliding Door Locks



Half Mortise



Also furnished with above strike, for side of door casing

Rim Reversible

This lock is reversible. It is impossible to raise the bolt from the outside by inserting any appliance under it between the door and casing, as the inner bolt, which must be raised first, is protected by a lip on the outer bolt extending under the inner bolt, so that anything inserted under the outer bolt comes in contact with this lip and cannot touch the inner bolt. May be unlocked from inside by pulling back the lever.

Two steel keys with each lock.
Face of lock, $4\frac{1}{4} \times 7\frac{1}{2}$ inches.
Catch plate, $1\frac{1}{2} \times 4\frac{1}{2}$ inches.
Escutcheon, $2\frac{1}{2} \times 4\frac{1}{2}$ inches.

No. 80 Japanned, dozen..... \$30.00

Adjustable to any thickness of door from two inches down.

In opening the door, the turning of the handle disengages the lever from the catch plate. In closing it is self-acting. Locks and unlocks from either side by using key.

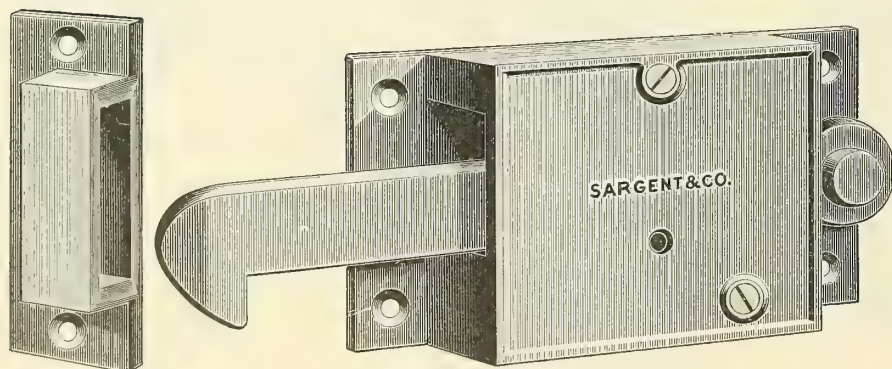
Two styles of catch furnished with each lock, one for face and one for side of door casing.

Two steel keys with each lock.
Face of lock, $2\frac{7}{8} \times 4\frac{3}{4}$ inches.
Escutcheon, $5\frac{1}{2} \times 2\frac{1}{2}$ inches.

No. 60 Japanned, dozen..... \$12.00

Rim Sliding Door Latches

Reversible



Size case, $5\frac{1}{2} \times 3\frac{1}{4} \times \frac{7}{8}$ inches.

Operated from one side only by lifting the bolt with the hand.

No. 6900 Japanned, dozen..... \$7.20

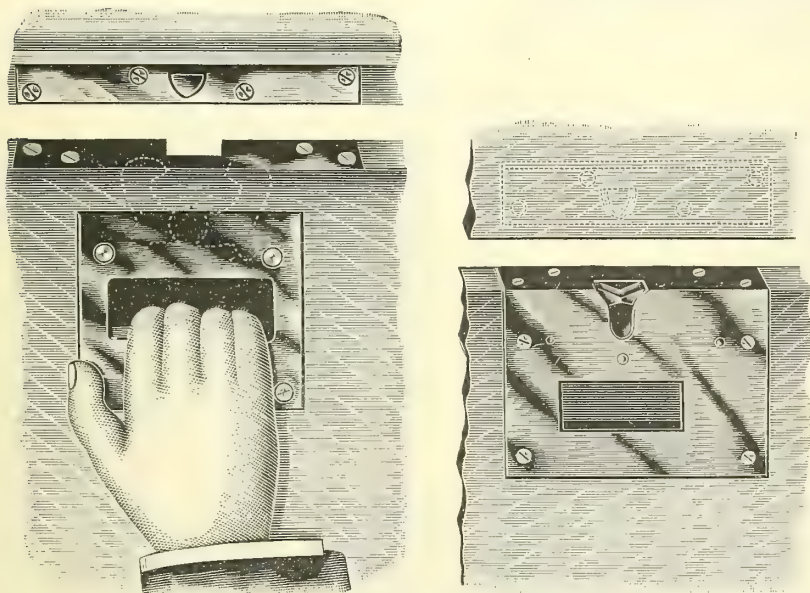
SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Steel Stable or Garage Sliding Door Locks

Half Mortise—Reversible



Made of steel with malleable jaws. The latch is made to fit flush in the door and can be operated from both sides.

Serves as a latch and pull combined and is indestructible. There are no projections on which to catch harness or clothing. Adjustable for doors $1\frac{3}{4}$ to $2\frac{1}{2}$ inches thick. Width of latch, $5\frac{1}{8}$ inches. Height, $6\frac{5}{8}$ inches.

Regularly furnished with strike for single doors. Can be furnished with strikes for double doors if specified.

On panel doors outer stiles should be no less than 6 inches wide.

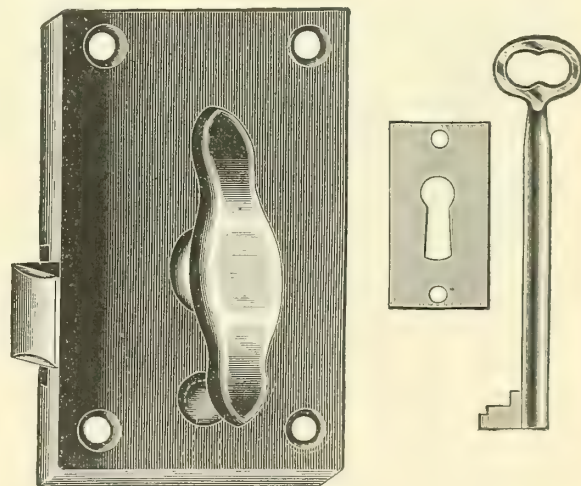
No. 520 Dead black finish, dozen \$15.00

Rim Elevator Door Latches

Not Reversible

State hand wanted. Cut shows left hand.
Size case, $4\frac{7}{8} \times 2\frac{7}{8} \times 1\frac{13}{16}$ inches.
Front to center of keyhole, $1\frac{1}{2}$ inches.
Operated from the outside by the key.
Operated from the inside by the T-handle.

No. B1 Japanned case, bronze metal latch and T-handle, dozen . \$20.00



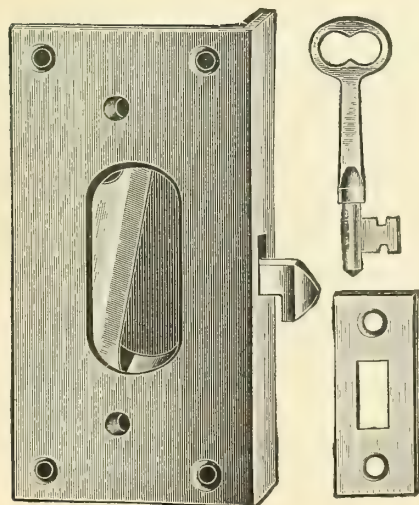
Elevator Latches

All these latches are operated from the outside by key. From inside by pressing back the lever.

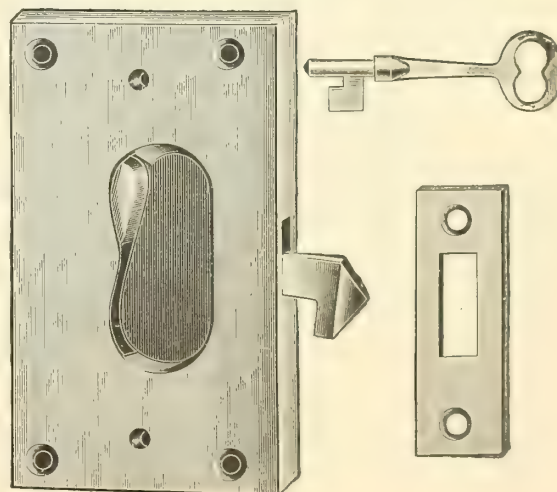
No. 1220 Reversible, half mortise. Size case, $2\frac{1}{2} \times 5$ inches. Cast bronze, polished, dozen \$18.25

No. 71 Not reversible. State hand wanted. Half mortise. Size case, $3 \times 5\frac{3}{8}$ inches. Cast bronze, polished, dozen 25.40

No. 1076 Reversible. Rim, for iron gates, doors, etc. Size case, $2\frac{7}{8} \times 5$ inches. Cast bronze, polished, dozen 22.00

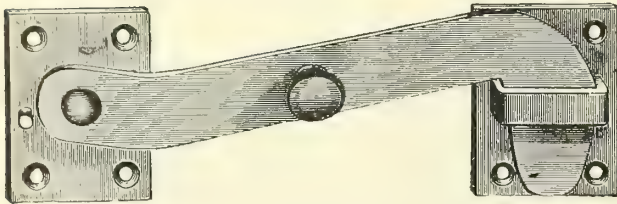


Nos. 71 and 1220
Cut shows Left Hand



No. 1076
Cut shows Left Hand

Sliding Door Hooks



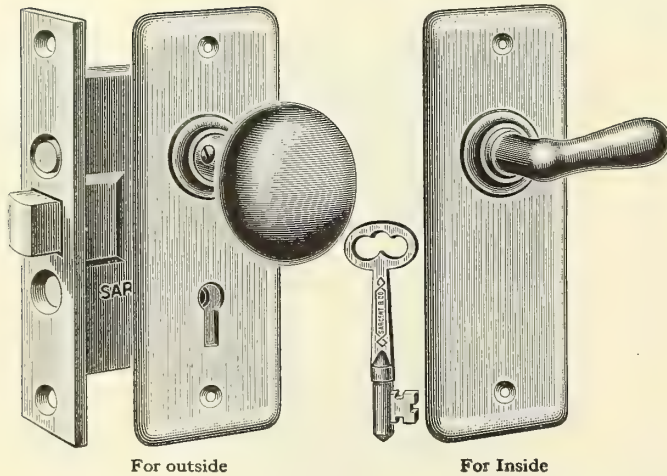
No. 1710

Made right and left hand. Cut is right hand.
Latch is $1\frac{1}{8} \times \frac{3}{16}$ inches.
Wrought iron, galvanized.

Length, inches.....	6	8	10
Dozen.....	\$13.75	14.25	17.00

Mortise Screen Door Night Latches

Reversible



For outside

For Inside

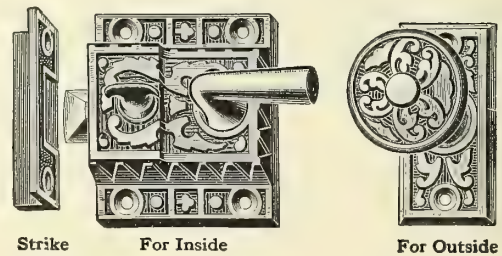
Size case, $3 \times 2\frac{1}{4} \times 1\frac{1}{2}$ inches.
Front to center of keyhole, $1\frac{5}{8}$ inches.
Front, $\frac{3}{4} \times 4\frac{1}{4}$ inches.
Hub, $\frac{5}{16}$ inch.
Size of escutcheons, $1\frac{1}{2} \times 4\frac{1}{2}$ inches.

Lever Handle for Inside, Knob for Outside

May be operated from the outside by the key, or may be operated from both sides of the knob and lever. The outside knob is set by the stop in the face of the latch.

No. 5866P Cast bronze front and bolt, cast bronze knob and lever, wrought bronze plate escutcheons, set.....	\$2.10
No. A3B5866 Cast bronze front and bolt, cast bronze knob and lever, wrought bronze plate escutcheon, statuary bronze finish, set.....	2.30
No. OB5866 Cast brass front and bolt, cast brass knob and lever, wrought brass plate escutcheons, old brass finish, set..	2.30

Rim Screen Door Latches



Strike

For Inside

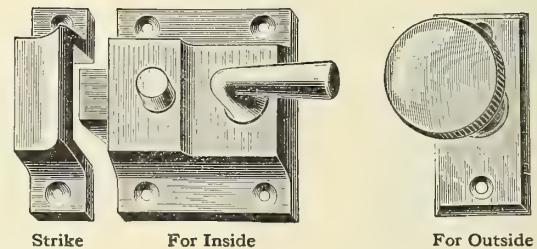
For Outside

Reverse Bevel

Size case, $2\frac{1}{4} \times 1\frac{1}{8}$ inches.
Outside plate, $1 \times 2\frac{1}{8}$ inches.
For doors $\frac{7}{8}$ to $1\frac{1}{4}$ inches thick. Reverse bevel.

†No. Y6555 Cast iron, bronze-plated, dozen.....	\$9.70
†No. 6855P Cast bronze, polished, dozen.....	19.00
†No. OB6855 Cast brass, old brass finish, dozen.....	20.00
*No. T6555A Cast iron, Tuscan bronze finish, dozen.....	4.20

*Fancy figured
†Plain



Strike

For Inside

For Outside

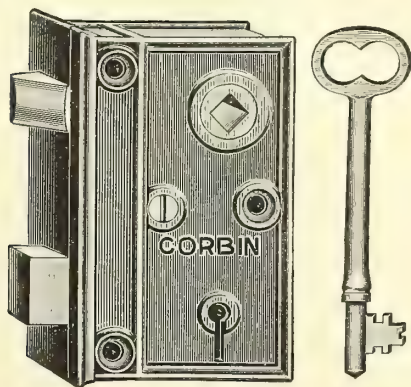
Regular Bevel

Size case, $2\frac{1}{4} \times 1\frac{1}{8}$ inches.
Outside plate, $1 \times 2\frac{1}{8}$ inches.
For doors $\frac{7}{8}$ to $1\frac{1}{4}$ inches thick.

No. Y6550 Cast iron, bronze-plated, dozen.....	\$9.70
No. 6850P Cast bronze, polished, dozen.....	19.00

Upright Rim Knob Locks

Reversible



Size case, 3⁵/₈x2¹/₄ inches.

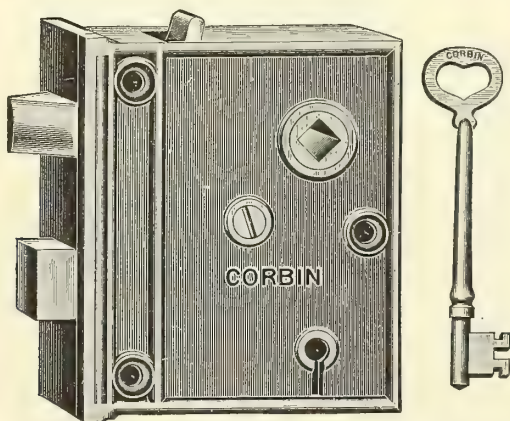
Front to center of hub, 1¹/₂ inches.

Size hub, ⁵/₁₆ inch.

1 tumbler, 12 changes.

No. 459 Corbin. Iron case, japanned; cast brass bolts, dozen. . \$6.90

No. N459 Corbin. Iron case, bronze-plated; cast brass bolts, dozen. 7.94

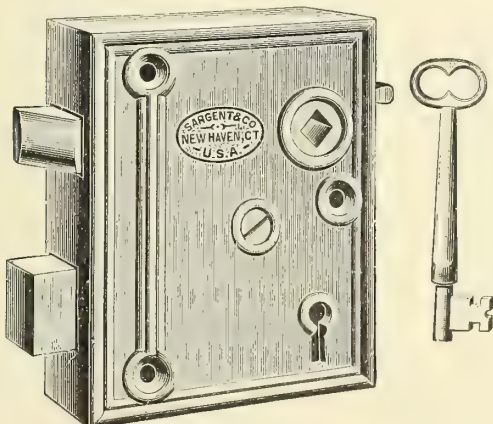


No. 962

Number		Size, Inches	Case		Front to Center of Hub Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts		Dozen
			Material	Finish					Material	Finish	
*†962	Corbin	4x3 ¹ / ₄	Iron	Japanned	2 ³ / ₈	⁵ / ₁₆	1	6	Cast Iron	Plain	\$3.90
†K961 ¹ / ₂	Corbin	4x3 ¹ / ₄	Iron	Japanned	2 ³ / ₈	⁵ / ₁₆	1	6	Cast Iron	Plain	2.85
470 ¹ / ₂	Corbin	4x3 ¹ / ₂	Iron	Japanned	2 ¹ / ₂	⁵ / ₁₆	1	12	Cast Brass	Plain	7.95
*2215	Sargent	4x3 ¹ / ₄ x ¹ / ₁₆	Iron	Japanned	2 ⁹ / ₁₆	⁵ / ₁₆	1	6	Cast Brass	Plain	4.00

* With stop.

† Furnished with reverse bevel strikes when so ordered.



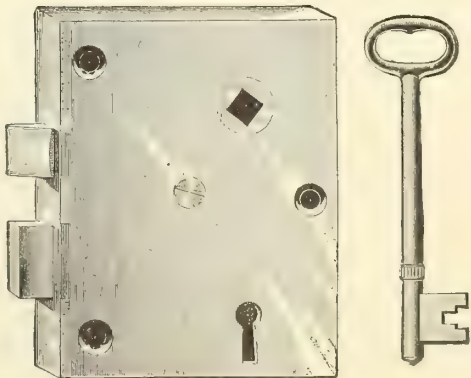
Size case, 4x3¹/₈ inches.

Front to center of hub, 2¹/₂ inches.

Size hub, ⁵/₁₆ inch.

With stop. 1 tumbler, 6 changes.

No. B.T. 2213S Steel case, brass-plated, brass-plated bolts, dozen. \$3.30



Size case, 3 x 3³/₄ inches.

Front to center of hub, 2¹/₈ inches.

Size hub, ⁵/₁₆ inch.

1 tumbler, 6 changes.

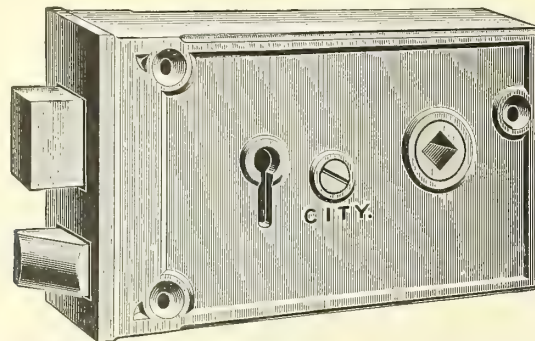
No. 12 Cast brass case, polished, brass inside, dozen. \$20.50

SINCE
1848

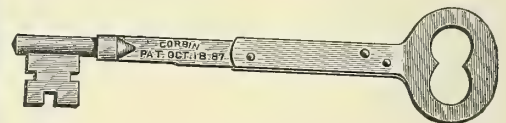
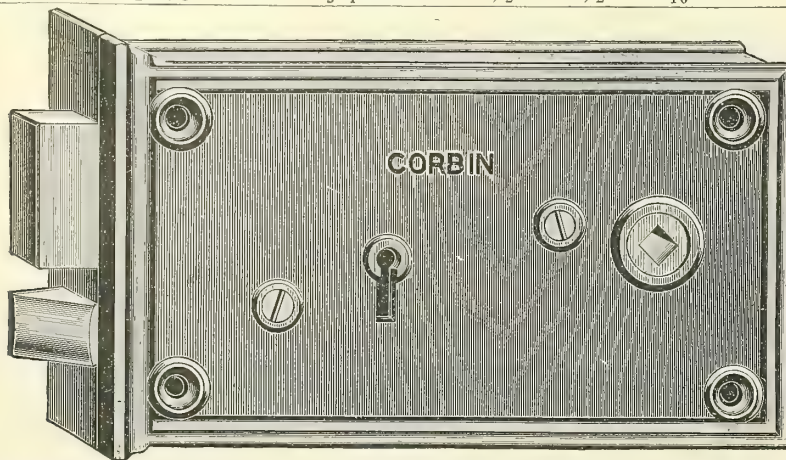
HAMMACHER SCHLEMMER & CO. NEW YORK

Horizontal Rim Knob Locks

Half Size Cuts



Number	Size, Inches	Case		Front to Center of Hub Inches	Front to Center of Keyhole Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts		Dozen
		Material	Finish						Material	Finish	
5 Sargent	4 $\frac{7}{8}$ x3 $\frac{1}{8}$	Iron	Japanned	3 $\frac{1}{8}$	4 $\frac{3}{4}$	$\frac{5}{16}$	1	6	Cast Brass	Plain	\$4.80
6 Sargent	5 $\frac{1}{2}$ x3 $\frac{3}{8}$	Iron	Japanned	3 $\frac{1}{2}$	5 $\frac{1}{2}$	$\frac{5}{16}$	1	12	Cast Brass	Plain	7.20

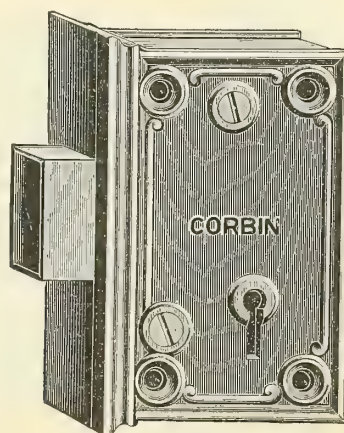


Number	Size, Inches	Case		Front to Center of Hub Inches	Front to Center of Keyhole Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts		Dozen
		Material	Finish						Material	Finish	
1673 Corbin	4 x6	Iron	Japanned	4 $\frac{3}{8}$	6	$\frac{5}{16}$	1	24	Cast Iron	Plain	\$25.50
*626 Reading	4 $\frac{3}{4}$ x7	Iron	Japanned	4 $\frac{3}{4}$	7	$\frac{5}{16}$	1	16	Cast Iron	Plain	25.00

* With Flat Keys.

Upright Rim Dead Locks

Reversible



No. 1445

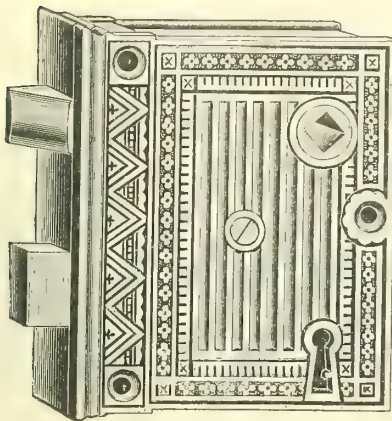


Number	Size, Inches	Case		Center of Keyhole Inches	Number of Tumblers	Number of Changes	Bolt		Dozen
		Material	Finish				Material	Finish	
1445 Corbin	4 x2 $\frac{1}{2}$	Iron	Japanned	1 $\frac{5}{8}$	1	24	Cast Iron	Plain	\$12.75
1448 Corbin	4 x2 $\frac{1}{2}$	Iron	Japanned	1 $\frac{5}{8}$	3	36	Cast Brass	Plain	17.70
*1450 Corbin	5 $\frac{1}{2}$ x3 $\frac{5}{8}$	Iron	Japanned	2 $\frac{5}{16}$	1	12	Cast Iron	Plain	21.60

* With Flat Keys.

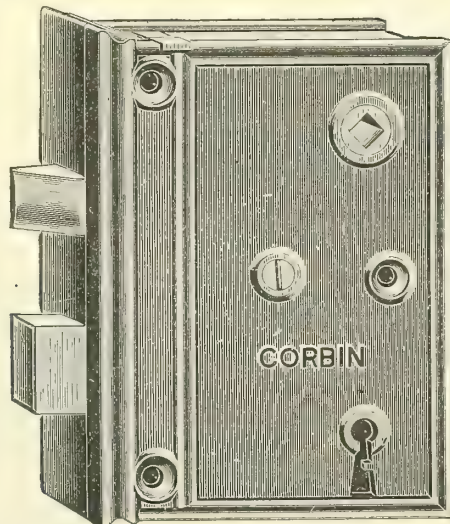
Upright Rim Knob Locks

Reversible



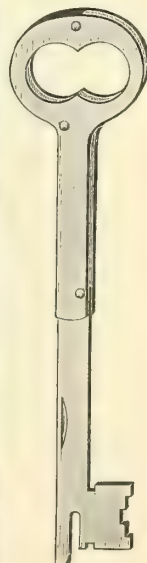
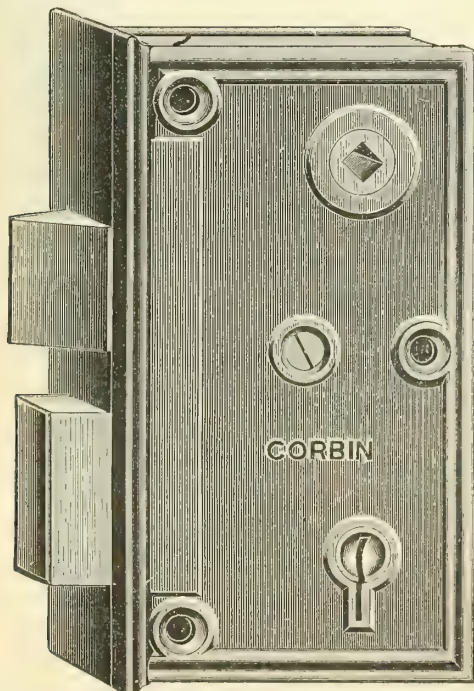
Size case, $4\frac{1}{4} \times 3\frac{1}{4}$ inches.
Front to center of hub, $2\frac{1}{2}$ inches.
Size hub, $\frac{5}{16}$ inch.
1 tumbler, 12 changes.

No. N3470 Corbin. Iron case, bronze-plated, cast brass bolts,
dozen \$11.85



No. 490

Number	Size, Inches	Case		Front to Center of Hub Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts		Dozen
		Material	Finish					Material	Finish	
487 Reading	$4\frac{1}{2} \times 3\frac{1}{4}$	Iron	Japanned	$2\frac{9}{16}$	$\frac{5}{16}$	1	12	Cast Brass	Plain	\$7.60
490 Corbin	$5 \times 3\frac{5}{8}$	Iron	Japanned	$2\frac{3}{4}$	$\frac{5}{16}$	1	18	Cast Brass	Plain	12.15
493 Corbin	$6\frac{1}{4} \times 4$	Iron	Japanned	3	$\frac{5}{16}$	1	18	Cast Brass	Plain	18.15

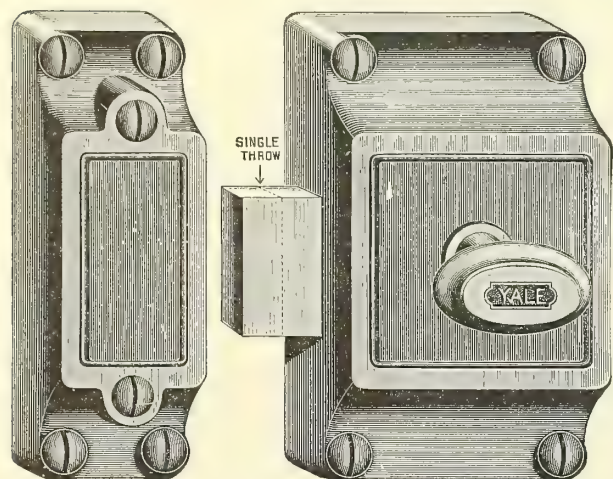


Size case, $6\frac{3}{4} \times 3\frac{5}{8}$ inches.
Front to center of hub, $2\frac{1}{2}$ inches.
Size hub, $\frac{5}{16}$ inch.
3 tumblers, 16 changes.

No. 1678 Corbin. Iron case, japanned, cast iron bolts, dozen . . \$31.50

Upright Rim Dead Locks

Half Size Cuts



No. 7 Yale



This lock has double-throw bolt, giving extra engagement with strike, which is attached to jamb by six screws. Heavy construction and steel bolt. Especially available for doors of wood or metal, $\frac{7}{8}$ to $2\frac{1}{2}$ inches thick, having narrow stiles.

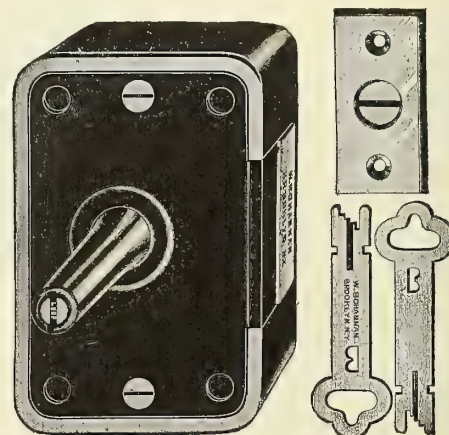
Operation: By key from outside, by turn knob from inside. A second turn of key or knob accomplishes the double-throw.

No. 7 Yale. Iron case, old copper finish, $4\frac{1}{2} \times 2\frac{3}{4} \times 1\frac{3}{8}$ inches; front to center of cylinder, $1\frac{3}{8}$ inches; 5 pin tumblers, practically unlimited changes, bronze cylinder and bronze thumb-knob, dozen \$62.35

Master keying in one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices upon application.

Iron case, japanned, $3\frac{7}{8} \times 2\frac{5}{8}$ inches.
Front to center of keyhole, $1\frac{1}{2}$ inches.
7 tumblers, 144 changes.
Bronze bolt and bronze knob.

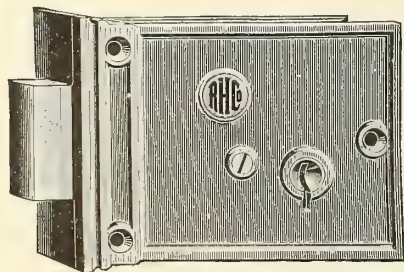
No. 198 Bohanan. Dozen \$25.00



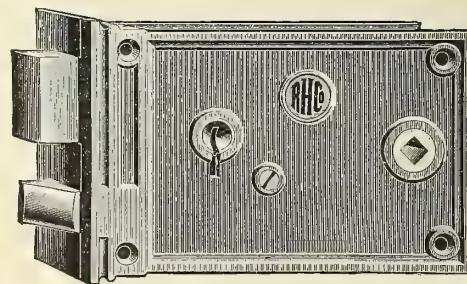
No. 198 Bohanan

Horizontal Rim Dead Locks

Half Size Cuts



No. 373



Nos. 378, 380, 402 and 426

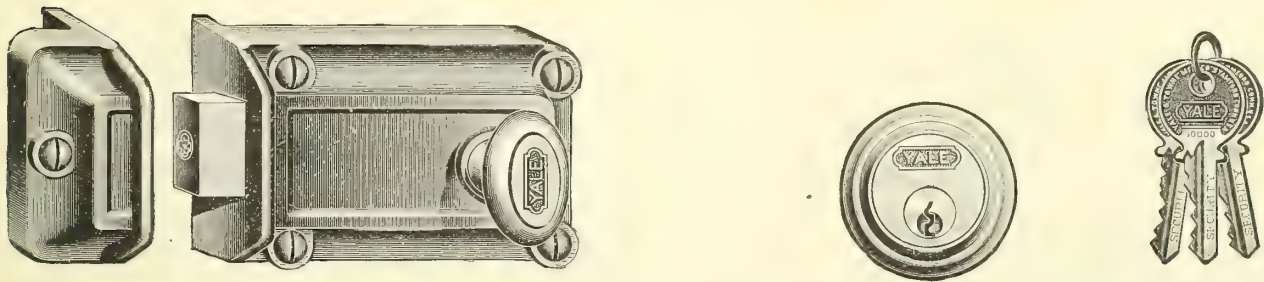
Iron Cases, Japanned Finish; Iron Bolts

Number	Size, Case Inches	Front to Center of Keyhole Inches
373 Reading	$2\frac{1}{2} \times 3\frac{3}{8}$	$1\frac{5}{8}$
378 Reading	$2\frac{1}{4} \times 3$	2
380 Reading	$2\frac{1}{2} \times 3\frac{3}{4}$	$2\frac{1}{2}$
402 Reading	$2\frac{1}{2} \times 3\frac{3}{4}$	$2\frac{1}{2}$
*426 Reading	$4\frac{3}{4} \times 7$	$3\frac{1}{2}$

*With Flat Keys.

Number of Tumblers	Number of Changes	Dozen
1	6	\$2.60
1	12	3.10
1	6	2.75
3	48	6.25
3	36	21.00

Horizontal Rim Dead Locks



Number	Size, Inches	Case		Front to Center of Cylinder Inches	Number of Tumblers	Number of Changes	Bolt, Cylinder and Thumb-knob		For Doors Thickness Inches	Dozen
		Material	Finish				Material	Finish		
2 Yale	2 ³ / ₈ x3 ⁵ / ₈	Iron	Japanned	2 ³ / ₈	5	Practically unlimited	Bronze	Polished	1 to 2 ¹ / ₂	\$40.75
3536 Eagle	3 ⁵ / ₈ x2 ³ / ₈	Iron	Japanned	2 ³ / ₈	5	Practically unlimited	Bronze	Polished	1 to 2 ¹ / ₄	13.20

Operation: By key from outside, by turn-knob from inside.

Master Keying

Master keying in one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. . Prices up on application.



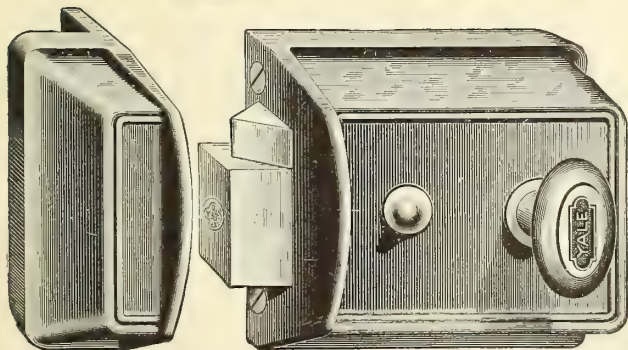
No. 91 Yale

Iron case, old copper finish, 3x3½ inches.
Front to center of cylinder, 2¾ inches.
5 pin tumblers, practically unlimited changes.
Bronze bolt, bronze cylinder and bronze thumb-knob.
For doors ⅞ to 2½ inches.

Operation: By key from outside, by turn-knob from inside. When unlocked by key or turn-knob both dead and trigger bolts are withdrawn and held back in case. When stop on case is pushed down, the trigger bolt is released and thrown out. When door is closed, the trigger bolt automatically releases the dead bolt, which is also thrown and locked.

No. 91 Yale. Dozen..... \$55.55

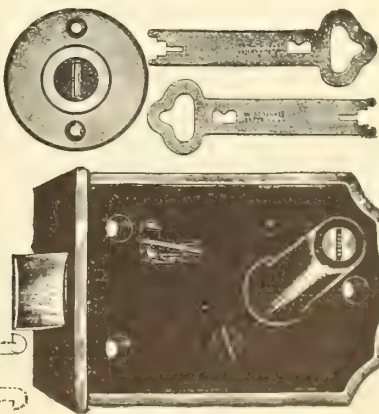
Master Keying: Same as Nos. 2 and 3536 listed above.



No. 262 Bohanan

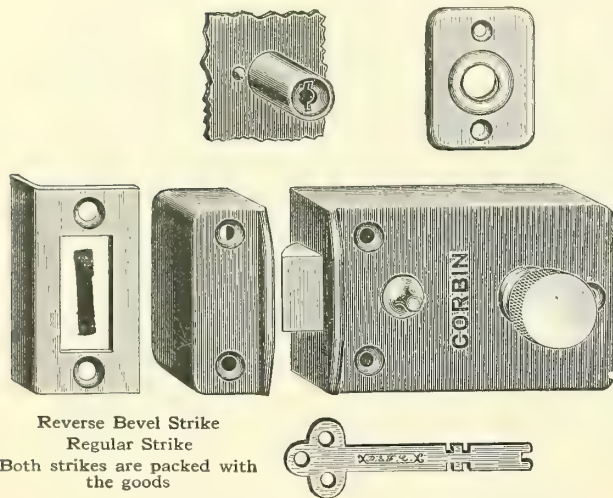
Iron case, japanned, 2½x3¾ inches.
Front to center of keyhole, 2¼ inches.
4 tumblers, 15 changes.
Operation: By key from outside, by turn-knob from inside.
Bronze bolt, brass knob, nickel-plated.

No. 262 Bohanan. Dozen..... \$14.00

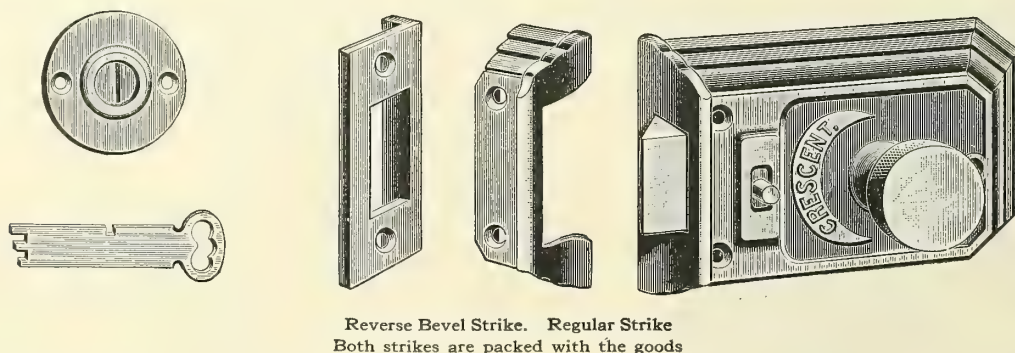


Rim Night Latches

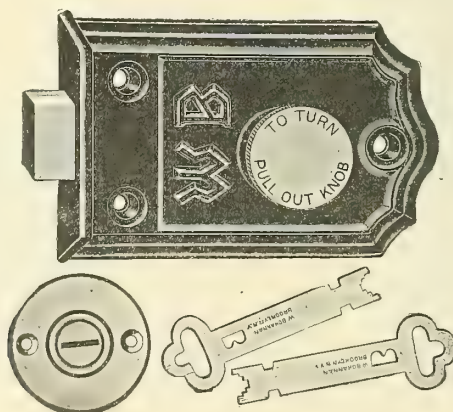
Reversible



No. 353 Corbin. Size case, 2x3 inches; front to center of key-hole, $2\frac{1}{8}$ inches; 12 changes. Cast iron bolt, brass-plated; wrought bronze escutcheon; iron turn-knob, bronze-plated, dozen..... \$6.60



No. 4234 Sargent. Size case, $3\frac{3}{4} \times 2\frac{3}{4}$ inches; front to center of keyhole, $1\frac{1}{8}$ inches; 12 changes. Cast iron bolt, bronze-plated; wrought bronze escutcheon; bronze turn-knob, dozen..... \$8.00

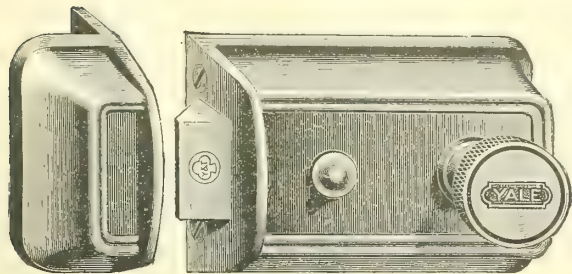


Cast Bronze Bolt, Bronze Escutcheon and Brass Draw-back Knob, Nickel-plated

Number	Size Case Inches	Front to Center of Keyhole Inches	Number of Tumblers	Number of Changes	Dozen
250 Bohannon	$2\frac{1}{2} \times 3\frac{5}{8}$	$2\frac{1}{8}$	4	15	\$13.00
151 Bohannon	$3 \times 4\frac{1}{4}$	$2\frac{5}{8}$	4	15	17.00

Rim Night Latches

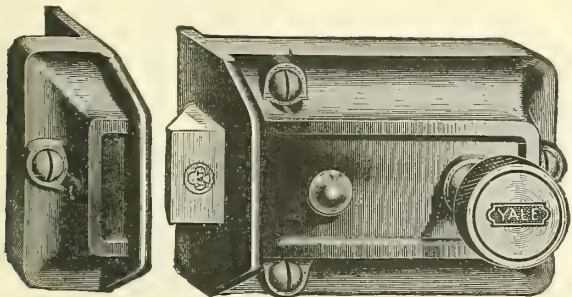
Reversible



Operation: By key from outside, by turn-knob from inside. Bolt may be held back by stop. For doors 7⁄8 to 2½ inches thick. Cast bronze bolts, bronze cylinder and bronze turn-knob.

Case				Front to Center of Cylinder Inches	Number of Pin Tumblers	Number of Changes	Dozen
Number	Size, Inches	Material	Finish				
42 Yale	2⅜x3½	Iron	Old Copper	2⅜	5	Practically unlimited	\$33.20
5042 Yale	2¼x3½	Bronze	Polished	2⅜	5	Practically unlimited	74.00

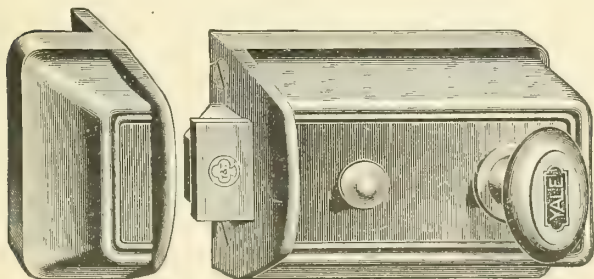
Master keying: In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with a master key to pass the locks in each set, and a grand master key to pass all the locks. Prices on application.



Cast Bronze Bolt, Bronze Cylinder, Bronze Turn-knob

Case				Front to Center of Cylinder Inches	Number of Pin Tumblers	Number of Changes	For Doors Thickness Inches	Dozen
Number	Size, Inches	Material	Finish					
*042 Yale	2½x3⅜	Iron	Japanned	2⅜	5	Practically unlimited	⅞ to 2½	\$30.90
*049 Yale	3 x4	Iron	Japanned	2¾	5	Practically unlimited	1⅛ to 3	46.30
†1356 Corbin	2½x3	Iron	Japanned	2⅜	5	Practically unlimited	⅞ to 2¼	33.00
*3504 Eagle	3⅝x2½	Iron	Japanned	2⅜	5	Practically unlimited	⅞ to 2¼	10.00

* Operates by key from outside, by turn-knob from inside. Bolt may be held back by stop inside.
† Operates by key from outside, by turn-knob from inside. Bolt may be deadlocked or held back by the stop inside or by the key outside. Cylinder is ball bearing.
Master Keying: Same as Nos. 42 and 5042, listed above.

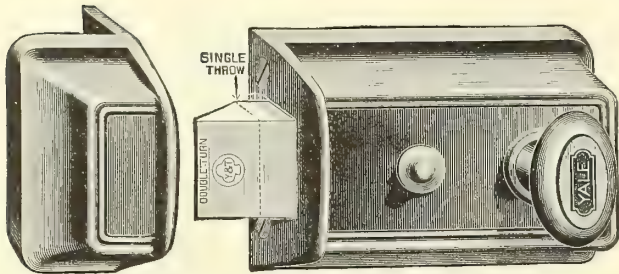


Iron case, old copper finish, 2⅜x3½ inches.
Front to center of cylinder, 2⅜ inches.
5 pin tumblers; practically unlimited changes.
No. 44 Yale. Cast bronze bolt, bronze cylinder and bronze turn-knob. For doors 7⁄8 to 2½ inches thick. Dozen . . . \$37.80
Master Keying: Same as Nos. 42 and 5042, listed above.

Operation: By key from outside, by turn-knob from inside. Bolt may be held back by stop. When door is closed the protector on back of bolt is held retracted and operates to positively deadlock the bolt against end pressure.

Rim Night Latches

Half Size Cuts



Iron case, old copper finish, $2\frac{3}{8} \times 3\frac{1}{2}$ inches.

Front to center of cylinder, $2\frac{3}{8}$ inches.

5 pin tumblers, practically unlimited changes.

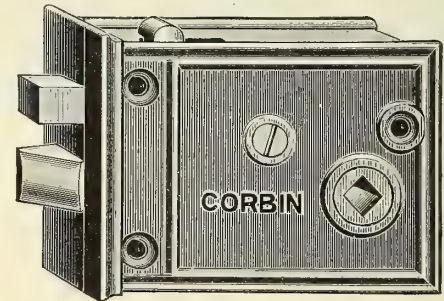
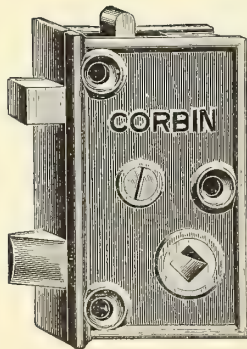
Operation: By key from outside, by turn-knob from inside. Bolt may be held back by stop. The bolt may be given a second throw by key from outside or turn-knob from inside which deadlocks, making it proof against end pressure.

No. 46 Yale. Cast bronze bolt, bronze cylinder, bronze turn-knob. For doors $\frac{7}{8}$ to $2\frac{1}{2}$ inches thick. Each..... \$39.35

Master Keying: In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices on application.

Rim Knob Latches

Reversible



No. 309

No. 355 Iron case, japanned, $3 \times 1\frac{3}{4}$ inches; front to center of cylinder, $1\frac{3}{16}$ inches; $\frac{5}{16}$ -inch hub; cast iron bolt and thumb-piece. Dozen..... \$3.00

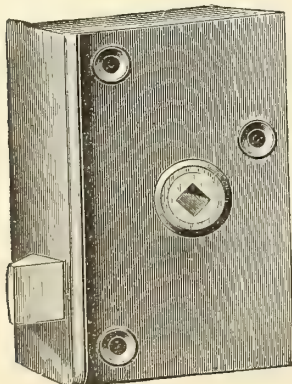
Iron case, japanned, $2\frac{5}{8} \times 3\frac{1}{2}$ inches.

Front to center of hub, $2\frac{3}{4}$ inches.

Furnished with reverse bevel strikes when so ordered.

No. 309 Corbin. Cast iron bolt and thumb-piece, dozen.... \$3.00

No. 310 Corbin. Cast brass bolt, dozen..... 4.50



Iron case, japanned, $2\frac{3}{8} \times 3\frac{3}{4}$ inches. Front to center of hub, $1\frac{3}{8}$ inches. $\frac{5}{16}$ -inch hub.

No. 110 Cast brass bolt, dozen..... \$8.00

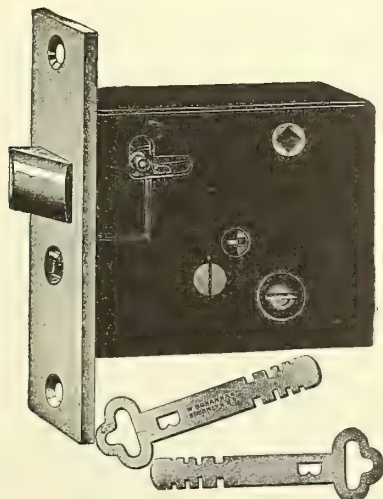
SINCE
1848

HAMMACHER SCHLEMMER & CO.

NEW
YORK

Iron Gate and Railing Latch

Reversible



Size case, $3\frac{1}{2} \times 3\frac{1}{2}$ inches.

Front to center of keyhole, $1\frac{1}{2}$ inches.

4 tumblers, 15 changes.

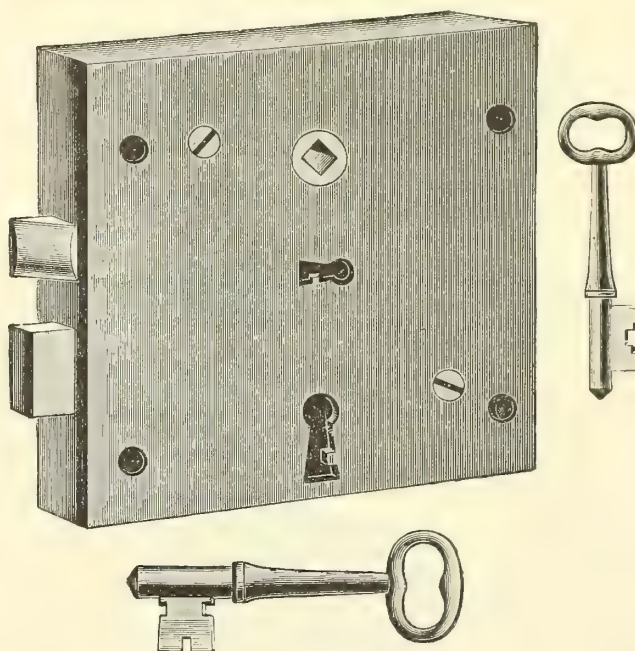
Operation: Unlatched with key from outside, or knob inside.

Can be deadlocked by key from inside.

No. 252 Cast brass bolt, brass, nickel-plated turn-knob,
dozen..... \$20.00

Iron Gate Locks

Reversible



Size case, 5x5 inches.

Front to center of keyholes, $2\frac{1}{2}$ inches.

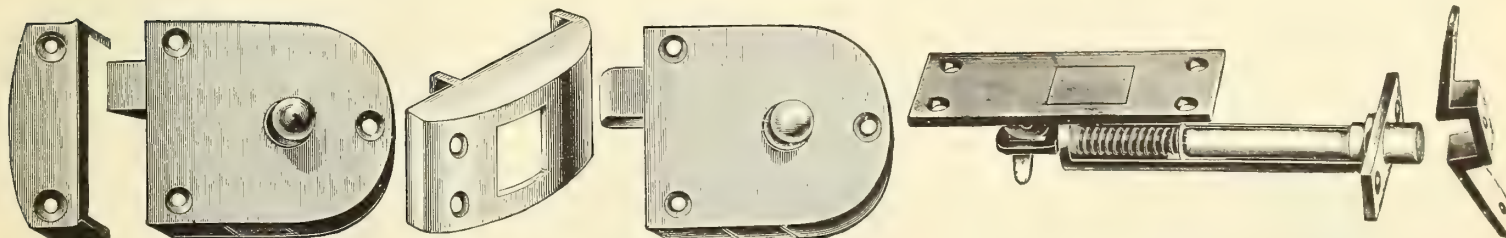
4 changes on night key, 8 changes on main key.

Operation: Inside by knobs and either side by keys.
 $\frac{5}{16}$ -inch hub.

No. 1017 $\frac{1}{2}$ Cast brass bolts, dozen..... \$12.50

Secret Gate Latches

Reversible



Has secret spring under rim, which
must be pressed in to open

Has secret spring under rim, which
must be pressed in to open

No. 214

Size case, $2\frac{1}{2} \times 2\frac{1}{2}$ inches.

For single acting doors.

No. 152 Japanned case, iron bolt,
brass knob, dozen..... \$5.00

No. 153 Cast bronze case, bronze
bolt, bronze knob, dozen..... 10.00

No. OB153 Cast brass case, bolt and
knob, old brass finish, dozen.... 10.00

Size of case, $2\frac{1}{2} \times 2\frac{1}{8}$ inches.

For double acting doors.

No. 156 Bronze metal throughout,
dozen..... \$12.50

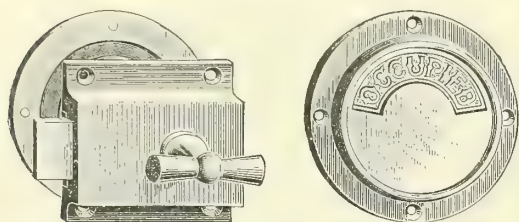
Face plate, $\frac{5}{8} \times 1\frac{5}{8}$ inches.

Trigger plate, $1\frac{3}{8} \times 3\frac{1}{4}$ inches.

For double acting doors.

No. 214 Bronze metal throughout,
dozen..... \$11.50

Lavatory Door Indicator Bolts



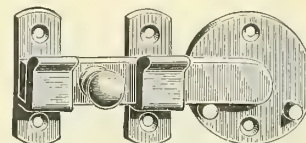
For doors 1 to 1 3/4 inches thick.

Size of case, 2 1/2 x 2 5/8 inches. Indicator, 3 1/4 inches.

Operated by T-handle from inside.

No. P1761-80 Cast bronze, nickel-plated, each..... \$2.00

Lavatory Door Throw Latch



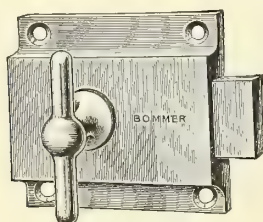
Length of Bar, 4 Inches

No. P1745 Cast bronze, polished, dozen..... \$ 9.00

No. P1745-80 Cast bronze, nickel-plated, dozen..... 10.00

No. 1745-37 Cast brass, old brass finish, dozen..... 10.00

Lavatory Door Rim Bolts



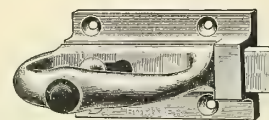
No. 5009

Size of case, 2 1/2 x 2 5/8 inches.

Face to center of handle, 1 5/8 inches.

Without Keeper, dozen..... \$18.40

With Keeper, dozen..... 20.00



No. 5006

Has rubber bumper on handle. Size of bolt, 3 1/2 inches.

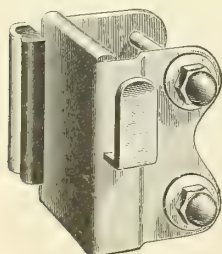
Without Keeper, dozen..... \$24.40

With Keeper, dozen..... 25.00

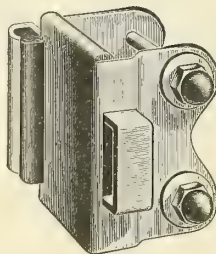
Strikes and Keepers for Lavatory Doors

The strikes have rubber bumpers. The box to clamp to the marble is adjustable. Suitable for marble or slate partitions of the following thicknesses: 1 inch, 1 1/4 inches, 1 1/2 inches, 1 3/4 inches and 2 inches.

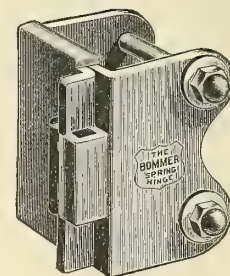
They are adjustable 1/8 inch over and under above sizes, to allow for variations from size in the thickness of the marble. Thickness of marble and door and finish desired must always be stated when ordering.



No. 1052 For throw latch, reversible, for right or left hand door opening in. Bronze, nickel-plated. Each. \$1.40



No. 1055 For rim bolt, reversible, right or left hand door opening in. Bronze, nickel-plated. Each.... \$1.40

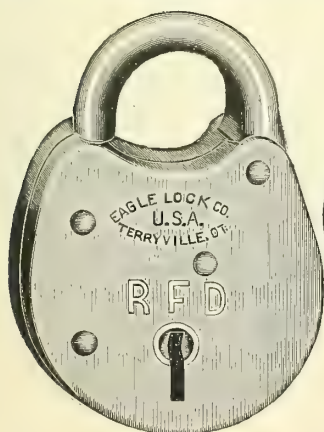
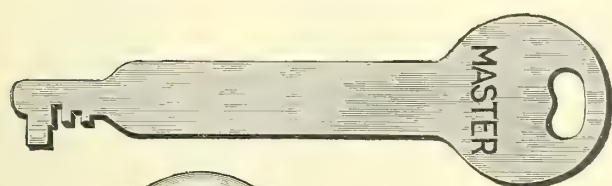


No. 1056 For rim bolt or throw latch, reversible, for right or left hand door opening out. Bronze, nickel-plated. Each..... \$1.40

Padlocks

Eagle

Half Size Cuts



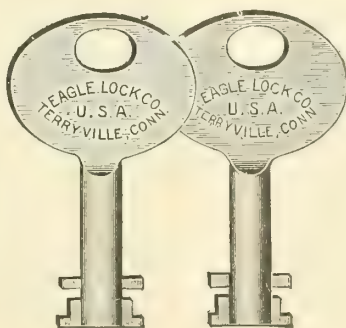
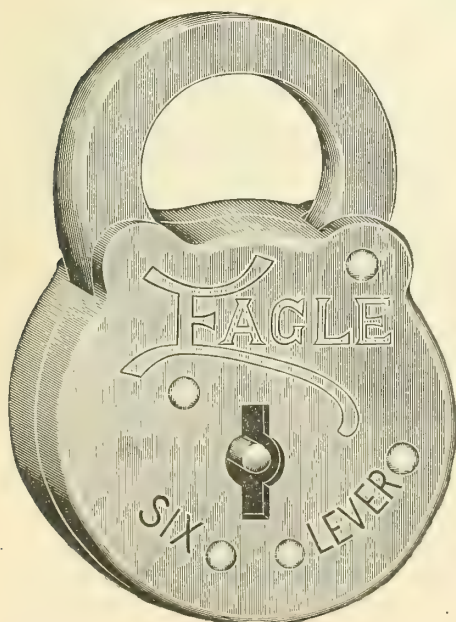
Brass case. Plain finish malleable iron. Spring shackle. Black nickeled. Self-locking. Two secure levers, 4 wards, 2 nickel-plated flat steel keys each. 36 changes of keys. One master key packed with each dozen locks.

No. 04233 1½ inches, per dozen \$4.00
No. 04233 Same as above but with chain 9 inches long, dozen.. 5.00



1¼ inches. Spring shackle. Self-locking. Five secure levers, Two fine flat bow keys each. All different in a dozen. 150 changes. Can be made with 720 changes of keys and 600 changes with master key. For making with more than 12 changes add 50 cents per dozen net. For making master keyed add \$1 per dozen net. Master keys 25 cents each extra.

No. 4198¼ Iron, all brass-plated, per dozen \$8.50
With Chain 9 Inches Long
No. 4198¼ Same as above but with chain, per dozen 10.50



1½ inches. Self-locking. Spring shackle. Six secure levers. Two double-bitted nickel-plated wrought steel keys each. All different in a dozen. 12 changes.

No. 4374¼ Iron, brass-plated, dozen \$6.50

Self-locking. Malleable iron. Spring shackle. Six secure levers. Two double-bitted keys. All different in a dozen. 12 changes.

No. 4010G All galvanized, dozen \$9.00

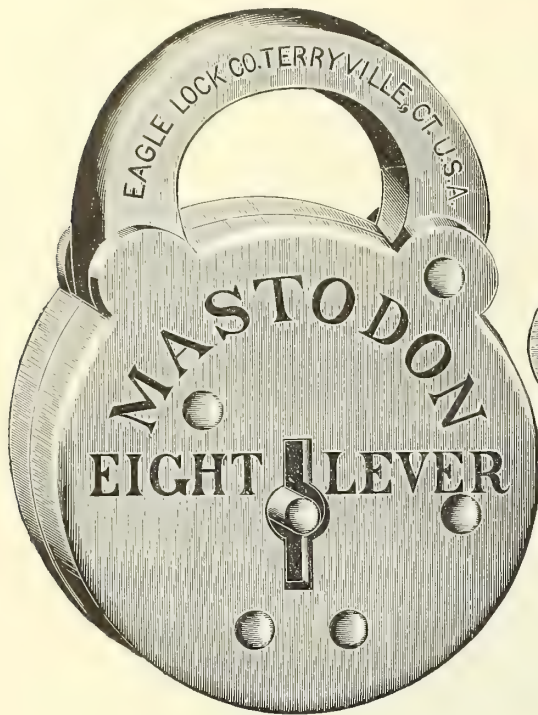
2 inches. Self-locking. Malleable iron spring shackle. Six secure levers. Two double-bitted brass-plated flat bow keys each. All different in a dozen. 12 changes.

No. 4127¼ Iron, all brass-plated, dozen.. \$8.00

With Heavy Iron Chain 9 Inches Long
No. 4127¼C Same as above but with chain, dozen 10.00

Padlocks

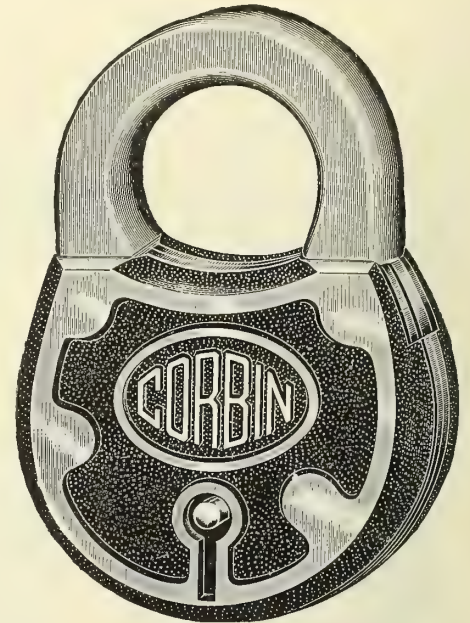
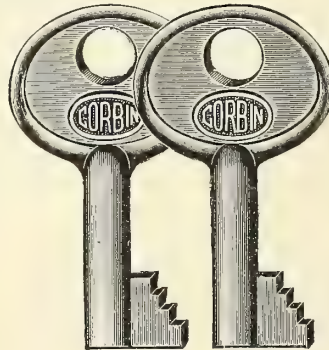
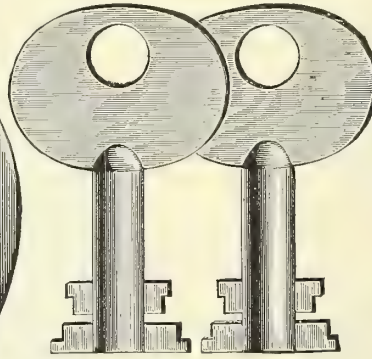
Half Size Cuts



Eagle

2½ inches. Self-locking. Cast spring shackle. 8 secure levers. Two double-bitted brass-plated flat bow keys each. Made regular all different in a dozen. 12 changes. Can be made with 3,120 changes of keys and 780 changes all different to one master key, or 3,120 changes all different to four different master keys. For making with more than 12 changes add \$1 per dozen net. For making master keyed add \$1 per dozen net. Master keys 25 cents each extra.

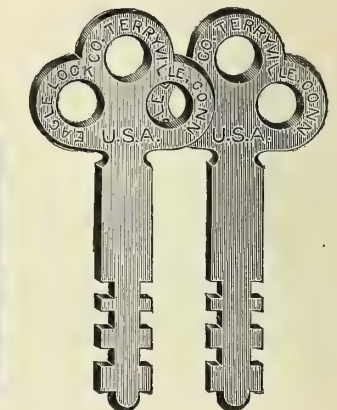
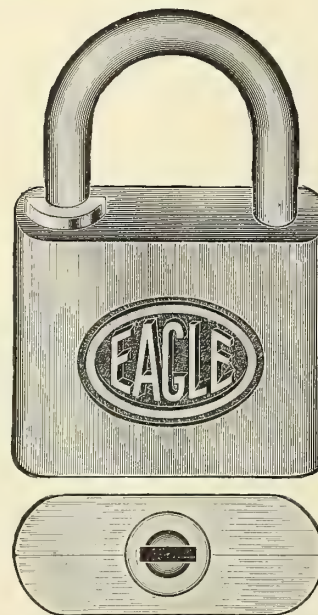
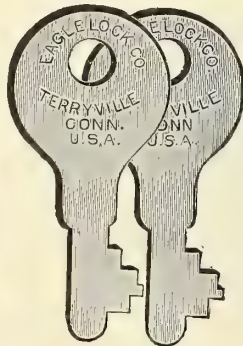
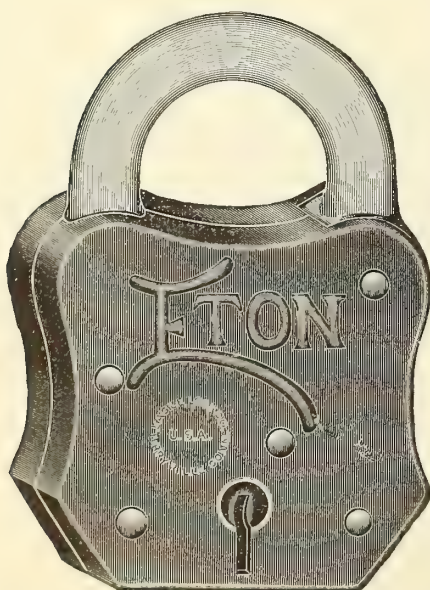
No. 4133 Iron, ivory black case, brass-plated shackle, dozen..... \$9.50



Corbin

2¼ inches. Heavy spring shackle. Three wards. Two levers. Two nickel-plated malleable iron keys to each lock, all different in a dozen. 12 changes.

No. 02865½ Bronze case, polished, bronze shackle, dozen \$7.80



Eagle

1¾ inches. Self-locking. Spring shackle. Steel, ivory black case. Iron spring shackle, self-locking. Six changes with two steel keys.

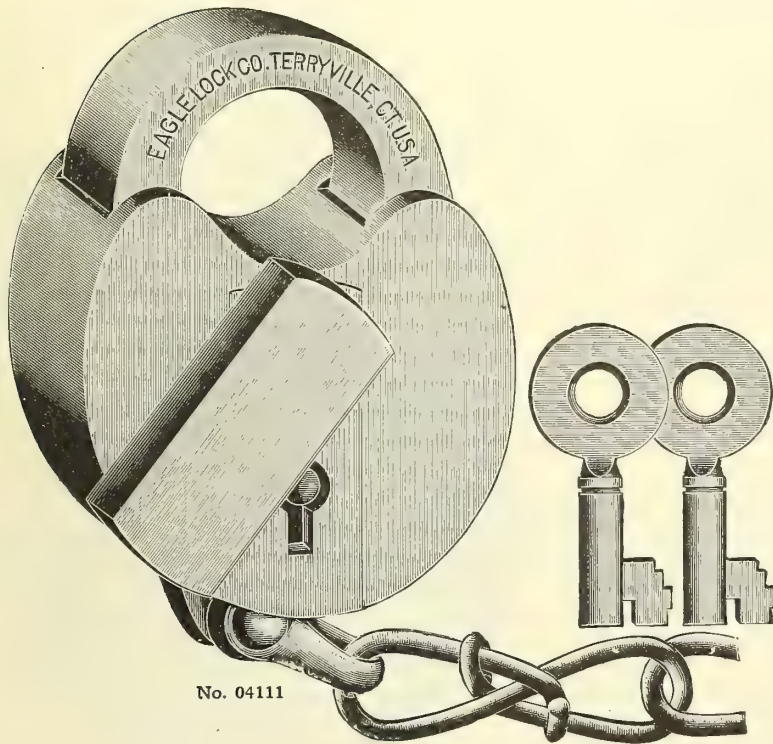
No. 4448 Dozen..... \$2.00

Self-locking. Spring shackle. Cast brass case. Steel shackle. Six changes. Two flat steel keys each.

No. 04607 1½ inches, dozen \$5.00
No. 04608 2¼ inches, dozen 6.00

Padlocks

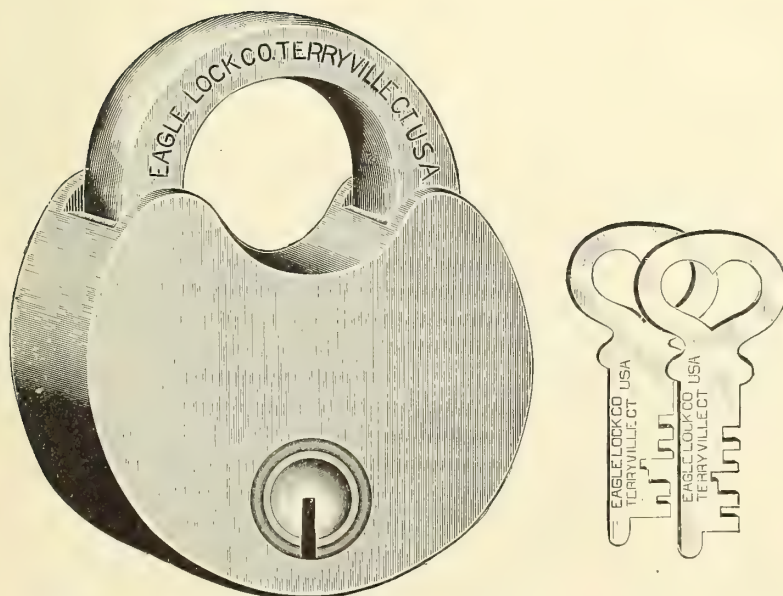
Full Size Cuts



Eagle

2¼ inches. Self-locking. Spring shackle and drop. Secure lever and ward. Two bronze keys each. 12 changes in a dozen.

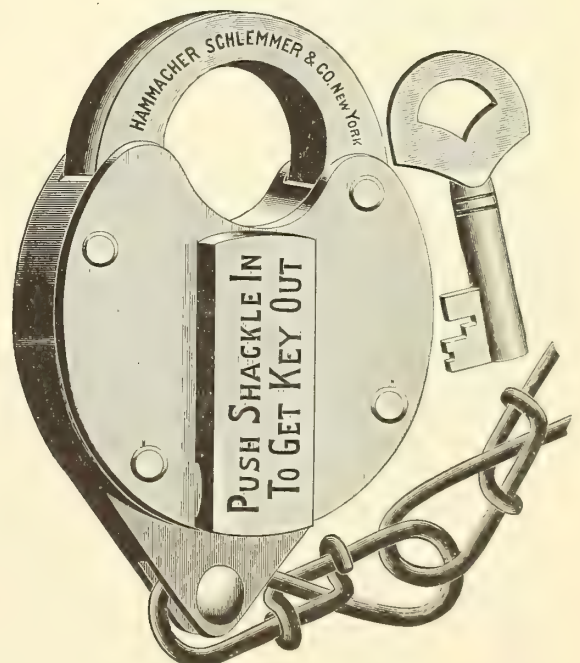
No. 04111 Cast bronze, polished finish,
dozen..... \$12.00



Eagle

Fine polished finish, all brass inside works. Self-locking. Spring shackle. Three secure levers. Two polished and nickel-plated flat steel keys each. Regularly made with 120 changes of keys. Can be made with 500 changes to master key. For making master keyed add \$1 per dozen net. Master keys 25 cents each extra.

No. 04196 Cast bronze, 2¼ inches, dozen..... \$18.00



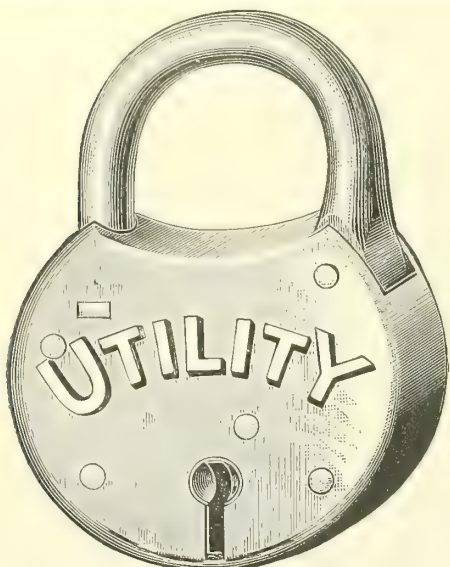
H. S. & Co.

Key cannot be removed until it is locked, a most valuable feature for railroads, express and telegraph companies, contractors, etc. All brass inside works, heavy cast bronze metal case and bronze metal key. Regular with 12 changes; can be furnished with 120 changes. 9-inch Japanned "non-kinkable" steel chain.

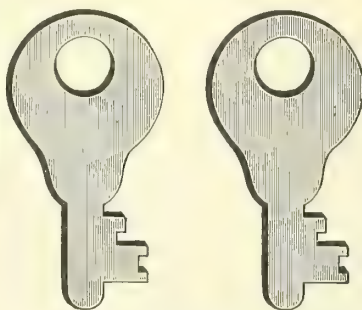
With two keys.

No. 11 Per dozen..... \$15.00

For customers using large quantities, we can reserve key changes for their exclusive use. Correspondence invited.



No. 214



Two Keys to each Lock

Padlocks

Full Size Cuts

H. S. & Co.—Utility

Iron black jappaned case, brass-plated shackle.
Self-locking spring shackle.

Number.....	161	182	193	214
Diameter, inches.....	1 1/4	1 1/2	1 3/4	2
Changes.....	12	12	12	12
Dozen.....	\$2.00	2.50	3.00	3.50

Brass case, brass-plated shackle.
Self-locking spring shackle.

Number.....	1601	1802	1903	2104
Diameter, inches.....	1 1/4	1 1/2	1 3/4	2
Changes.....	12	12	12	12
Dozen.....	\$3.50	4.00	4.50	5.00

Above padlocks can be furnished keyed alike.

H. S. & Co.

Cast bronze case and shackle. Self-locking spring shackle. 6 levers. Practically unlimited changes.

No. 127 2 1/4 inches diameter, without chain, dozen..... \$10.00

No. 127C 2 1/4 inches diameter, with heavy galvanized chain 9 inches long, dozen.. 12.00

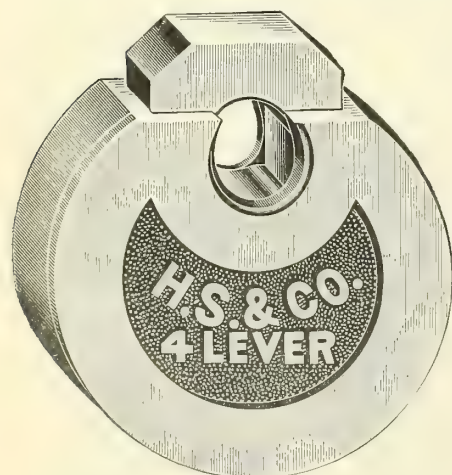
Above padlocks can be furnished keyed alike.



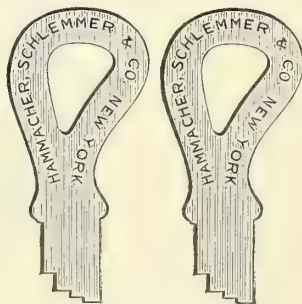
Two Keys to each Lock



No. 127



No. 131



Two Keys to each Lock

H. S. & Co.

Cast bronze case and shackle. Self-locking spring shackle. 4 levers. 120 changes.

No. 131 2 inches diameter, without chain, dozen.. \$8.00

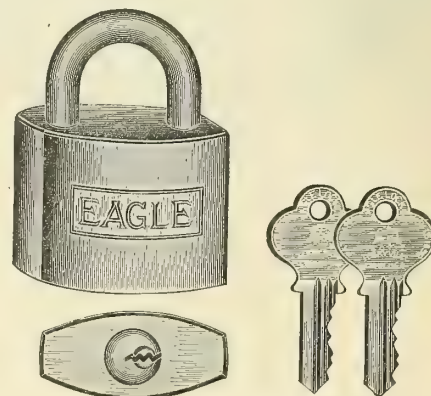
No. 131C 2 inches diameter, with brass chain, 9 inches long, dozen..... 10.00

Above padlocks can be furnished keyed alike.

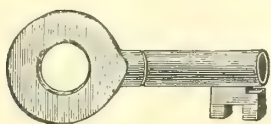
Eagle—All Brass

Solid extruded metal case. Self-locking spring shackle. Pin tumbler mechanism. Two embossed, gold-plated, corrugated German silver keys each. No two locks alike. Can be master keyed to an unlimited number of changes without affecting the security of the locks.

Number	Size Inches	Dozen
04279	1	\$20.00
04280	1 3/8	22.50
04281	1 1/2	25.00
04282	1 3/4	27.50
04283	2	30.00
04285	2 1/2	35.00

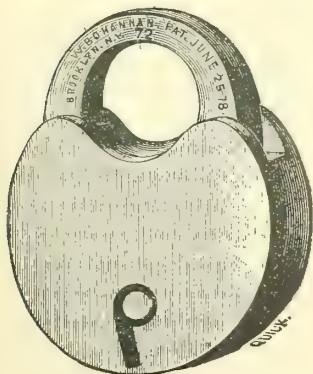


Half size Cut of No. 04283—2-inch size



Padlocks

Bohannon
Full Size Cuts



No. 72

Cast Brass Base and Shackle, Self-locking Spring Shackle

Number.....	A	0	1	70	71	72	73	74	80
Diameter, inches.....	1	3/4	5/8	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4
Changes.....	48	.....	.....	48	48	96	144	144	240
Per dozen.....	\$3.80	3.55	3.45	4.30	5.00	7.25	8.25	9.50	11.25

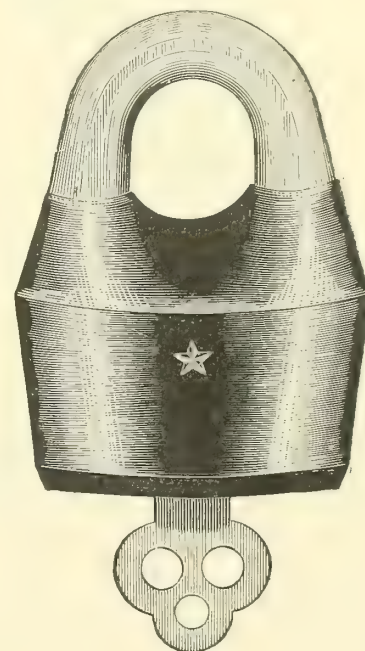
Scandinavian

Malleable iron, 2 flat steel keys to each lock, all different in a dozen.

No. 226	2 1/2 inches, dozen.....	\$10.00
No. 0226	2 1/2 inches. Wide shackle. Dozen.....	11.00
No. 227	3 inches, dozen.....	13.00
No. 228	3 1/2 inches, dozen.....	16.00

With Chain

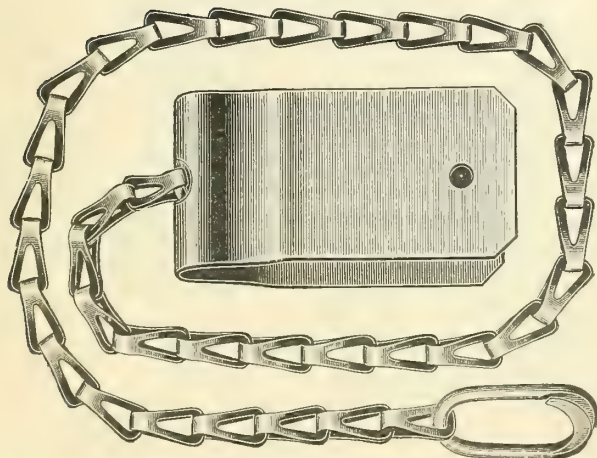
No. 226 1/2	2 1/2 inches, dozen.....	\$11.50
No. 227 1/2	3 inches, dozen.....	14.50



No. 226

Mat Guard

Half Size Cut



For attaching to mats, runners, rugs, etc.
The plate is riveted to the article and the eye
on end of chain is fastened with padlock to
a staple in the wall or on the floor.

Mat Guard, coppered iron, dozen.....\$3.50

Phone Padlocks

For locking the receiver to the
phone. Will avoid tampering
and unauthorized telephone calls.

"Phone Lock." Dozen...\$9.00



Padlocks

Yale

Full Size Cuts



No. 813

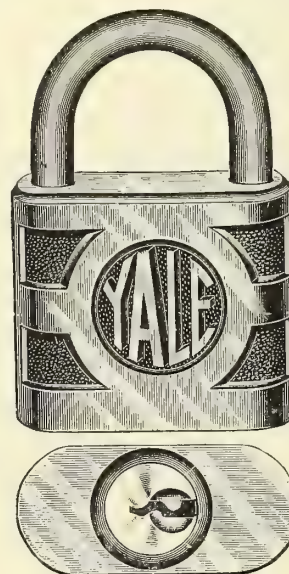
Master Keying: In one set not exceeding 4000 all different with a master key to pass all locks; or a somewhat less quantity may be divided into sets, with master key to pass the locks in each set and a grand master key to pass all the locks. This applies to all except No. 830, which can only be master keyed up to 350 sets.

Cast Bronze Case, Steel Shackle. Self-locking Spring Shackle

5 Pin Tumblers, Practically Unlimited Changes

Number.....	830	840	850	870
Size, inches.....	1½	1¾	2	2½
Per dozen.....	\$28.80	35.75	43.70	65.50

Prices for master keyed locks on application



No. 830



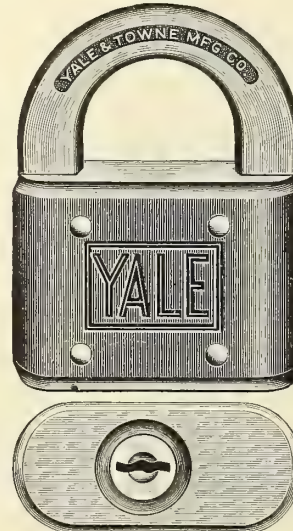
No. 743S

Steel Case and Shackle, Self-locking Spring Shackle

No. 743S	1½ inches, 36 changes, dozen.....	\$19.85
No. 745S	2 inches, 144 changes, dozen.....	21.85

No. 745S can be master keyed as follows:

In 60 sets of 6 to 14 locks each, each set having its own master key but cannot be grand master keyed. Prices on application.



No. 8434

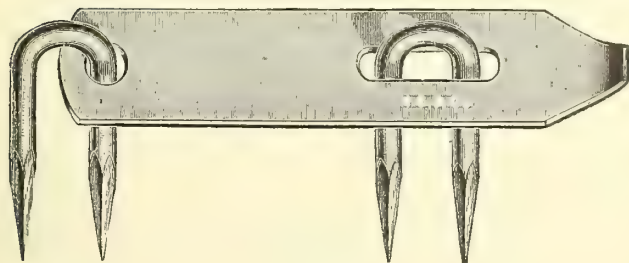
Steel Case and Shackle, Self-locking Spring Shackle

No. 8434	1½ inches, 48 changes, dozen.....	\$16.90
No. 8454	2 inches, 144 changes, dozen.....	20.85

With Chain 9 Inches Long

No. 8434½	Same as above, but with chain, dozen.....	\$19.90
No. 8454½	Same as above, but with chain, dozen.....	23.85

Wrought Steel Hasps and Staples



No. 106

No. 106

Price complete with two staples.

Length is measured over all.

4 inches, dozen.....	\$.84
5 inches, dozen.....	.90
6 inches, dozen.....	1.00
8 inches, dozen.....	1.30

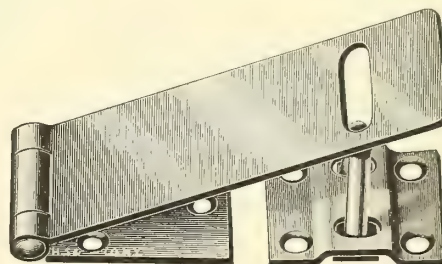
Wrought Steel Hinge Hasps



No. 912

Size, length of strap, inches..	3	4½	6	8	10
Width at joint, inches.....	1⅞	1⅞	1½	1⅞	2⅜
Size screw number.....	6	7	9	10	10
No. 912 Plain steel, dozen..	\$.50	.60	.80	1.05	1.50
No. 1308 Galvanized, dozen.	.75	1.00	1.35	1.80	2.70

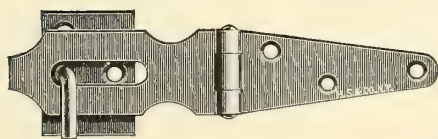
Safety



No. 915

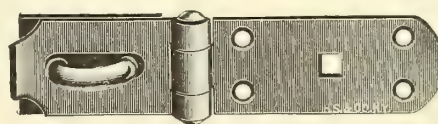
Size, length of strap, inches.....	3	4½	6
No. 915 Bright, without screws, dozen...	\$.90	1.20	1.70
No. 1310 Galvanized, with screws, dozen	1.80	2.25	3.50

Crate



No. 920 Length of strap 3 inches, width at joint 1⅞ inches, dozen..... \$.40

Extra Heavy

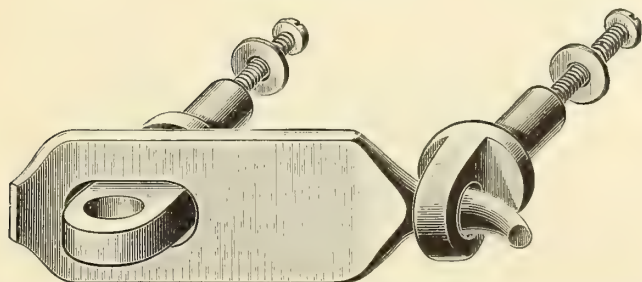


Wrought steel, extreme length 7½ inches, width 1¾ inches, thickness ⅞ inch.

No. 941J Japanned, with screws, dozen..... \$7.75
No. 941G Galvanized, brass pin, with screws, dozen..... 10.00

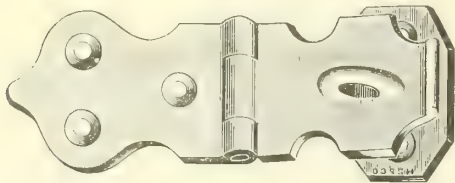
Bronze Hinge Hasps

Half Size Cut

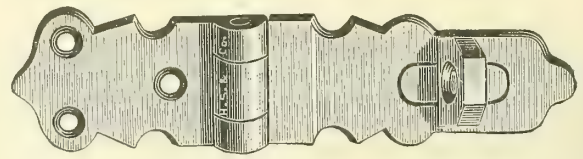


No. 870P 5⅞ inches full length. Cast bronze, polished, with machine screws, dozen..... \$17.80

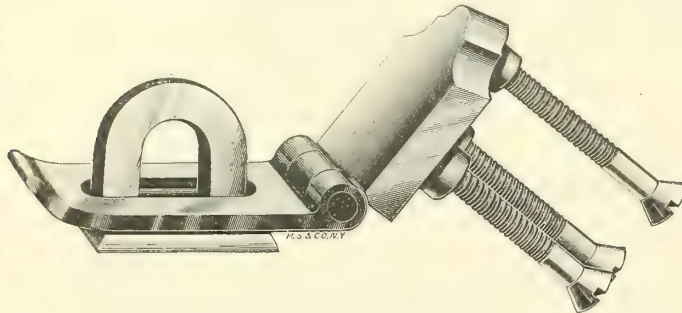
Brass and Bronze Hinge Hasps



No. 4 Cast brass, polished, 5 inches full length, stationary staple, dozen \$6.00



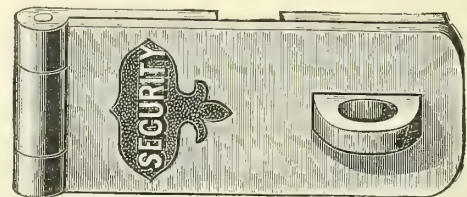
No. 2 Cast brass, polished, 5 1/2 inches full length, swivel staple, dozen \$7.30



Complete, with screws

No. P1704 Cast bronze, polished, 1 1/4 x 2 1/4 inches, each. \$1.35
No. P1704 Cast bronze, polished, 1 3/4 x 3 inches, each. 1.65

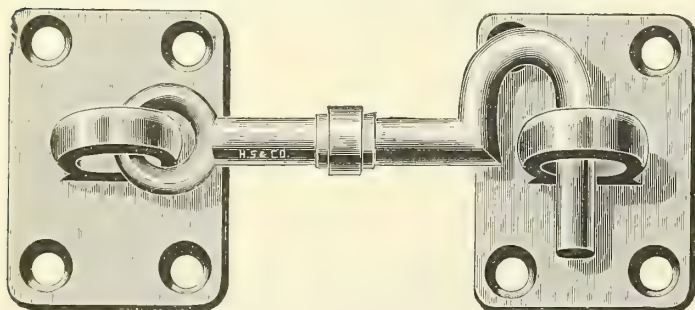
Bronze Hinge Hasps



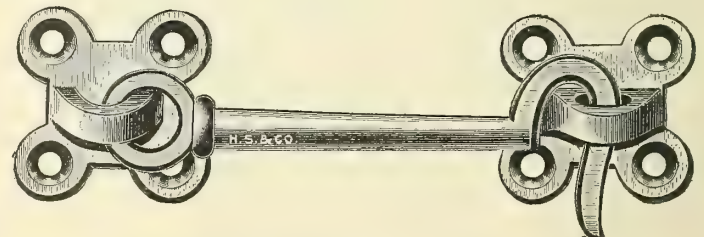
"Security"

No. 8705 Cast brass, polished, heavy, for store doors, 4 1/2 inches full length, dozen \$13.40

Cabin Door Hooks



Cast Brass, Polished. Wrought Plates, with Screws

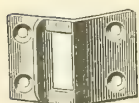


Cast Bronze, Polished. Heavy

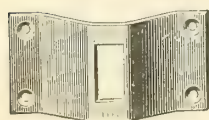
No. 762 3 inches, light, dozen \$3.20
No. 773 2 1/2 inches, heavy, dozen 4.00
No. 773 4 inches, heavy, dozen 4.80
No. 773 6 inches, heavy, dozen 7.50

No. 674 4 inches, with screws, dozen \$9.80
No. 676 6 inches, with screws, dozen 11.90
No. 678 8 inches, with screws, dozen 14.70

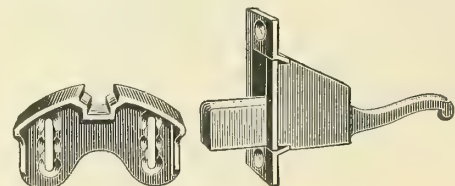
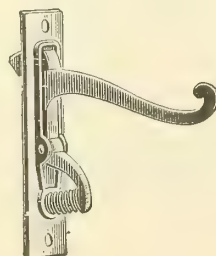
Outside Gate Latches



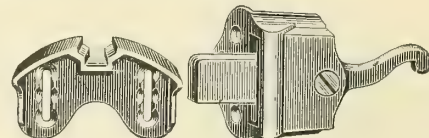
Strike for No. 1



Strike for No. 3



No. 8



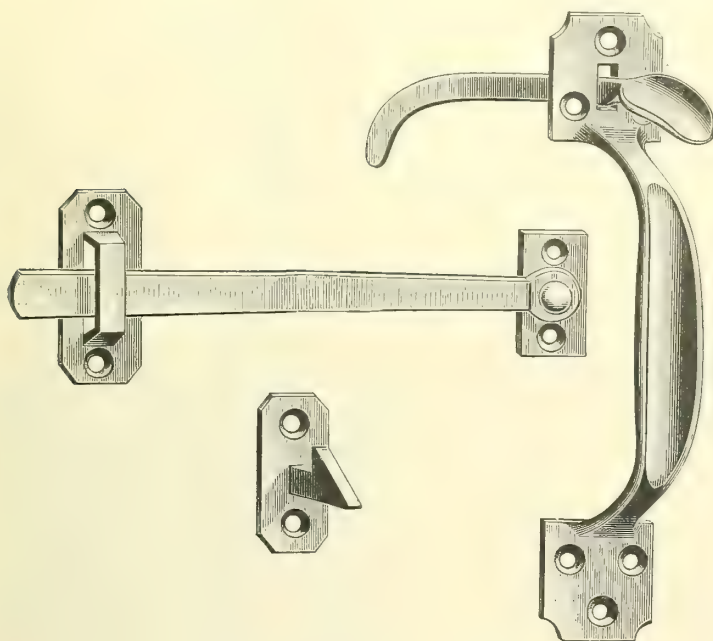
No. 9

To swing gate both ways.

No. 1 Riveted Latch; to swing one way, per dozen \$1.30
No. 3 Riveted Latch; to swing both ways, per dozen 1.60

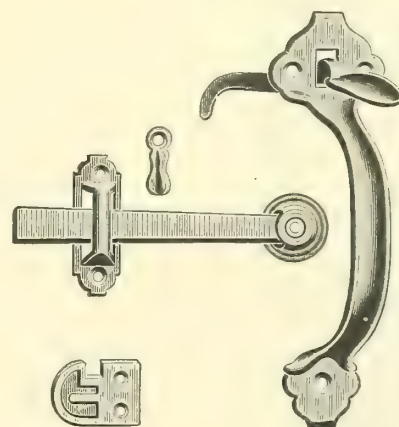
No. 8 Mortise, per dozen \$1.65
No. 9 Surface, per dozen 2.00

Thumb Latches



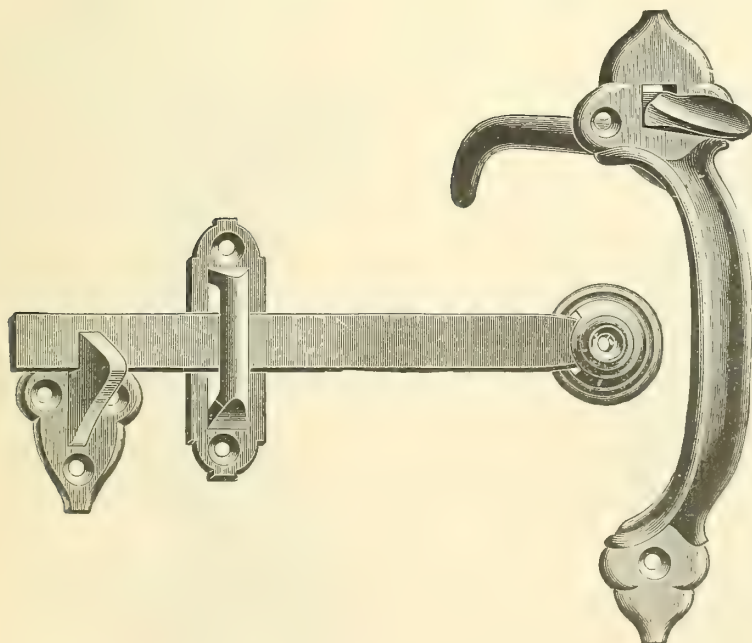
Length of handle $6\frac{1}{2}$ inches

No. OB484 Cast brass, old brass finish, dozen..... \$19.20



Length of handle $7\frac{1}{8}$ inches

No. 3 Cast iron japanned handle, wrought iron japanned latch, dozen..... \$1.30



Length of handle 10 inches

No. 5 Cast iron japanned handle, wrought iron latch, dozen.... \$2.52

All Wrought Iron, Extra Heavy

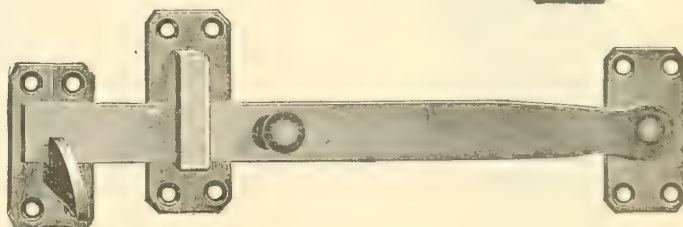
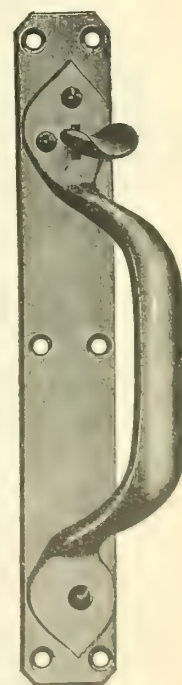
In ordering, state thickness of door, so that correct size thumb-piece can be supplied; also in ordering latches with offset handles, the hand must be specified.

No. 20

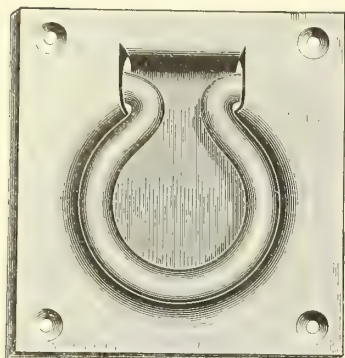
Plate, $11\frac{1}{2} \times 2 \times \frac{3}{16}$ inches. Latch, $12\frac{1}{2} \times 1\frac{1}{4} \times \frac{5}{16}$ inches

Per Dozen Sets, with Screws

Japanned	\$51.00
Japanned, with offset handle.....	55.00
Galvanized	57.00
Galvanized, with offset handle	63.00

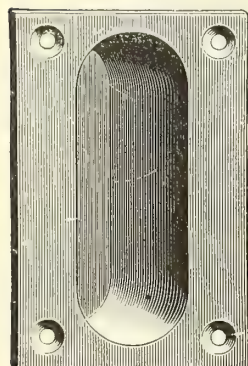


Flush Trap Door Rings



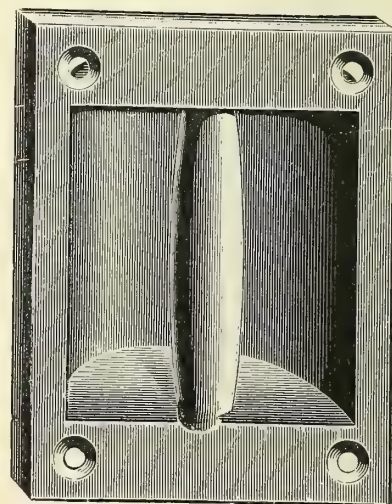
Wrought steel. Size of plate $3\frac{3}{8} \times 3\frac{5}{8}$ inches.
 No. 2001 Japanned, dozen..... \$1.85
 No. YT2001 Bronze plated, bright finish, unpolished, with
 screws, dozen..... 2.50

Flush Barn Door Pulls



No. 500

No. 500 $2\frac{1}{2} \times 3\frac{3}{4}$ inches, cast iron, japanned, dozen... \$.80
 No. 1400 $3\frac{1}{2} \times 4\frac{5}{8}$ inches, cast iron, japanned, dozen.. 5.00



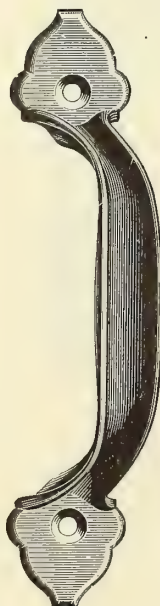
No. 1400

Door Pulls



Extra Heavy

No. 1417 Length
 $9\frac{1}{2}$ inches, cast
 iron, japanned,
 dozen.... \$3.60



No. 502 Length 6 inches,
 cast iron, japanned,
 dozen..... \$.50



Heavy

No. 504 Length $6\frac{1}{8}$ inches, cast iron,
 japanned, dozen..... \$.90
 No. 505 Length $6\frac{1}{8}$ inches, cast iron,
 galvanized, dozen..... 1.60

Door Pulls



No. 550 Length 3½ inches, cast bronze, polished, dozen..... \$1.80



No. 1137 Length 3½ inches, cast bronze, polished, dozen..... \$2.25
No. OB1137 Length 3½ inches, cast brass, old brass finish, dozen.... 2.25



No. 2145½ Length 5 inches, wrought steel, bronze plated, gross..... \$5.60
No. AC2145½ Length 5 inches, wrought steel, antique copper finish, gross..... 5.60
No. OB2145 Length 5 inches, wrought brass, old brass finish, gross..... 9.10



No. 1 Length 4¾ inches, cast brass, polished, dozen..... \$.83
No. P1144 Length 4¾ inches, cast bronze, polished, dozen..... 1.80
No. P1145 Length 6 inches, cast bronze, polished, dozen..... 2.80



No. 2 Length 6 inches, cast brass, polished, dozen..... \$2.70
No. 3 Length 6½ inches, cast brass, polished, dozen..... 3.30



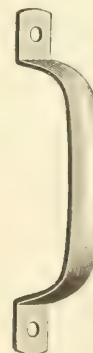
No. 510 Length 5⅞ inches, cast bronze, polished, dozen..... \$8.35
No. BY65-510 Length 5⅞ inches, cast bronze, statuary bronze finish, dozen..... 9.35



No. 12250 Length 4¼ inches, cast bronze, polished, dozen..... \$2.60
No. N12250 Length 4¼ inches, cast bronze, nickel-plated, dozen..... 2.60
No. 5 Length 5¾ inches, cast brass, polished, dozen..... 4.80
No. P01155 Length 5¾ inches, cast bronze, polished, dozen..... 5.60
No. OB01155 Length 5¾ inches, cast brass, old brass finish, dozen. 5.60

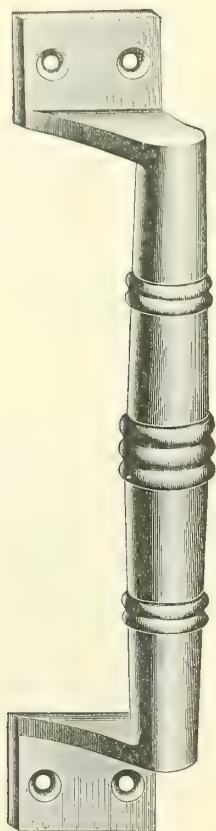


No. 6075½ Length 4½ inches, cast bronze, polished, dozen..... \$3.00

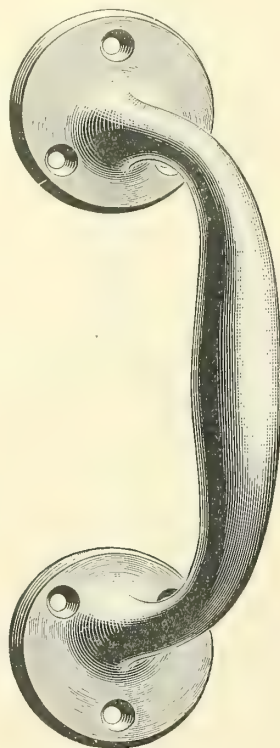


No. DA2400 Length 3⅝ inches, wrought steel, antique copper finish, gross..... \$4.80
No. 2700 Length 3⅝ inches, wrought brass, natural color, gross..... 7.30

Door Pulls

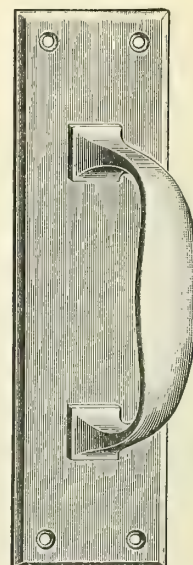


No. P1160 Length 8¼ inches; cast bronze, polished, dozen \$17.50



No. 1535 Length 7½ inches, cast bronze, polished, dozen \$15.40

No. OB1535 Length 7½ inches, cast brass, old brass finish, dozen 16.90



No. 2209 2½ x 9 inches; plate, wrought bronze, polished; grip, cast bronze, polished, dozen \$22.41



No. 298

Plate 2¾ x 10 inches, with 5½ inch grip

No. 8362 Cast bronze grip, wrought bronze plate, polished, dozen \$18.05

No. 8362-2 Cast bronze grip, wrought bronze plate, statuary bronze finish, dozen 20.45

No. 8362-K Cast brass grip, wrought brass plate, old brass finish, dozen 20.45

No. 8362-O Cast bronze grip, wrought bronze plate, antique copper finish, dozen 20.45

Plate 3 x 12 inches with 5¾ inch grip

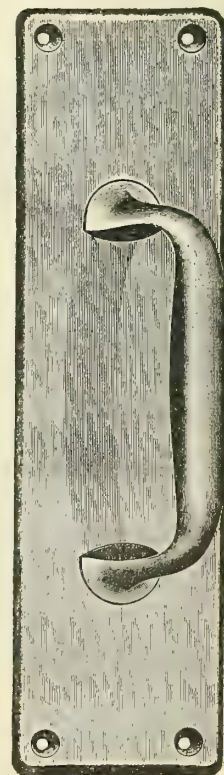
No. 298 Grip and plate, cast bronze, polished, dozen 50.40

Plate 3 x 12 inches, with 7⅞ inch grip

No. 8363 Cast bronze grip, wrought bronze plate, polished, dozen 30.40

No. 8363-2 Cast bronze grip, wrought bronze plate, statuary bronze finish, dozen 33.60

No. 8363K Cast brass grip, wrought brass plate, old brass finish, dozen 33.60



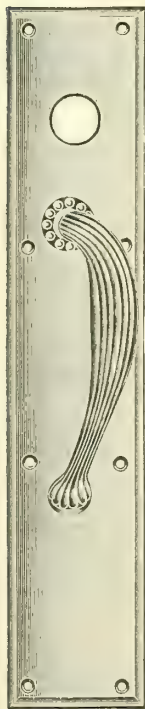
Nos. 8362 and 8363

SINCE
1848

HAMMACHER SCHLEMMER & Co.

NEW
YORK

Door Pulls



No. 735PX2830P $3\frac{1}{2}$ x 18 inches;
wrought bronze plate, polished;
cast bronze grip, polished; with
hole cut for cylinder, each. \$6.40
With dummy cylinder, each. 7.20



No. KA97486 $3\frac{1}{4}$ x $16\frac{1}{2}$ inches, cast
brass plate and grip, old brass
finish, each. \$6.93

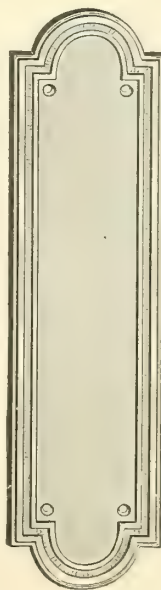


No. A3B1892AD $3\frac{3}{8}$ x 15 inches, cast
bronze plate and grip, statuary
bronze finish, each. \$6.40

Push Plates



No. 2325 $\frac{1}{2}$ $3\frac{1}{2}$ x 18 inches, wrought
bronze, polished plate, each. \$2.08
With hole for cylinder, add.60
With dummy cylinder, add.90



No. KA97490 $3\frac{1}{4}$ x $16\frac{1}{2}$ inches, cast
brass plate, old brass finish, each. \$4.98

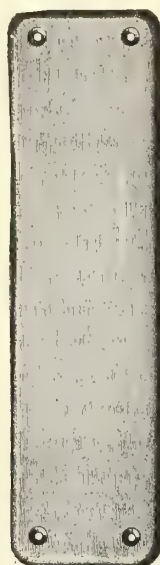


No. A3B892AD $3\frac{3}{8}$ x 15 inches, cast
bronze plate, statuary bronze
finish, each. \$4.80

Push Plates



No. 3 3 x 12 inches, cast bronze, polished, dozen..... \$24.00

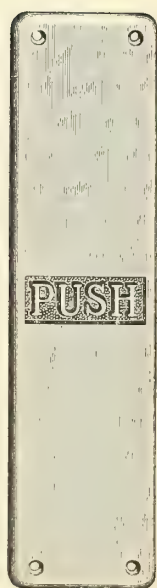


2 3/4 x 10 Inches

- | | |
|--|--------|
| No. Y392 M.R. Steel, bronze plated, dozen..... | \$3.70 |
| No. A.B.392 Steel, antique copper finish, dozen..... | 3.85 |
| No. 4000 3/4 Wrought bronze, polished, dozen..... | 6.00 |
| No. 4000 3/4 K Wrought brass, old brass finish, dozen..... | 7.20 |
| No. 4000 3/4 -2 Wrought bronze, statuary bronze finish, dozen..... | 7.20 |
| No. 4000 3/4 O Wrought bronze, antique copper finish, dozen..... | 7.20 |

3 x 12 Inches

- | | |
|--|------|
| No. 4001 3/4 Wrought bronze, polished, dozen..... | 8.40 |
| No. 4001 3/4 K Wrought brass, old brass finish, dozen..... | 9.60 |
| No. 4001 3/4 -2 Wrought bronze, statuary bronze finish, dozen..... | 9.60 |



No. 2333 3 x 12 inches, cast bronze, polished, dozen..... \$27.00



No. 1 2 1/2 x 8 inches, wrought bronze, polished, dozen..... \$5.76

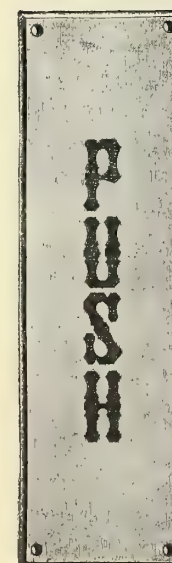


Polished Clear Glass

- | | |
|--------------------------------------|--------|
| No. 14 3 x 12 inches, dozen..... | \$8.00 |
| No. 15 3 1/2 x 18 inches, dozen..... | 15.00 |

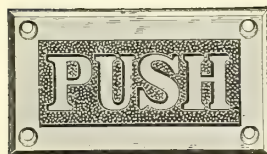
Polished White Porcelain

- | | |
|----------------------------------|-------|
| No. 16 3 x 12 inches, dozen..... | 12.00 |
|----------------------------------|-------|

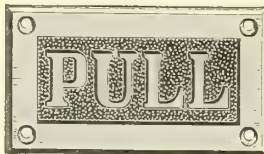


- | | |
|--------------------------------------|---------|
| No. 841 Push, 2 1/2 x 10 1/2 inches. | |
| No. 851 Pull, 2 1/2 x 10 1/2 inches. | |
| wrought bronze, polished, dozen..... | \$20.20 |

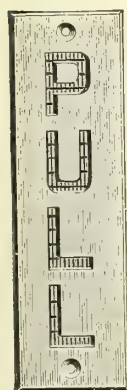
Push Plates



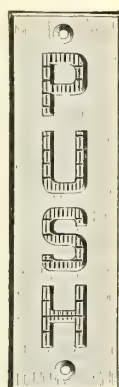
No. 9341 $2\frac{1}{4}$ x 4 inches, cast bronze,
polished, each..... \$.70



No. 9341 $\frac{1}{2}$ $2\frac{1}{4}$ x 4 inches, cast bronze,
polished, each..... \$.70



No. 846 Push, $1\frac{1}{4}$ x 4 inches.



No. 856 Pull, $1\frac{1}{4}$ x 4 inches.

Cast bronze, polished, dozen.....\$5.00

$2\frac{1}{8}$ x 7 Inches

No. 11 Push, iron, enameled white,
blue letters.

No. 11 $\frac{1}{2}$ Pull, iron, enameled white,
blue letters.

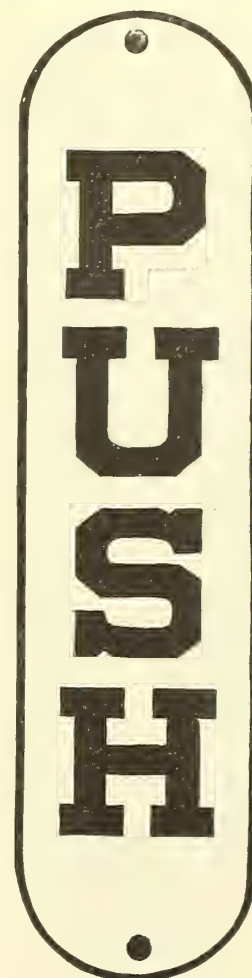
Dozen..... \$6.40

$2\frac{1}{2}$ x 10 Inches

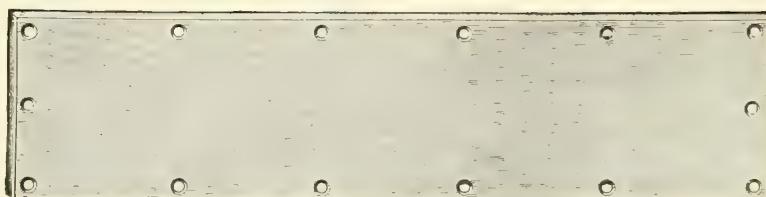
No. 12 Push, iron, enameled white,
blue letters.

No. 12 $\frac{1}{2}$ Pull, iron, enameled white,
blue letters.

Dozen..... \$8.00



Kick Plates



Made of polished bronze sheet metal. Top edge and two side edges beveled.
Thickness, 14 gauge, B. & S. Price each, including Oval Head Screws:

Length, inches.....	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Width 6 inches.....	\$2.16	2.40	2.64	2.88	3.12	3.36	3.60	3.84	4.08	4.32	4.56	4.80	5.04	5.28	5.52	5.76
Width 7 inches.....	2.52	2.80	3.08	3.36	3.64	3.92	4.20	4.48	4.76	5.04	5.32	5.60	5.88	6.16	6.44	6.72
Width 8 inches.....	2.88	3.20	3.52	3.84	4.16	4.48	4.80	5.12	5.44	5.76	6.08	6.40	6.72	7.04	7.36	7.68
Width 9 inches.....	3.24	3.60	3.96	4.32	4.68	5.04	5.40	5.76	6.12	6.48	6.84	7.20	7.56	7.92	8.28	8.64
Width 10 inches....	3.60	4.00	4.40	4.80	5.20	5.60	6.00	6.40	6.80	7.20	7.60	8.00	8.40	8.80	9.20	9.60
Width 11 inches....	3.96	4.40	4.84	5.28	5.72	6.16	6.60	7.04	7.48	7.92	8.36	8.80	9.24	9.68	10.12	10.56
Width 12 inches....	4.32	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16	8.64	9.12	9.60	10.08	10.56	11.04	11.52
Width 14 inches....	5.44	6.04	6.65	7.25	7.86	8.46	9.07	9.67	10.28	10.88	11.49	12.09	12.70	13.30	13.91	14.51
Width 16 inches....	6.68	7.42	8.16	8.90	9.64	10.38	11.13	11.87	12.61	13.35	14.10	14.84	15.58	16.32	17.07	17.81
Width 18 inches....	8.03	8.92	9.82	10.71	11.60	12.49	13.39	14.28	15.17	16.07	16.96	17.85	18.74	19.64	20.53	21.42

Intermediate sizes not listed take price of next larger size.

List for Other Finishes

For polished brass deduct 10 per cent from list prices.

For dull brass, antique copper, antique brass, statuary bronze, or nickel finish, add 25 per cent. to list prices.

For sand blast finish in antique copper or antique brass or dead black add 33 $\frac{1}{3}$ per cent. to list prices.

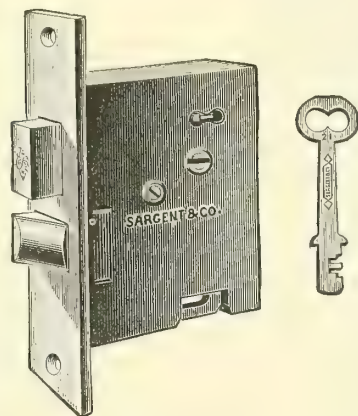
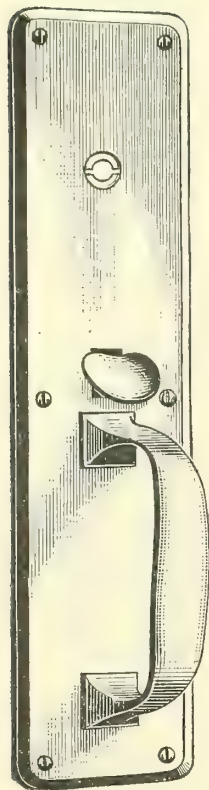
For verde antique finish add 40 per cent to list prices.

Genuine Bower-Barff finish on steel, same price as polished bronze.

We carry in stock 8 x 28, 8 x 30 and 8 x 32 inches, polished bronze. Other sizes and finishes to order.

Store Door Lock Sets

Third Size Cuts



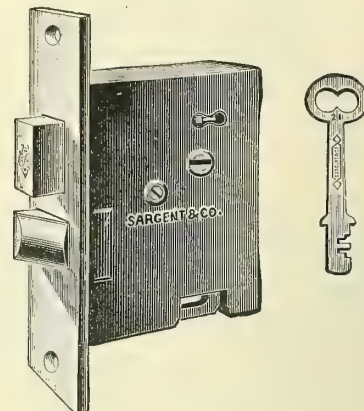
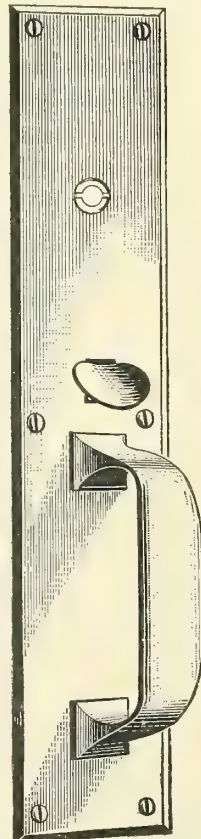
Lock No. AB403, reversible.

Japanned case, $4\frac{1}{4} \times 3 \times \frac{3}{4}$ inches; back-set, face to key hole, $2\frac{3}{16}$ inches; front, $1\frac{1}{8} \times 6\frac{3}{8}$ inches; 4 tumblers, 48 changes.

Plate 3×12 inches.

Set No. Y7403SB Wrought steel, bronze plated, with Lock No. 403, cast iron face bronze plated, set \$4.30

Set No. AB7403SB Wrought steel, bronze plated, with Lock No. AB403, cast iron face, antique copper, set. 4.60

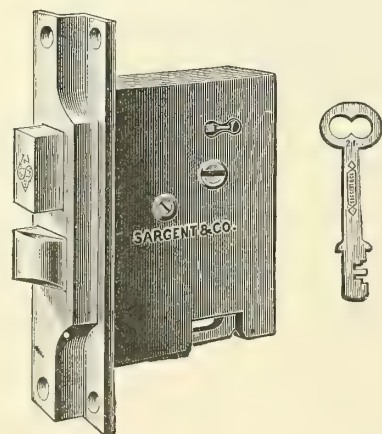
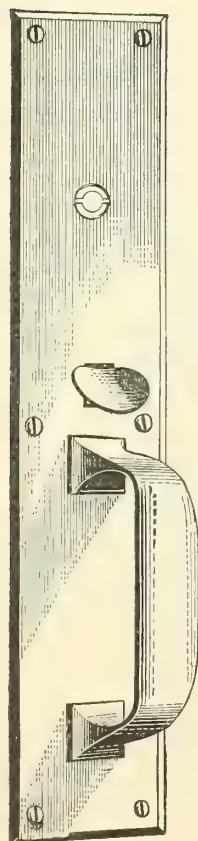


Lock No. 803P, reversible.

Japanned case, $4\frac{1}{4} \times 3 \times \frac{3}{4}$ inches; back-set, face to key hole, $2\frac{3}{16}$ inches; front, $1\frac{1}{8} \times 6\frac{3}{8}$ inches; 4 tumblers, 48 changes.

Plate $2\frac{3}{4} \times 14$ inches.

Set No. 6803P Wrought bronze, polished, with Lock No. 803P, cast bronze, polished face, set. \$8.50

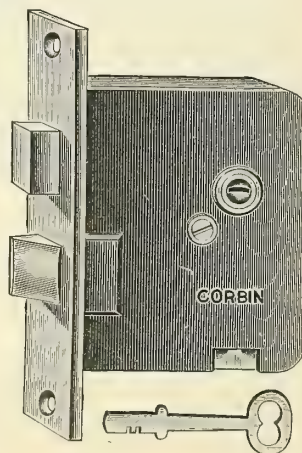


Lock No. 809P, not reversible, state hand desired.

Japanned case, $4\frac{1}{4} \times 3 \times \frac{3}{4}$ inches; back-set, face to key hole, $1\frac{11}{16}$ and $2\frac{3}{16}$ inches; front, $1\frac{1}{4} \times 6\frac{1}{2}$ inches; 4 tumblers, 48 changes.

Plate $2\frac{3}{4} \times 14$ inches.

Set No. 6809P Wrought bronze, polished, with Lock No. 809P, cast bronze, polished face, set. \$10.30



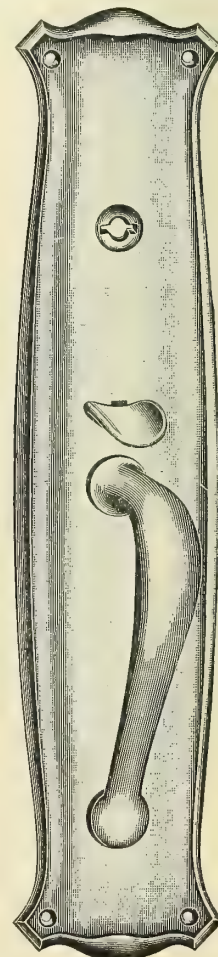
Lock No. 0186 $\frac{1}{2}$, reversible.

Japanned case, $4\frac{1}{2} \times 3\frac{3}{4} \times \frac{11}{16}$ inches; backset, face to keyhole, $2\frac{3}{4}$ inches; front, $1 \times 6\frac{1}{2}$ inches; 4 tumblers, 36 changes.

Plate $3\frac{1}{4} \times 15$ inches.

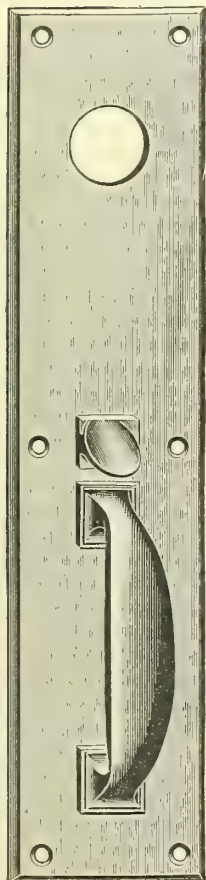
Set No. 721-952 Wrought bronze, polished, with Lock No. 0186 $\frac{1}{2}$, cast bronze, polished face, set. . . \$ 9.75

Set No. DA721-952 Wrought brass, old brass finish, with Lock No. DA0186 $\frac{1}{2}$, cast brass, old brass finish face, set. 10.50



Store Door Lock Sets

One-third Size Cuts

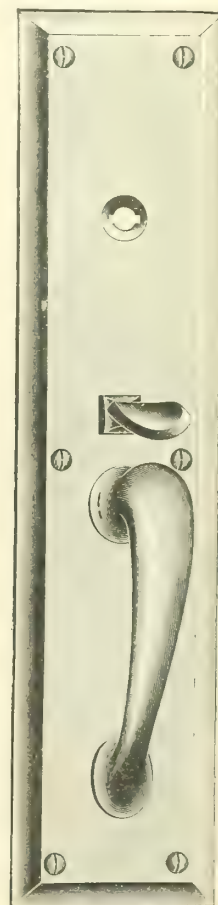
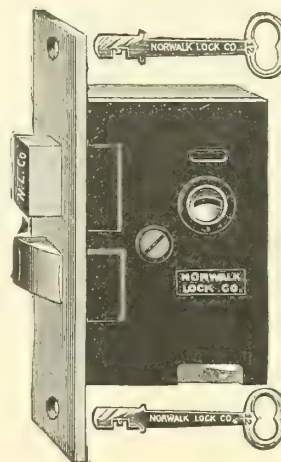


Lock No. 3551, reversible.

Japanned case, $5\frac{1}{8} \times 3 \times 1$ inches; back-set, $2\frac{1}{4}$ inches; front, $1\frac{3}{8} \times 7\frac{3}{8}$ inches; 5 pin tumblers; changes practically unlimited.

Plate $3 \times 13\frac{1}{2}$ inches.

Set No. 3551 Cast bronze, polished, with Lock No. 3551, cast bronze, polished face, set..... \$12.00

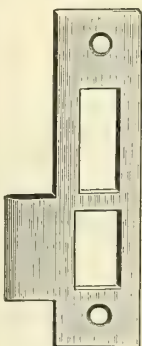
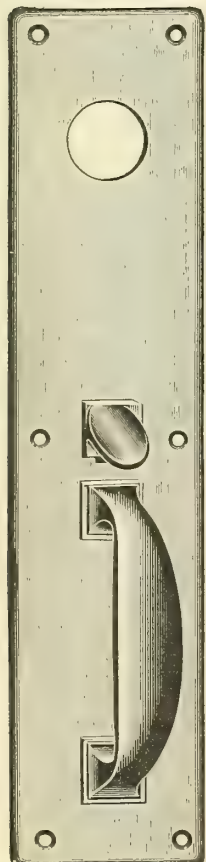
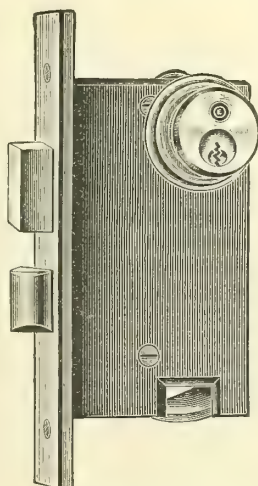


Lock No. 453, reversible.

Japanned case, $4\frac{1}{2} \times 3\frac{1}{4} \times \frac{11}{16}$ inches; backset, $2\frac{3}{8}$ inches; front, $6\frac{7}{8} \times 1\frac{3}{16}$ inches; 3 tumblers; 24 changes.

Plate $3\frac{1}{4} \times 14$ inches.

Set No. 8152 Wrought bronze, polished, with Lock No. 453, cast bronze, polished face, set..... \$6.50

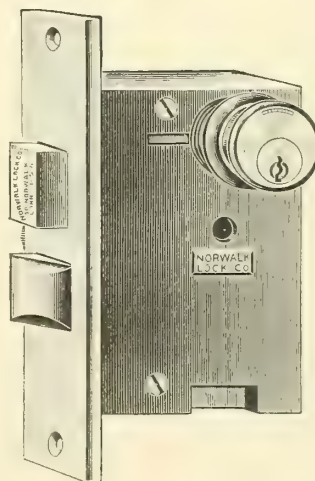


Lock No. 3552, reversible.

Japanned case, $5\frac{1}{8} \times 3 \times 1$ inches; back-set, $2\frac{1}{4}$ inches; front, $1\frac{3}{8} \times 7\frac{3}{8}$ inches; 5 pin tumblers; changes practically unlimited.

Plate $3 \times 13\frac{1}{2}$ inches.

Set No. 3552 Wrought bronze, polished, with Lock No. 3552, cast bronze, polished face, set..... \$10.66

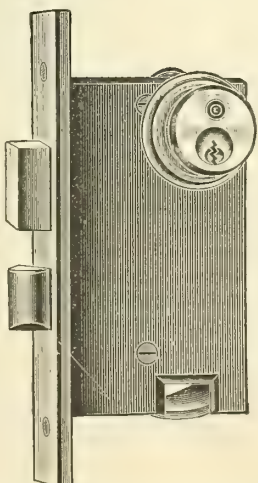


Lock No. 700 $\frac{1}{8}$, reversible.

Japanned case, $5 \times 4 \times 1\frac{1}{16}$ inches; back-set, $2\frac{3}{4}$ inches; front, $1\frac{3}{16} \times 7\frac{3}{8}$ inches; 5 pin tumblers; changes practically unlimited.

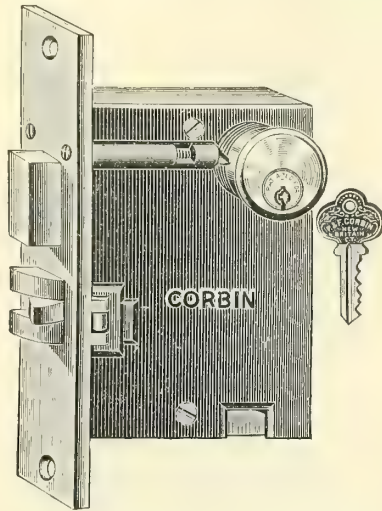
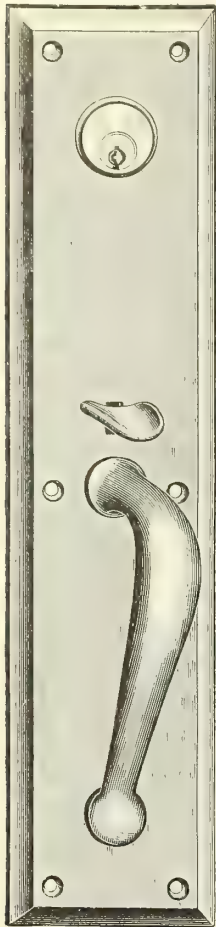
Plate $3\frac{1}{2} \times 16$ inches.

Set No. 8140 Cast bronze, polished, with Lock No. 700 $\frac{1}{8}$, cast bronze, polished face, set..... \$14.55



Store Door Lock Sets

One-third Size Cuts

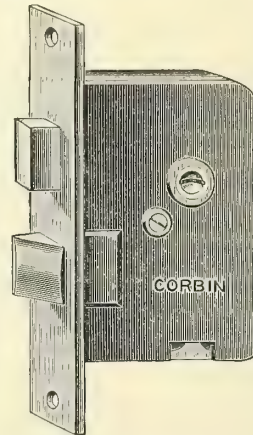


Lock No. DA0288, reversible.

Japanned case $5 \times 3\frac{3}{4} \times 1$ inches;
backset $2\frac{3}{4}$ inches; front $1\frac{5}{16} \times 7\frac{3}{8}$
inches; 5 pin tumblers; changes practically
unlimited.

Plate $3\frac{1}{8} \times 14\frac{1}{8}$ inches.

Set No. DA720-991 Wrought
brass, old brass finish, with
Lock No. DA0288, cast brass,
old brass finish face, set. \$17.25

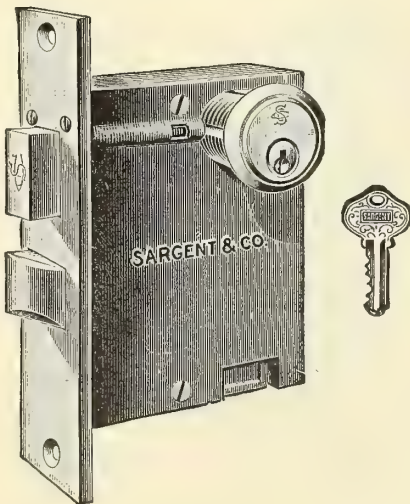
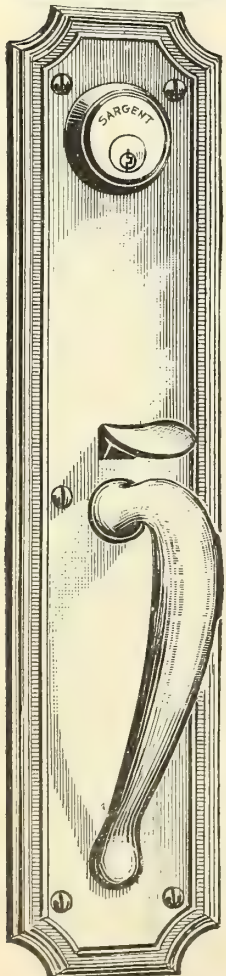
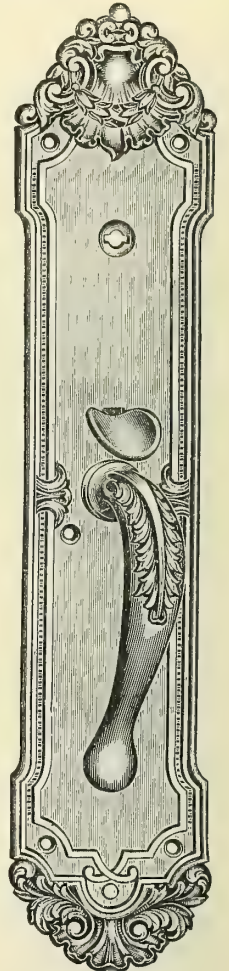


Lock No. R0386 $\frac{1}{4}$, reversible.

Japanned case $4\frac{1}{2} \times 3 \times 1\frac{1}{16}$ inches;
backset 2 inches; front $1 \times 6\frac{1}{2}$ inches;
4 tumblers; 36 changes.

Plate $3 \times 15\frac{1}{2}$ inches.

Set No. R652922
Cast iron, antique
copper finish, with
Lock No. R0386-
 $\frac{1}{4}$, cast iron,
antique copper
finish face,
set. \$ 5.25

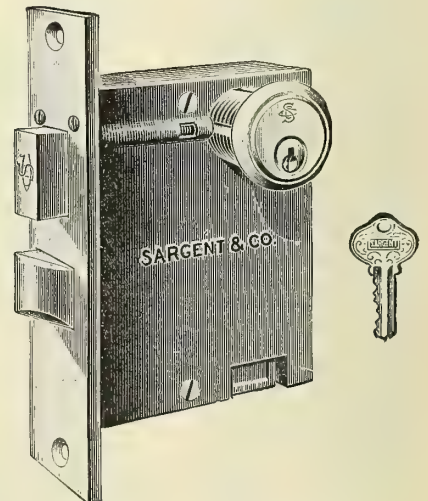
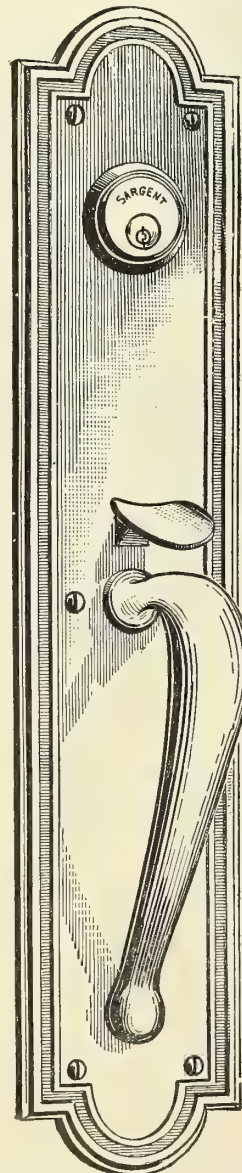


Lock No. 933P, reversible.

Japanned case $5\frac{1}{4} \times 3\frac{5}{8} \times 1\frac{1}{16}$ inches;
backset $2\frac{3}{4}$ inches; front $1\frac{3}{8} \times 7\frac{1}{2}$ inches;
5 pin tumblers; changes practically
unlimited.

Plate $3\frac{1}{2} \times 15$ inches.

Set No. R7D7933SE Antique
brass, depressed surface oxi-
dized black, and relieved with
edges of escutcheons buffed
to show bright brass, set. . . . \$22.80



Lock No. 933P, reversible.

Japanned case $5\frac{1}{4} \times 3\frac{5}{8} \times 1\frac{1}{16}$ inches;
backset $2\frac{3}{4}$ inches; front $1\frac{3}{8} \times 7\frac{1}{2}$ inches;
5 pin tumblers; changes practically
unlimited.

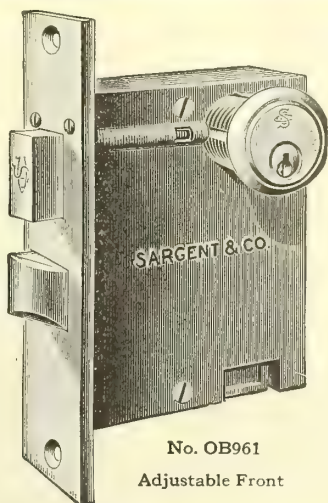
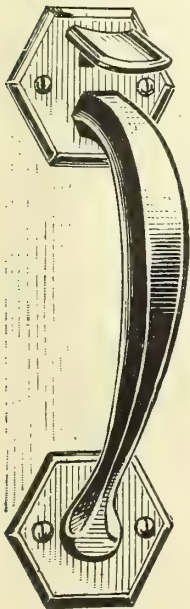
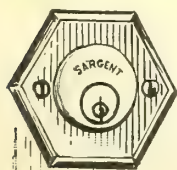
Plate $3\frac{1}{2} \times 18$ inches.

Set No. R7D9933BA Antique brass,
depressed surface oxidized
black, and relieved with edges
of escutcheons buffed to show
bright brass, set. \$22.80

SINCE
1848

HAMMACHER SCHLEMMER & Co.

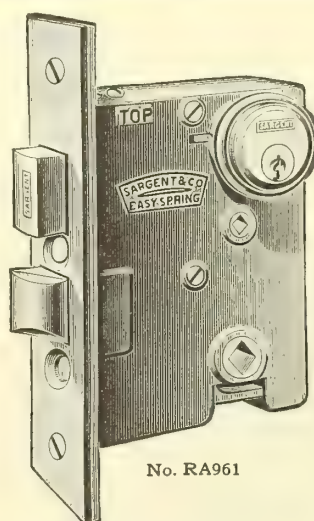
NEW
YORK



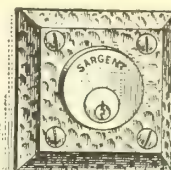
No. OB961
Adjustable Front

Dutch Door Lock Sets

One-third Size Cuts



No. RA961



Set No. OB2961xOB1622½ Model F.
Cast brass, old brass finish, with
Lock No. OB961, cast brass,
old brass finish face, set. \$19.00

Set No. RA4361xRA
1622½ Model F. Cast
bronze, statuary bronze
finish, set. \$20.00

These locks permit the use of a handle on the outside of the front or vestibule door, while the inside is trimmed with a knob and rose.

Both bolts are operated from the outside by the key. Dead bolt is operated from inside of thumb knob. Latch bolt is operated from outside by the store door handle thumb piece; from inside by knob. The outside thumb piece of the store door handle is set by the stop in face of lock.

Reversible.

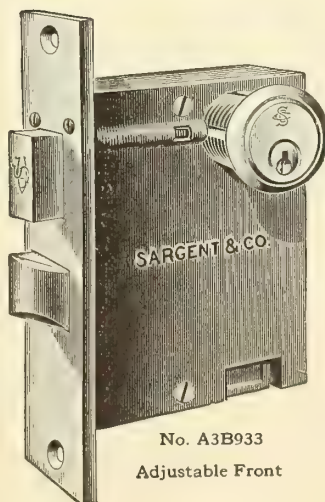
Japanned case, 5½ x 4 x 7⁄8 inches; backset, 2¾ inches; front, 1¼ x 7¾ inches; 5 pin tumblers; changes practically unlimited.

No. OB2961 x OB1622½, Handle size over all including cylinder, 2¾ x 14½ inches. Knob, 2¼ inches.

No. RA4361 x RA1622½, Handle size over all including cylinder, 2¾ x 14½ inches. Knob, 2¼ inches.

Store Door Lock Sets

One-third Size Cuts

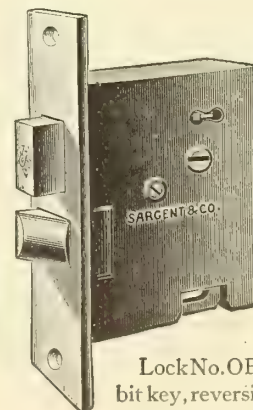


No. A3B933
Adjustable Front



Dutch Door Lock Sets

One-third Size Cut



Lock No. OB802, with bit key, reversible. Japanned case, 4 x 3¼ x 5⁄8 inches; backset 2⅞ inches; front, 1 x 5⁄8 inches; 1 tumbler; 50 changes.

Handle, size over all including key plate, 2¼ x 9½ inches.

Set No. OB2902DC Cast brass, old brass finish, with Lock No. OB802, cast brass, old brass finish face, set. \$10.60

Lock No. A3B933, reversible.

Japanned case, 5¼ x 3⅝ x 1⅛ inches; backset, 2¾ inches; front, 1⅝ x 7½ inches; 5 pin tumblers; changes practically unlimited.

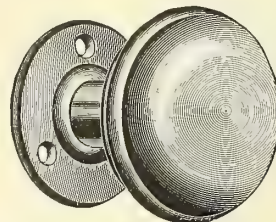
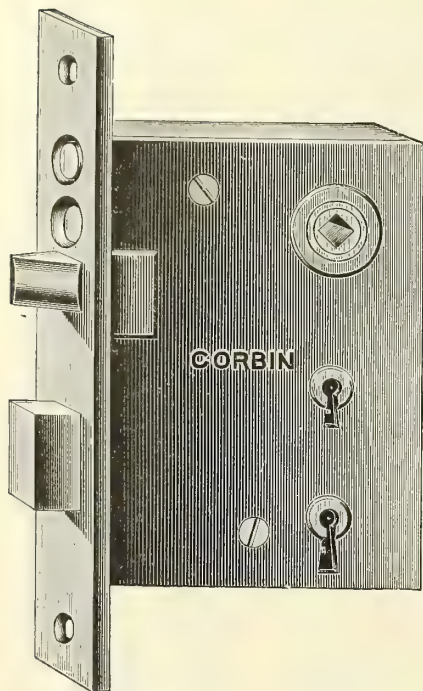
Plate 4⅜ x 21 inches.

Set No. A3B7933 GF. Cast bronze, statuary bronze finish, with Lock No. A3B933, cast bronze face, statuary bronze finish, set. \$32.90

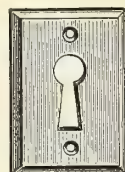
Front Door Lock Sets

Design Columbia

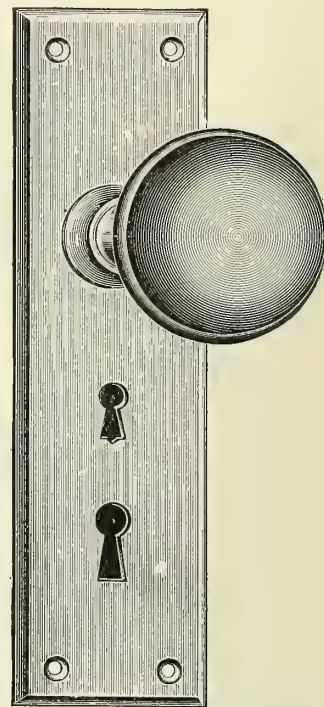
Half Size Cuts



Inside Knob No. 01583, 2 1/4 inches, with one rose. Wrought bronze, polished.



Inside Escutcheon No. 2596 1/2, 1 1/4 x 1 3/4 inches. Wrought bronze, polished.



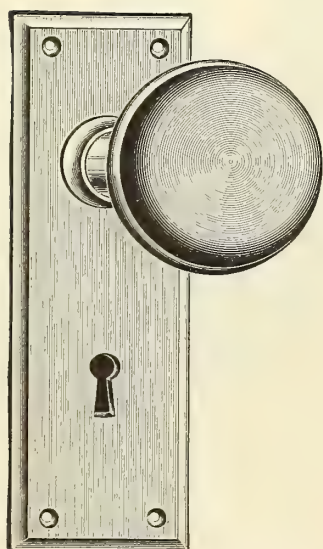
Outside Knob No. 01583, 2 1/4 inches. Escutcheon No. 2424, 2 x 7 inches. Wrought bronze, polished.

Lock No. 1230 1/4 B, reversible.
Case, 4 5/8 x 3 5/8 x 1 1/8 inches; front to center of hub, 2 5/8 inches; hub 5/16 inch for swivel spindle; cast bronze front 1 x 6 3/4 inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.

Lock No. 1230 1/4, each.....	\$2.70	Outside Escutcheon No. 2424, each.....	.40
Knobs No. 01583, with one rose, pair.....	.98	Inside Escutcheon No. 2596 1/2, dozen.....	.90
Set No. F100 Complete set for single door, dozen sets.... \$41.40			

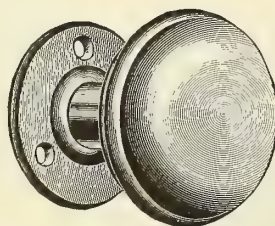
Vestibule Door Lock Sets

Design Columbia



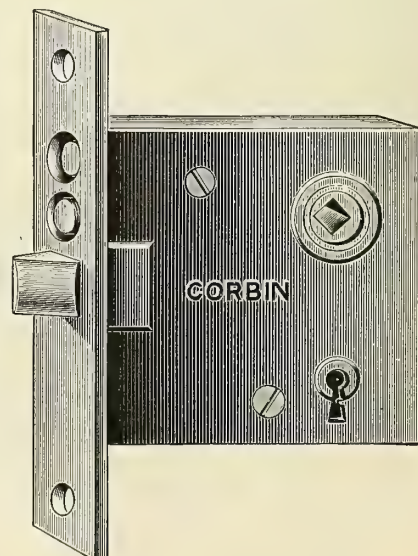
Outside Knob No. 01583, 2 1/4 inches. Wrought bronze, polished.

Outside Escutcheon No. 2422, 2 x 5 3/4 inches. Wrought bronze, polished.



Inside Knob No. 01583, 2 1/4 inches, with one rose. Wrought bronze, polished.

Lock No. 1220 1/4, each.....	\$2.25
Knobs No. 01583, with one rose, pair..	.98
Outside Escutcheon No. 2422, each..	.32
Inside Escutcheon, none.	
Set No. V150 Complete set for single door, dozen sets.....	36.00



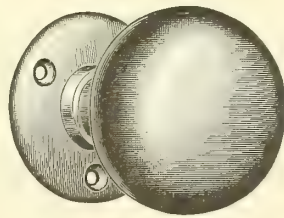
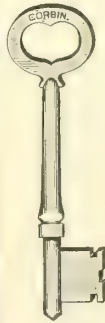
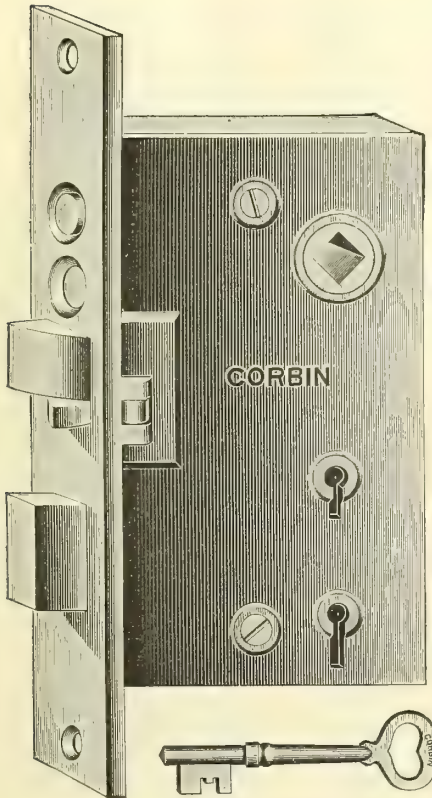
Lock No. 1220 1/4 B, reversible.
Case, 3 3/8 x 3 5/8 x 1 1/8 inches; front to center of hub, 2 5/8 inches; hub 5/16 inch for swivel spindle; cast bronze front, 1 x 5 1/2 inches; 1 tumbler, 16 changes.



Front Door Lock Sets

Design Columbia

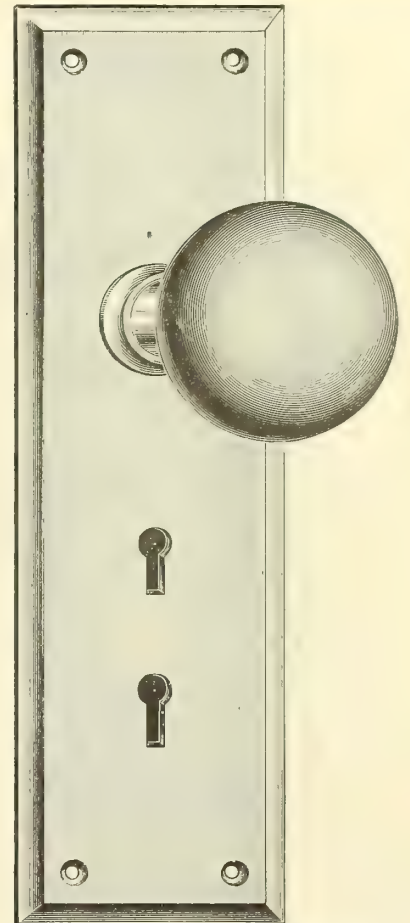
Half Size Cuts



Inside Knob 1512, 2 1/4 inches, with one rose. Cast bronze, polished.



Inside Escutcheon 2590 1/2 2 x 1 3/8 inches. Wrought bronze, polished.



Outside Knob 1511, 2 1/2 inches. Cast bronze, polished. Outside escutcheon 4446-2 3/4 x 9 1/2 inches. Cast bronze, polished.

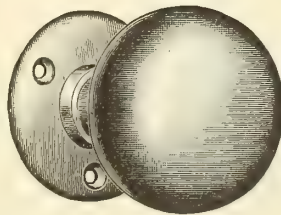
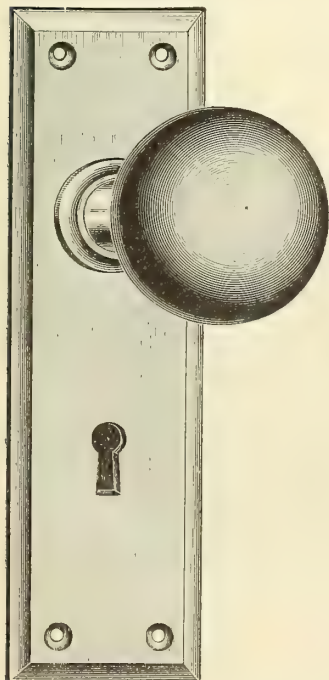
Lock No. 1350B, not reversible, state hand. Case 5 3/4 x 3 3/8 x 3/4 inches; front to center of hub 2 5/8 inches; hub 3/8 inch for swivel spindles; cast bronze front 1 1/4 x 8 inches; 3 tumblers, 40 changes on latch bolt; 1 tumbler, 24 changes on main bolt.

Lock No. 1350B, each.....	\$ 6.00
Knobs, 1511 x 1512, with one rose, pair.....	2.59
Outside Escutcheon 4446, each.....	1.95
Inside Escutcheon 2590 1/2, dozen.....	1.08
Set No. F600 Complete set for single door, set.....	10.77

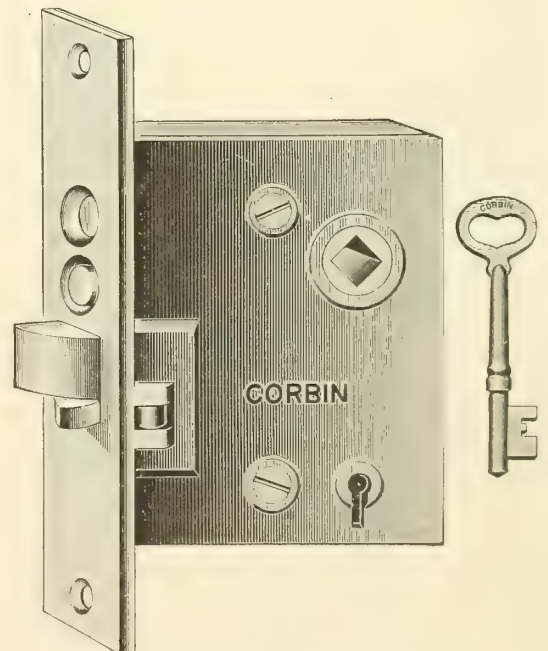
Vestibule Door Lock Sets

Design Columbia

Half Size Cuts



Inside knob 1512, 2 1/4 inches with one rose. Cast bronze, polished.



Outside Knob 1512, 2 1/4 inches. Cast bronze, polished. Outside Escutcheon 4424, 2 x 7 inches. Cast bronze, polished.

Lock No. 1340B, each.....	\$4.50
Knob 1512, with one rose, pair.....	2.29
Outside Escutcheon 4424, each.....	.90
Inside Escutcheon, none.....	
Set No. V650 Complete set for single door, set.....	7.34

Lock 1340B, not reversible, state hand. Case 4 1/4 x 3 1/2 x 3/4 inches; front to center of hub 2 5/8 inches; hub 3/8 inch for swivel spindles; cast bronze front 1 1/4 x 6 3/8 inches; 3 tumblers, 40 changes.

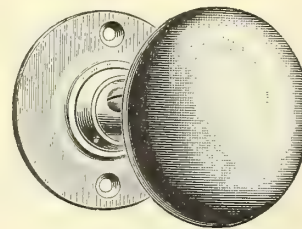
Front Door Lock Sets

Design Tarlton
Half Size Cuts



Lock No. OB6354, reversible.

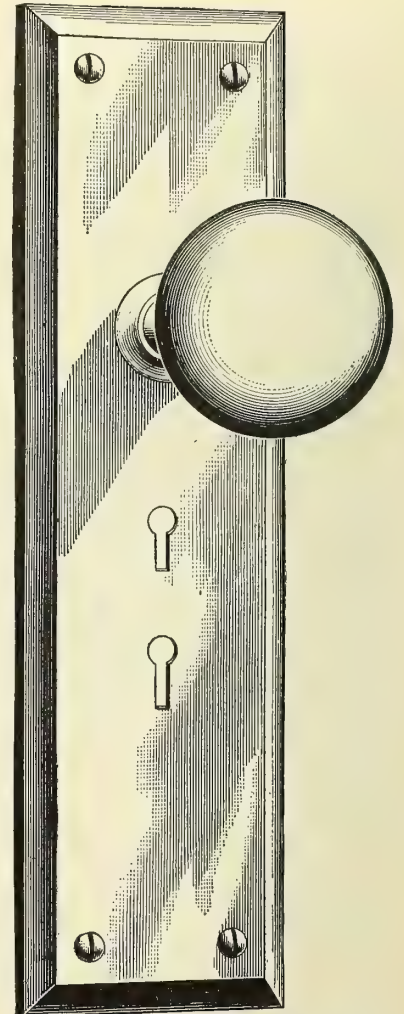
Case, $4\frac{3}{4} \times 3\frac{1}{2} \times \frac{3}{4}$ inches; front to center of hub, $2\frac{7}{8}$ inches; hub $\frac{5}{16}$ inch for swivel spindle; cast brass, old brass finish; front $1\frac{1}{8} \times 7$ inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob No. OB1763, with one rose, $2\frac{1}{4}$ inches. Wrought brass, old brass finish.



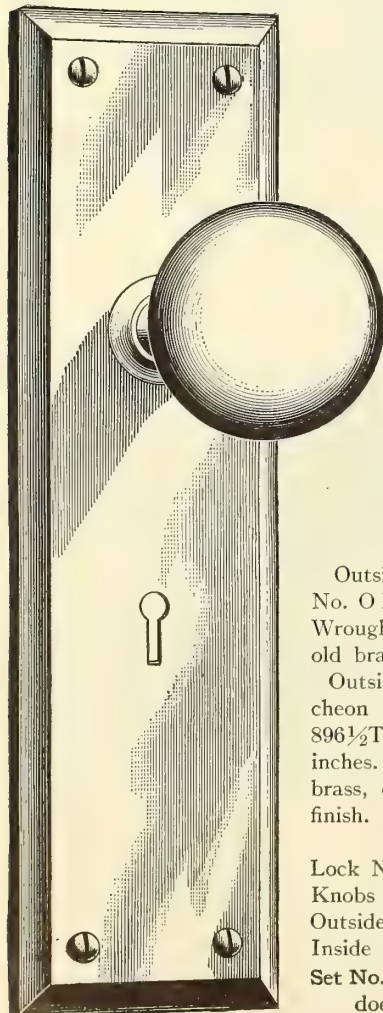
Inside Escutcheon No. OB870TC, $1\frac{1}{4} \times 2$ inches. Wrought brass, old brass finish.



Lock No. OB6354, each.....	\$1.90
Knobs No. OB1763, with one rose, pair.....	1.20
Outside Escutcheon No. OB896TC, each.....	.94
Inside Escutcheons No. OB870TC, dozen.....	.96
Set No. OB4249TC Old brass, complete set for single door, set.....	3.10

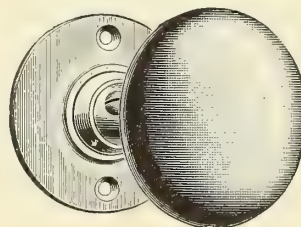
Vestibule Door Lock Set

Design Tarlton
Half Size Cuts



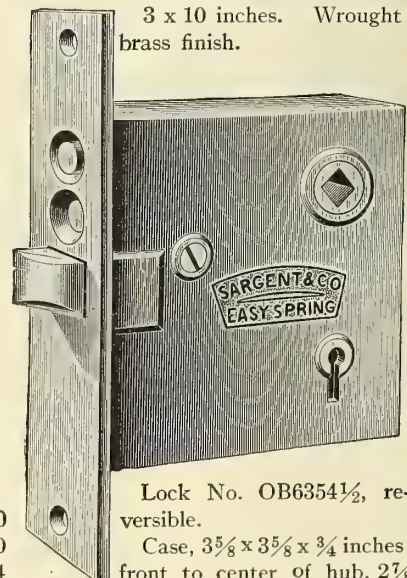
Outside Knob No. OB1763. Wrought brass, old brass finish.

Outside Escutcheon No. OB896 $\frac{1}{2}$ TC, 3×10 inches. Wrought brass, old brass finish.



Inside Knob No. OB1763, $2\frac{1}{4}$ inches, with one rose. Wrought brass, old brass finish.

Lock No. OB6354 $\frac{1}{2}$, each.....	\$1.60
Knobs No. OB1763, with one rose, pair.....	1.20
Outside Escutcheon No. OB896 $\frac{1}{2}$ TC, each.....	.94
Inside Escutcheon, none.....	
Set No. OB4249 $\frac{1}{2}$ TC Old brass, complete set for single door, set.....	2.80



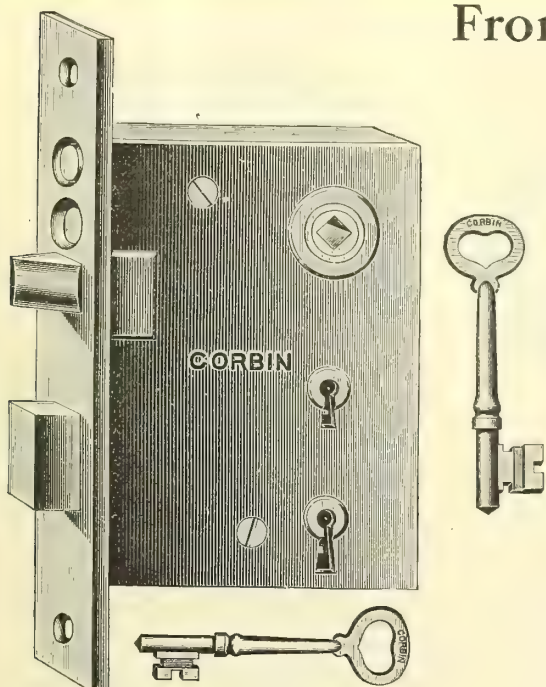
Lock No. OB6354 $\frac{1}{2}$, reversible.

Case, $3\frac{5}{8} \times 3\frac{5}{8} \times \frac{3}{4}$ inches; front to center of hub, $2\frac{7}{8}$ inches; hub $\frac{5}{16}$ inch for swivel spindle; cast brass, old brass finish; front $1\frac{1}{8} \times 6$ inches; 1 tumbler, 16 changes.



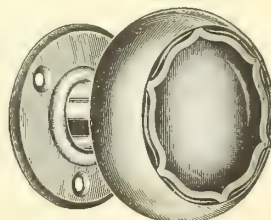
Front Door Lock Sets

Design Wakefield
Half Size Cuts



Lock KA1230 $\frac{1}{4}$, reversible.

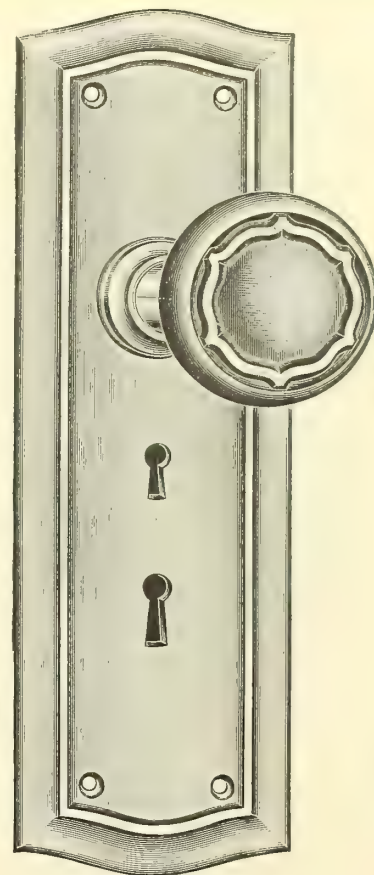
Case $4\frac{5}{8} \times 3\frac{5}{8} \times \frac{11}{16}$ inches; front to center of hub $2\frac{5}{8}$ inches; hub $\frac{1}{8}$ inch for swivel spindle; cast brass, old brass finish, front $1 \times 6\frac{3}{4}$ inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob KA72622, $2\frac{1}{4}$ inches. Wrought brass, old brass finish, with one rose.



Inside Escutcheon KA72640
 $1\frac{1}{4} \times 2$ inches. Wrought brass, old brass finish.

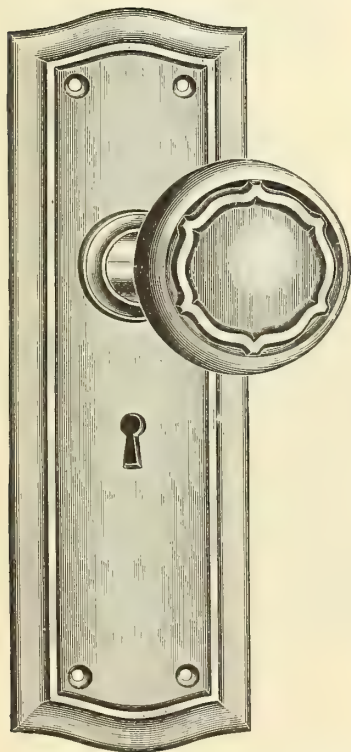


Outside Knob KA72622, $2\frac{1}{4}$ inches.
Outside Escutcheon KA72630, $2\frac{7}{8} \times 9$ inches.
Wrought brass, old brass finish.

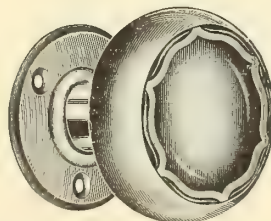
Lock KA1230 $\frac{1}{4}$, each..... \$2.85 Outside Escutcheon KA72630, each..... \$.67
Knob KA72622, with one rose, pair.... 2.90 Inside Escutcheon KA72640, dozen..... 1.80
Set KA726816 Old brass finish, complete set for single doors, dozen sets..... 56.25

Vestibule Door Lock Sets

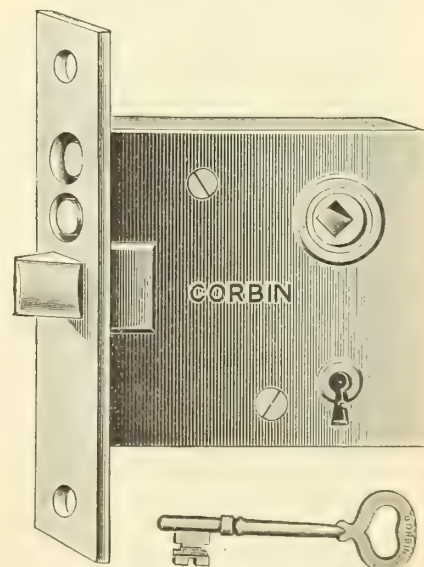
Design Wakefield
Half Size Cuts



Outside Knob KA72622, $2\frac{1}{4}$ inches
Outside Escutcheon KA72631
 $2\frac{1}{2} \times 7\frac{3}{4}$ inches.
Wrought brass, old brass finish.



Inside Knob KA72622, $2\frac{1}{4}$ inches. Wrought brass, old brass finish, with one rose.



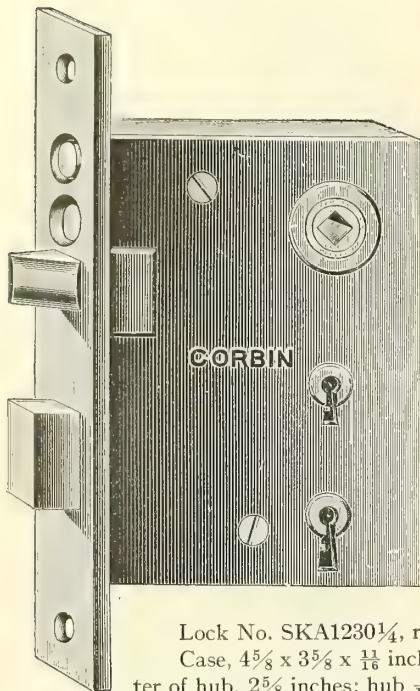
Lock KA1220 $\frac{1}{4}$, reversible.

Case $3\frac{3}{8} \times 3\frac{5}{8} \times \frac{11}{16}$ inches; front to center of hub $2\frac{5}{8}$ inches, hub $\frac{1}{8}$ inch; for swivel spindle; wrought brass, old brass finish, front $1 \times 5\frac{1}{2}$ inches; 1 tumbler, 16 changes.

Lock KA1220 $\frac{1}{4}$, each..... \$2.40
Knob KA72622, with one rose, pair..... 2.90
Outside Escutcheon KA72631, each..... .67
Inside Escutcheon, none.
Set KA726716 Old brass finish, complete set for single door, dozen sets..... 50.85

Front Door Lock Sets

Design Princeton
Half Size Cuts



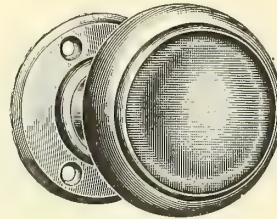
Lock No. SKA1230 1/4, reversible.

Case, 4 5/8 x 3 3/8 x 1 1/8 inches; front to center of hub, 2 3/8 inches; hub 5/16 inch for swivel spindle; cast brass sanded, old brass finish front, 1 x 6 3/4 inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.

Lock No. SKA1230 1/4, each..... \$2.85

Knob No. SKA72122, with one rose, pair... 2.90

Set No. SKA721820 Sanded, old brass, complete set for single door, dozen sets..... 61.65



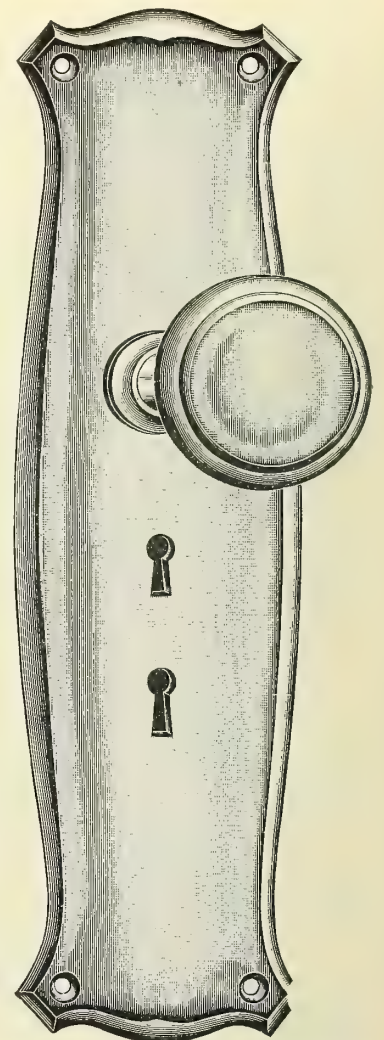
Inside Knob No. SKA72122, with one rose, 2 1/4 inches. Wrought brass sanded, old brass finish.



Inside Escutcheon No. SKA72140, 1 1/4 x 2 inches. Wrought brass sanded, old brass finish.

Outside Escutcheon No. SKA72129, each \$1.27

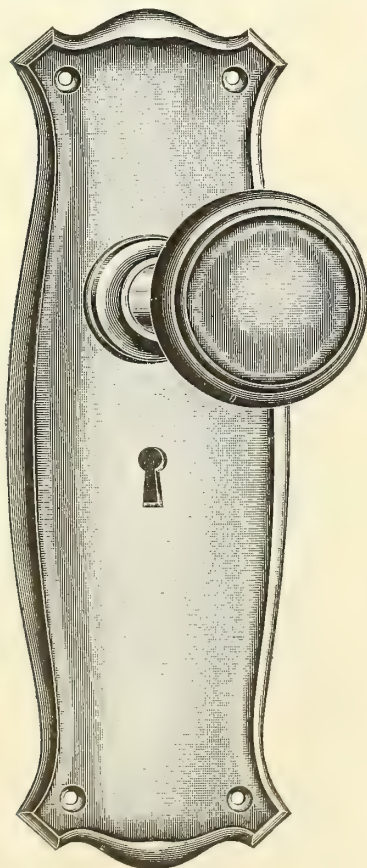
Inside Escutcheon No. SKA72140, dozen 1.80



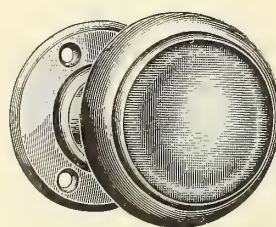
Outside Knob No. SKA72122, 2 1/4 inches. Outside Escutcheon No. 72129, 3 x 11 inches. Wrought brass sanded, old brass finish.

Vestibule Door Lock Sets

Design Princeton
Half Size Cuts



Outside Knob No. SKA72122, 2 1/4 inches. Outside Escutcheon No. 72130, 2 7/8 x 9 inches. Wrought brass sanded, old brass finish.



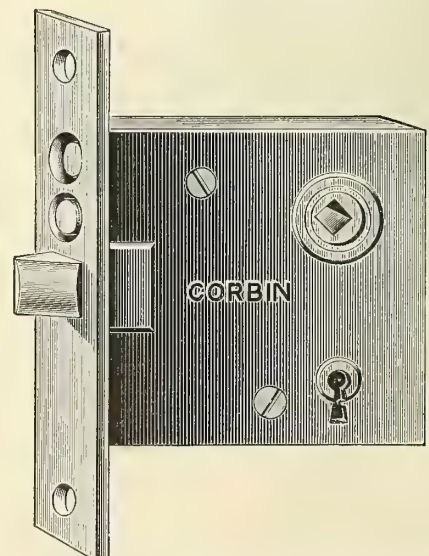
Inside Knob No. SKA72122, with one rose, 2 1/4 inches. Wrought brass sanded, old brass finish.

Lock No. SKA1220 1/4, each \$2.40

Knobs No. SKA72122, with one rose, pair..... 2.90

Outside Escutcheon No. SKA72130, each..... .67

Inside Escutcheon, none.
Set No. SKA721720 Sanded old brass finish, complete set for single door..... 50.85

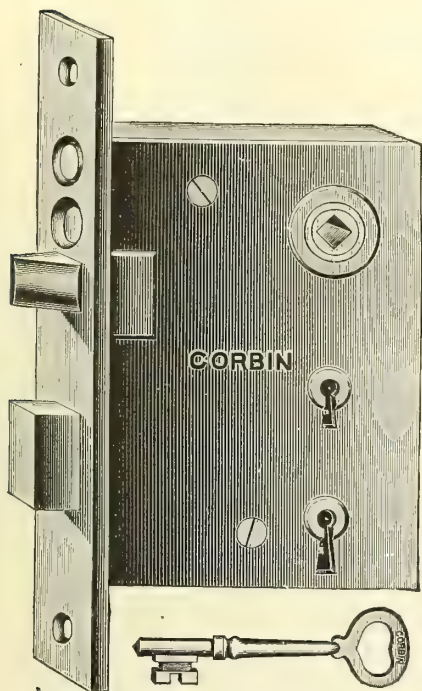


Lock No. SKA1220 1/4; case 3 3/8 x 3 3/8 x 1 1/8 inches; front to center of hub 2 3/8 inches; hub 5/16 inch for swivel spindle; cast brass sanded, old brass finish, front 1 x 5 1/2 inches; 1 tumbler, 16 changes.



Front Door Lock Sets

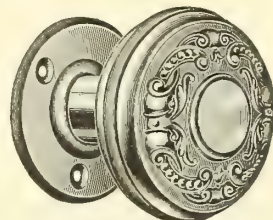
Design Holland
Half Size Cuts



Lock R1230 1/4, reversible.

Case 4 5/8 x 3 5/8 x 1 1/8 inches; front to center of hub 2 5/8 inches; hub 1/8 inch for swivel spindle; cast bronze, antique copper finish, front 1 x 6 3/4 inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.

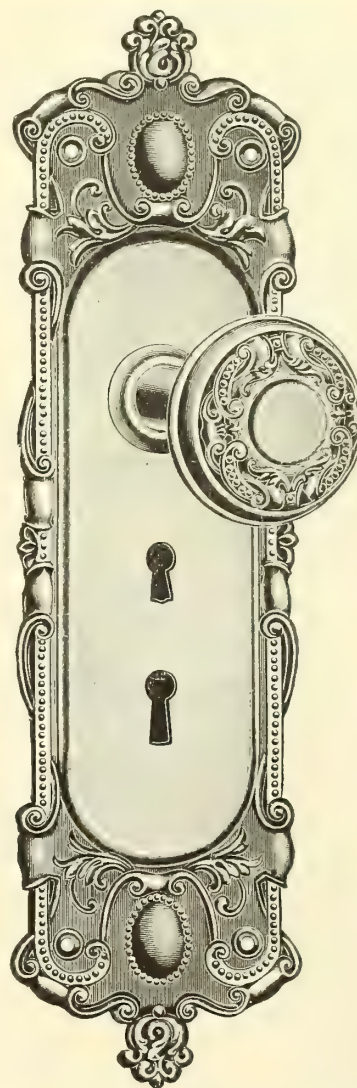
Lock R1230 1/4..... \$2.40 Outside Escutcheon ERxRR71729, each. \$1.14
Knobs ERxRR71722, with one rose. . . 2.90 Inside Escutcheon ERxRR71740, dozen. 1.80
Set No. F1200 Royal copper finish, depressed surface, antique copper. Complete set for single door, dozen sets..... 54.00



Inside Knob ERxRR71722
2 1/4 inches, with one rose.
Wrought bronze, royal copper finish; depressed surface, antique copper finish.



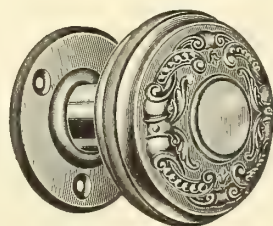
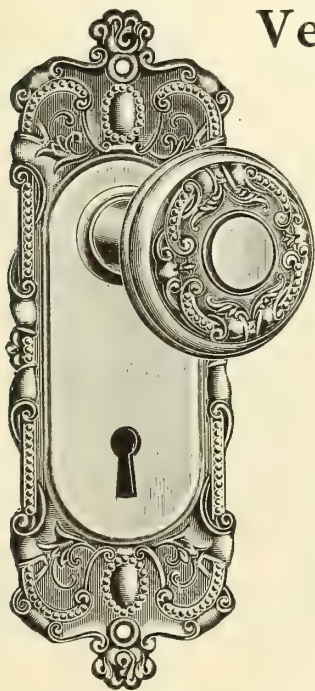
Inside Escutcheon ERxRR-
71740, 1 1/4 x 2 1/2 inches. Wrought
bronze, royal copper finish; de-
pressed surface, antique copper
finish.



Outside Knob ERxRR71722, 2 1/4 inches.
Outside Escutcheon ERxRR
71729, 3 1/8 x 1 1/8 inches.
Wrought bronze, royal copper
finish; depressed surface, antique
copper finish.

Vestibule Door Lock Sets

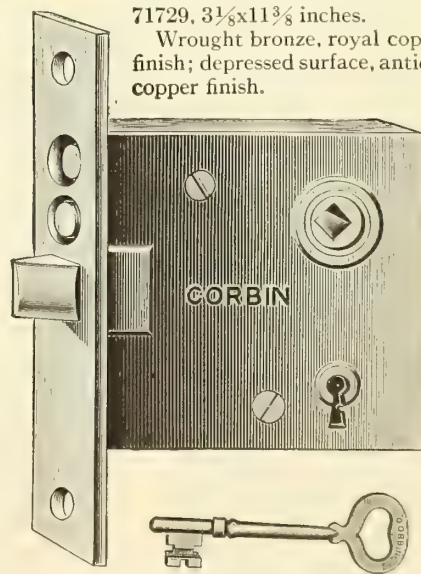
Design Holland
Half Size Cuts



Inside Knob ERxRR71722,
2 1/4 inches, with one rose.
Wrought bronze, royal copper
finish; depressed surface, antique
copper finish.

Lock R1220 1/4..... \$2.40
Knob ERxRR71722, with one rose, pair. 2.90
Outside Escutcheon ERxRR71729, each. . 1.14
Inside Escutcheon, none.

Set No. V1250 Royal copper finish, de-
pressed surface antique copper. Com-
plete set for single door, dozen sets. . . 51.45

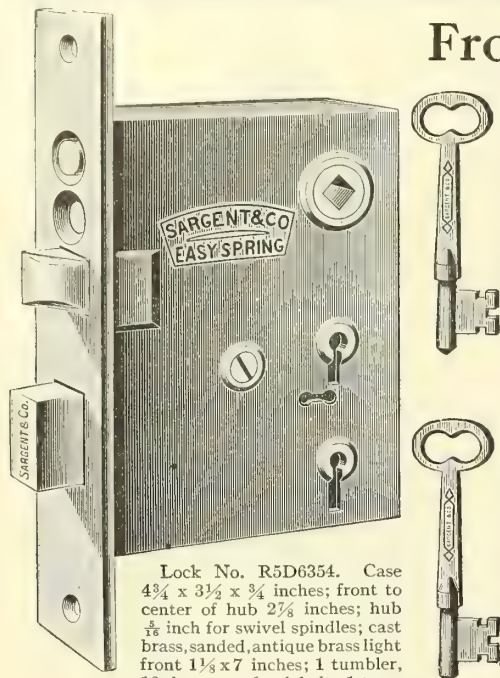


Lock R1220 1/4, reversible.

Case 3 3/8 x 3 5/8 x 1 1/8 inches; front to center of hub 2 5/8 inches; hub 1/8 inch; for swivel spindle; cast bronze, antique copper finish, front 1 x 5 1/2 inches; 1 tumbler, 16 changes.

Front Door Lock Sets

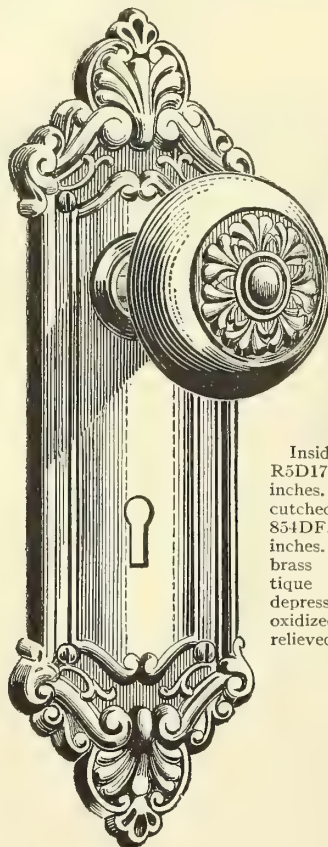
Design Dunkirk. Half Size Cuts



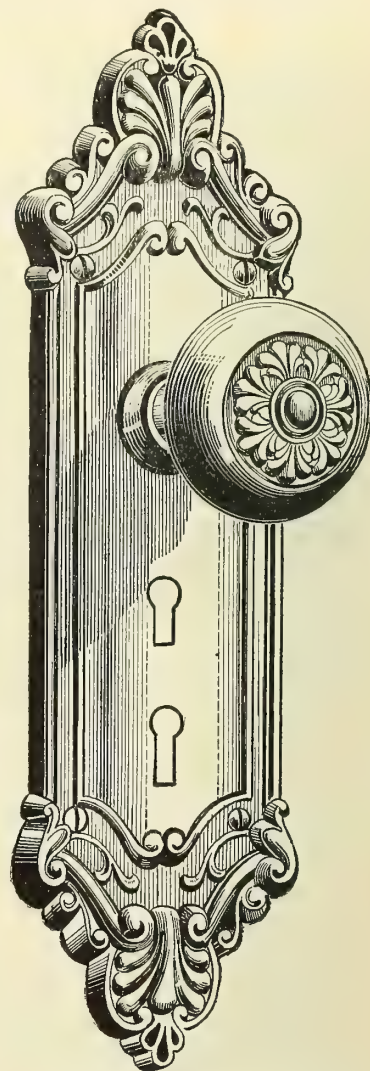
Lock No. R5D6354. Case $4\frac{3}{4} \times 3\frac{1}{2} \times \frac{3}{4}$ inches; front to center of hub $2\frac{1}{4}$ inches; hub $\frac{1}{8}$ inch for swivel spindles; cast brass, sanded, antique brass light front $1\frac{1}{4} \times 7$ inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.

Lock No. R5D6354, each..... \$1.90
Knobs No. R5D1763DF, without roses, pair..... .95
Outside Escutcheon No. R5D876DF, each..... .85
Inside Escutcheon No. R5D854DF, each..... .45

Set No. R5D4245DF Sanded antique brass light depressed surface, black and relieved, set complete for single door... 3.85



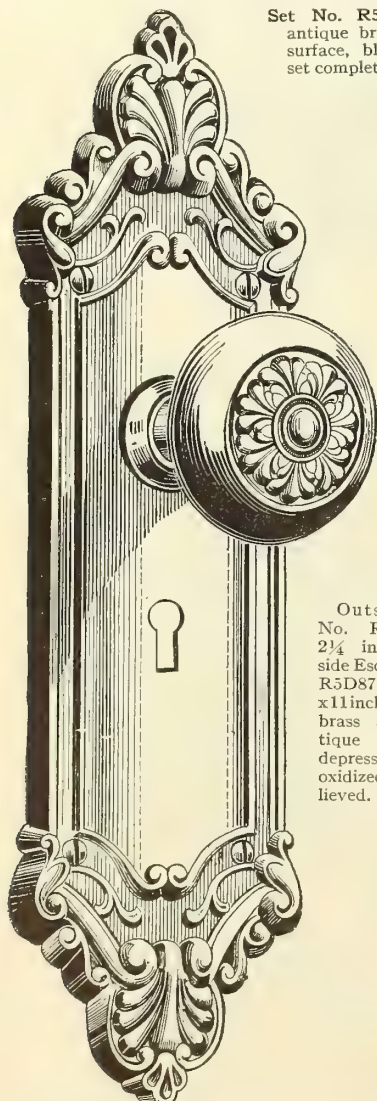
Inside Knob No. R5D1763DF, $2\frac{1}{4}$ inches. Inside Escutcheon No. R5D854DF, $2\frac{3}{4} \times 8\frac{1}{2}$ inches. Wrought brass sanded, antique brass light depressed surface, oxidized black and relieved.



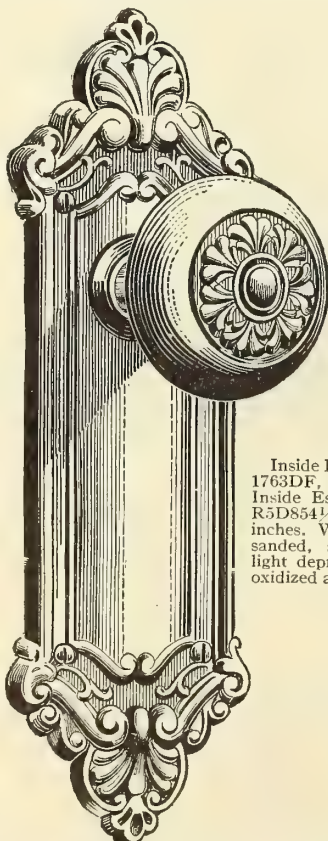
Outside Knob No. R5D1763DF, $2\frac{1}{4}$ inches. Outside Escutcheon No. R5D876DF, $3\frac{1}{4} \times 11$ inches. Wrought brass sanded, antique brass light depressed surface, oxidized black and relieved.

Vestibule Door Lock Sets

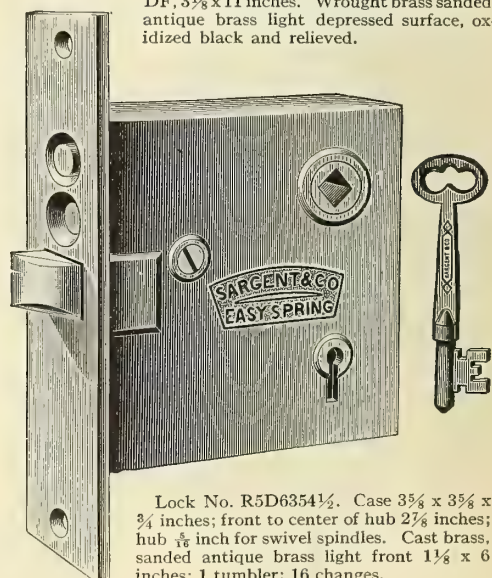
Design Dunkirk. Half Size Cuts



Outside Knob No. R5D1763DF, $2\frac{1}{4}$ inches. Outside Escutcheon No. R5D876DF, $3\frac{1}{4} \times 11$ inches. Wrought brass sanded, antique brass light depressed surface, oxidized and relieved.



Inside Knob No. R5D1763DF, $2\frac{1}{4}$ inches. Inside Escutcheon No. R5D854DF, $2\frac{3}{4} \times 8\frac{1}{2}$ inches. Wrought brass sanded, antique brass light depressed surface, oxidized and relieved.



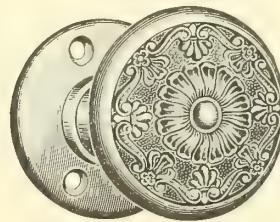
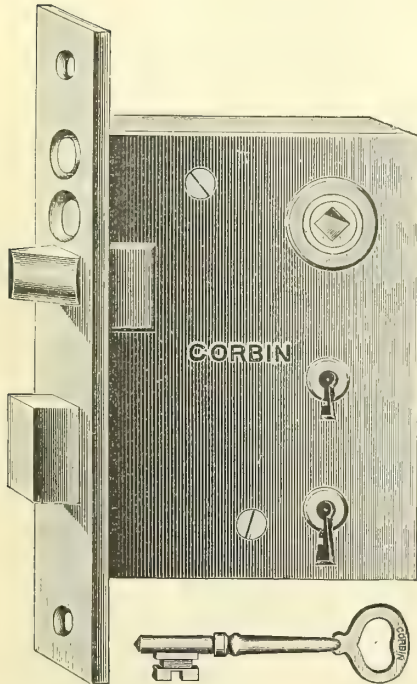
Lock No. R5D6354. Case $3\frac{5}{8} \times 3\frac{5}{8} \times \frac{3}{4}$ inches; front to center of hub $2\frac{1}{4}$ inches; hub $\frac{1}{8}$ inch for swivel spindles. Cast brass, sanded antique brass light front $1\frac{1}{4} \times 6$ inches; 1 tumbler; 16 changes.

Lock No. R5D6354, each..... \$1.60
Knobs No. R5D1763DF, without roses, pair..... .95
Outside Escutcheon No. R5D876DF, each..... .85
Inside Escutcheon No. R5D854DF, each..... .45
Set No. R5D4245DF Sanded antique brass, light depressed surface, black and relieved, set complete for single door..... 3.55

Front Door Lock Sets

Design Parthenon

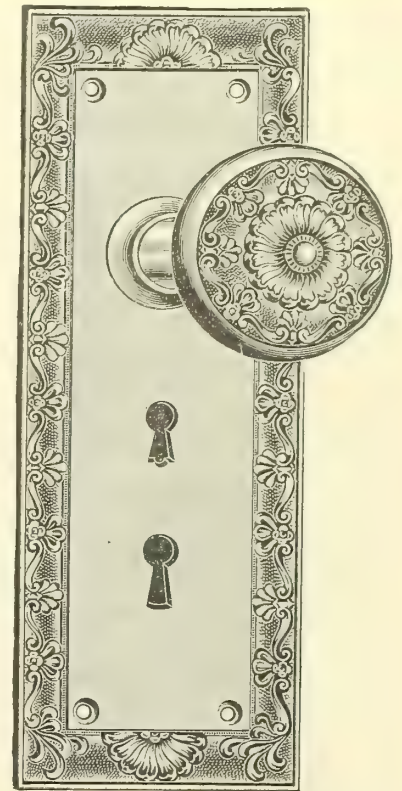
Half Size Cuts



Inside Knob R81022, 2 1/4 inches, with one rose. Cast bronze, antique copper finish.



Inside Escutcheon R81040, 1 1/8 x 2 inches. Cast bronze, antique copper finish.



Outside Knob R81022, 2 1/4 inches. Cast bronze, antique copper finish.

Outside Escutcheon R81030, 2 7/8 x 8 inches; cast bronze, antique copper finish.

Lock R1230 1/4, reversible.

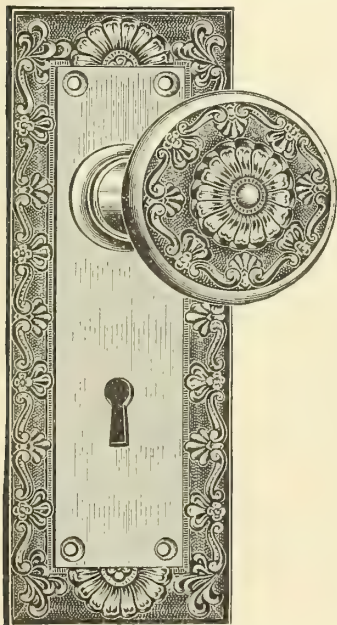
Case 4 5/8 x 3 5/8 x 1 1/8 inches; front to center of hub 2 5/8 inches; hub 1 5/8 inch for swivel spindle; cast bronze, antique copper finish; front 1 x 6 3/4 inches; 1 tumbler, 16 changes on latch bolt. 1 tumbler, 16 changes on main bolt.

Lock R1230 1/4, each.....	\$2.85	Outside Escutcheon R81030, each.....	\$2.19
Knobs R81022, with one rose, pair.....	2.48	Inside Escutcheon R81040, each.....	.42
Set No. F400 Antique copper finish. Complete set for single door, set.....			8.07

Vestibule Door Lock Sets

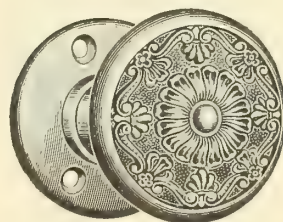
Design Parthenon

Half Size Cuts

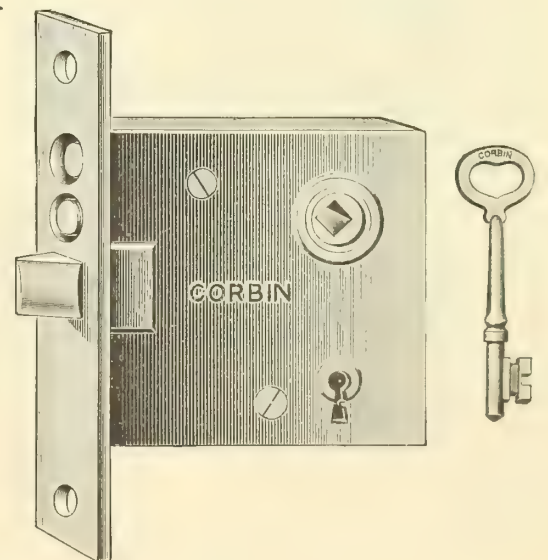


Outside Knob R81022, 2 1/4 inches. Cast bronze, antique copper finish.

Outside Escutcheon R81031, 2 3/8 x 6 1/2 inches. Cast bronze, antique copper finish.



Inside Knob R81022, 2 1/4 inches, with one rose. Cast bronze, antique copper finish.



Lock R1220 1/4, reversible.

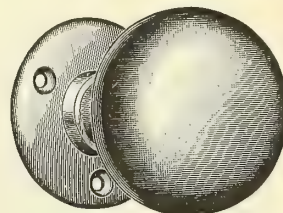
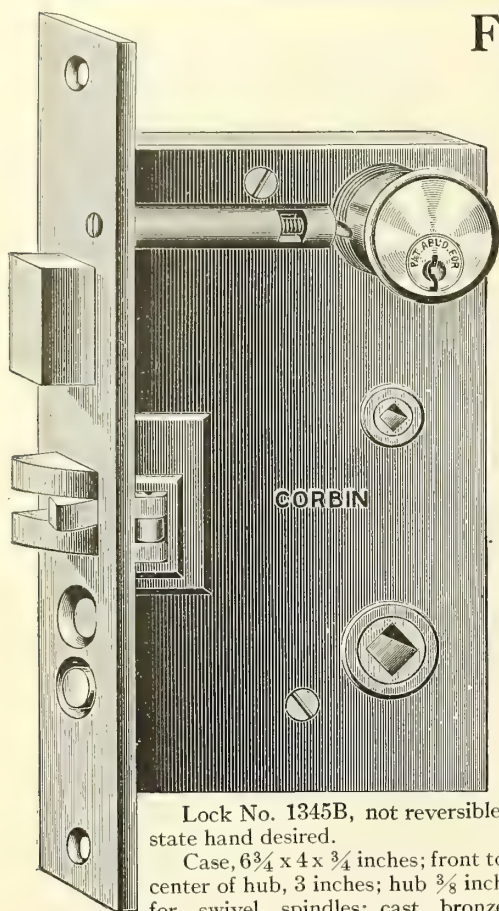
Case 3 3/8 x 3 5/8 x 1 1/8 inches; front to center of hub 2 5/8 inches; hub 1 5/8 inch for swivel spindle; cast bronze, antique copper finish, front 1 x 5 1/2 inches; 1 tumbler, 16 changes.

Lock R1220 1/4, each.....	\$2.40
Knobs R81022, with one rose, pair.....	2.48
Outside Escutcheon R81031, each.;....	1.47
Inside Escutcheon, none.	
Set No. V450 Antique copper finish.	
Complete set for single door, set.....	6.49

Front Door Lock Sets

Design Columbia

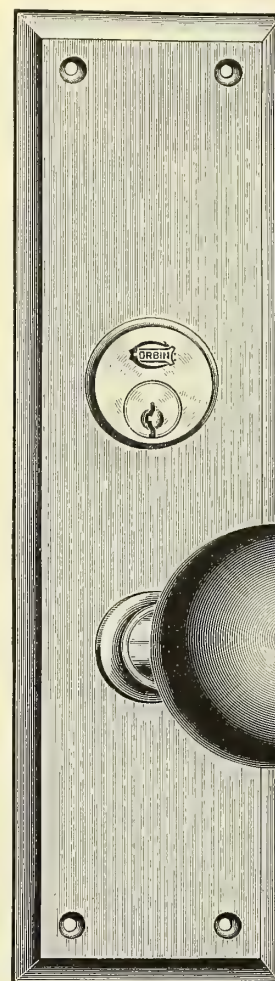
Half Size Cuts



Inside Knob No. 1512, 2 1/4 inches with one rose. Cast bronze, polished.



Inside Thumb Knob No. 2149, cast bronze polished.



Outside Knob No. 1511, 2 1/2 inches, cast bronze, polished.

Outside Escutcheon No. 4448, 2 3/4 x 10 inches, cast bronze, polished.

Lock No. 1345B, not reversible, state hand desired.

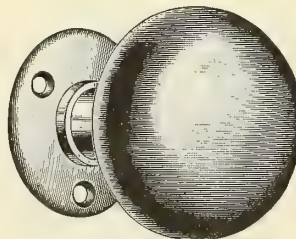
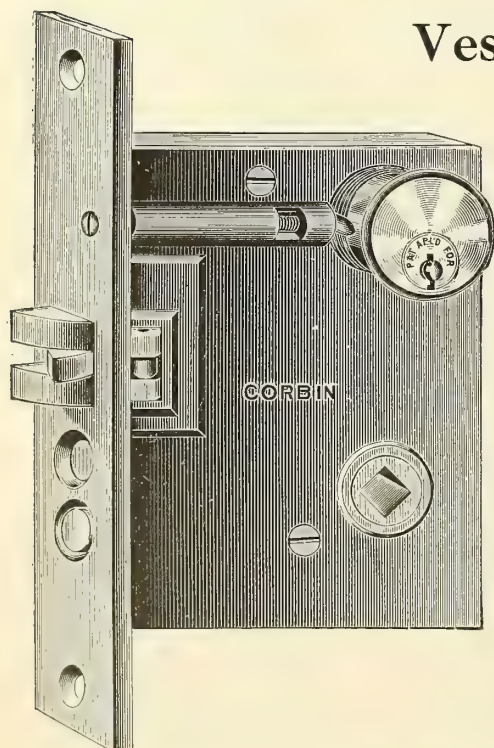
Case, 6 3/4 x 4 x 3/4 inches; front to center of hub, 3 inches; hub 3/8 inch for swivel spindles; cast bronze front, 9 1/8 x 9 1/4 inches; practically unlimited changes.

Lock No. 1345B, each.....	\$12.00
Knobs No. 1511x1512, with one rose, pair...	2.59
Outside Escutcheon No. 4448, each.....	2.07
Inside Escutcheon, none.	
Set No. F700 Complete set for single door, set.....	16.36

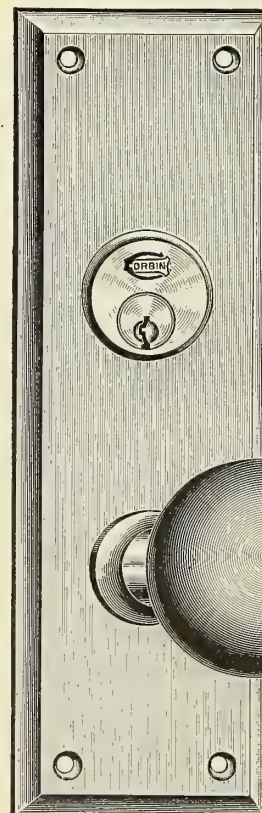
Vestibule Door Lock Sets

Design Columbia

Half Size Cuts



Inside Knob No. 1512, 2 1/4 inches, with one rose. Cast bronze, polished.



Outside Knob No. 1512, 2 1/4 inches, cast bronze, polished.

Outside Escutcheon No. 4442, 2 5/8 x 8 3/8 inches, cast bronze, polished.

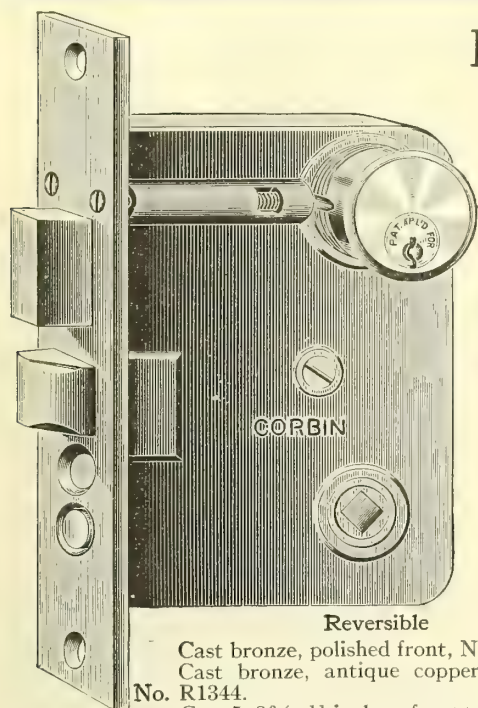
Lock No. 1339B, not reversible, state hand desired.

Case, 5 x 4 x 3/4 inches; front to center of hub, 3 inches; hub 3/8 inch for swivel spindle; cast bronze front, 7 3/8 x 1 1/4 inches; practically unlimited changes.

Lock No. 1339B, each.....	\$8.25
Knobs No. 1512, with one rose, pair.....	2.29
Outside Escutcheon No. 4442.....	1.65
Inside Escutcheon, none.	
Set No. V750 Complete set for single door, set.....	12.34

Front Door Lock Sets

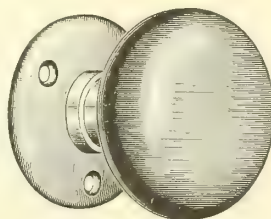
Design Washington
Half Size Cuts



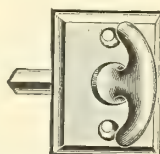
Reversible

Cast bronze, polished front, No. 1344B.
Cast bronze, antique copper finish front,
No. R1344.

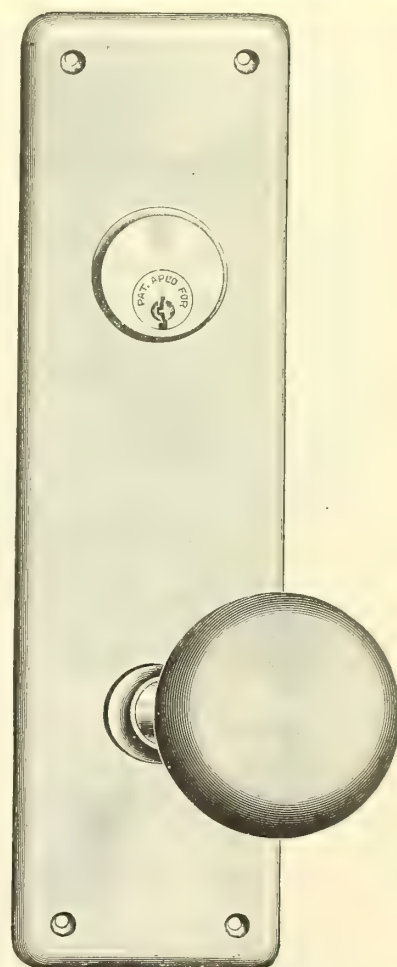
Case $5 \times 3\frac{3}{4} \times 1\frac{1}{8}$ inches; front to center of hub
 $2\frac{3}{4}$ inches; hub $\frac{3}{8}$ inch for swivel spindle; front
 $1\frac{1}{16} \times 7\frac{1}{8}$ inches. Practically unlimited changes.



Inside Knob $2\frac{1}{4}$ inches,
with rose. Cast bronze, polished, No. 1519 $\frac{1}{2}$. Cast bronze,
antique copper finish, No.
R1519 $\frac{1}{2}$.



Inside Thumb Knob. Cast
bronze, polished, No. 2149.
Cast bronze, antique copper
finish, No. R2149.



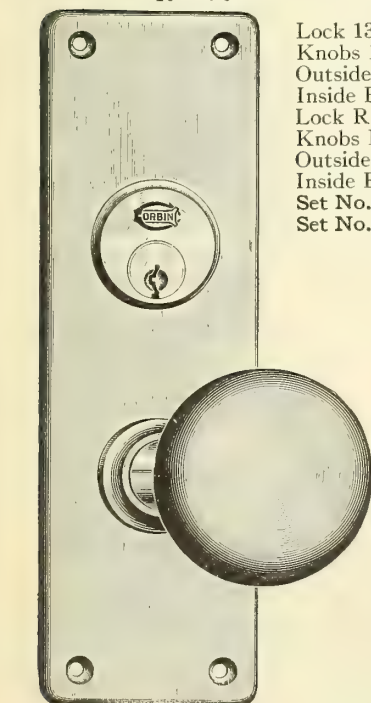
Outside Knob $2\frac{1}{2}$ inches. Cast bronze,
polished, No. 1518 $\frac{1}{2}$. Cast bronze, an-
tique copper finish, No. R1518 $\frac{1}{2}$.

Outside Escutcheon, $2\frac{3}{4} \times 10$ inches.
Wrought bronze, polished, No. 2448 $\frac{1}{2}$.
Wrought bronze, antique copper finish,
No. R2448 $\frac{1}{2}$.

Lock 1344B, polished bronze, each.....	\$10.05
Knobs 1518 $\frac{1}{2}$ x1519 $\frac{1}{2}$, with one rose, pair	1.69
Outside Escutcheon 2448 $\frac{1}{2}$, each	1.10
Inside Escutcheon, none.....	
Lock R1344, antique copper, each.....	10.50
Knobs R1518 $\frac{1}{2}$ xR1519 $\frac{1}{2}$, with one rose, pair.....	1.90
Outside Escutcheon R2448 $\frac{1}{2}$, each.....	1.20
Inside Escutcheon, none.....	
Set No. F1100 Polished bronze. Complete set for single door, set	13.20
Set No. F1000 Antique copper. Complete set for single door, set	13.92

Vestibule Door Lock Sets

Design Washington
Half Size Cuts



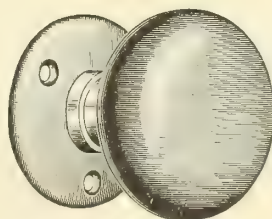
Outside Knob, $2\frac{1}{4}$ inches. Cast bronze,
polished, No. 1519 $\frac{1}{2}$. Cast bronze, an-
tique copper finish, No. R1519 $\frac{1}{2}$.

Outside Escutcheon, $2\frac{1}{4} \times 7\frac{1}{4}$ inches.
Wrought bronze, polished, No. 2430 $\frac{1}{2}$.
Wrought bronze, antique copper finish,
No. R2430 $\frac{1}{2}$.

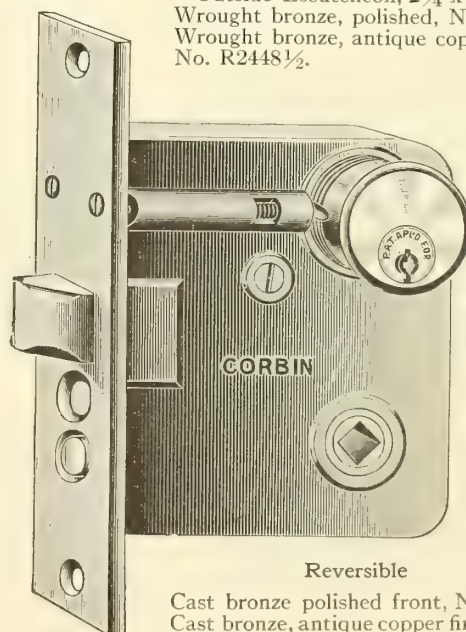
Lock 1334B, polished bronze, each.....	\$7.50
Knob 1519 $\frac{1}{2}$, with one rose, pair	1.69
Outside Escutcheon 2430 $\frac{1}{2}$, each .....	.50
Inside Escutcheon, none.....	
Lock R1334, antique copper, each	7.95
Knob R1519 $\frac{1}{2}$, with one rose, pair	1.90
Outside Escutcheon R2430 $\frac{1}{2}$, each .....	.55
Inside Escutcheon, none.....	

Set No. V1150 Polished bronze. Complete set for single door, set.....

Set No. V1050 Antique copper. Complete set for single door, set.....



Inside Knob, $2\frac{1}{4}$ inches,
with rose. Cast bronze, polished, No. 1519 $\frac{1}{2}$. Cast bronze,
antique copper finish, No.
R1519 $\frac{1}{2}$.



Reversible

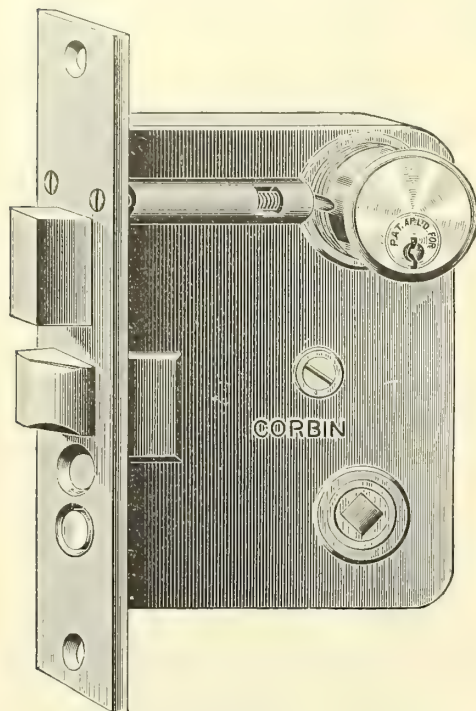
Cast bronze polished front, No. 1334B.
Cast bronze, antique copper finish front,
No. R1334.

Case $4\frac{1}{8} \times 3\frac{3}{4} \times 1\frac{1}{8}$ inches; front to cen-
ter of hub $2\frac{3}{4}$ inches; hub $\frac{3}{8}$ inch for
swivel spindle. Practically unlimited
changes; front $1\frac{1}{16} \times 6\frac{1}{4}$ inches.



Front Door Lock Set

Design Victor
Half Size Cuts

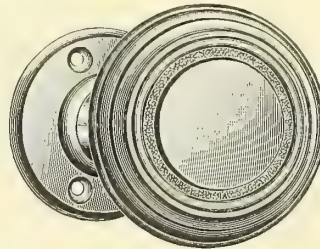


Lock KA1344, reversible.

Case 5 x 3 $\frac{3}{4}$ x $\frac{11}{16}$ inches; front to center of hub 2 $\frac{3}{4}$ inches; hub $\frac{3}{8}$ inch for swivel spindles; cast brass, old brass finish, front 1 $\frac{1}{16}$ x 7 $\frac{1}{8}$ inches. Practically unlimited changes.



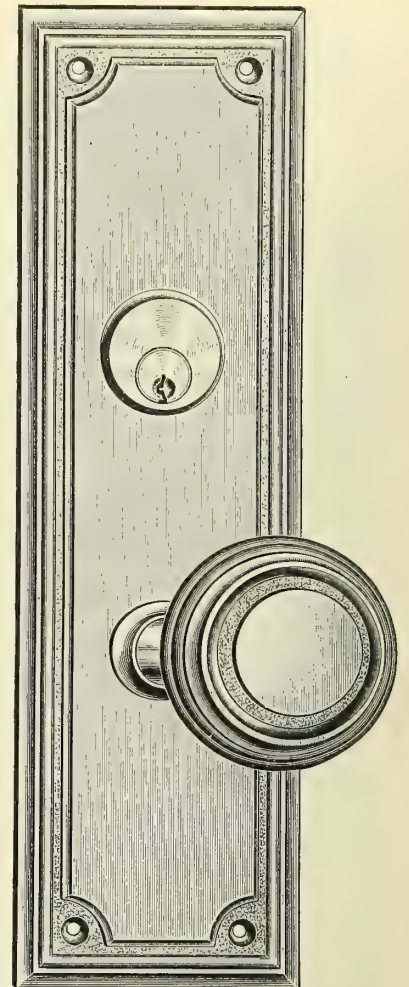
Inside Knob KA71822, 2 $\frac{1}{4}$ inches, with one rose. Wrought brass, old brass finish.



Inside Thumb Knob KA2149, cast brass, old brass finish.



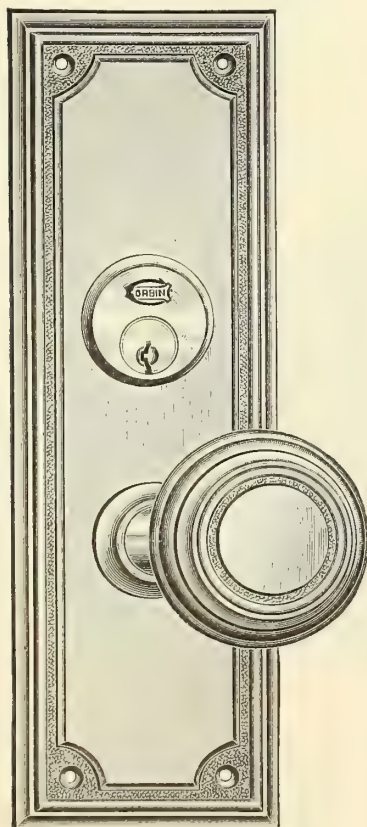
Lock KA1344, each..... \$10.50
Knob KA71821, 2 $\frac{1}{2}$ x 2 $\frac{1}{4}$, with one rose, pair..... 1.50
Outside Escutcheon KA71829, each.. 1.14
Inside Escutcheon, none.
Set No. KA718840 old brass finish.
Complete set for single door, set... 13.29



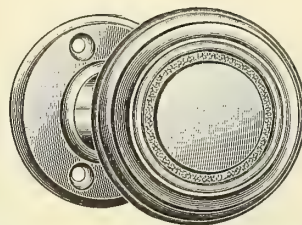
Outside Knob KA71821, 2 $\frac{1}{2}$ inches. Outside Escutcheon KA71829, 3 x 10 $\frac{1}{2}$ inches. Wrought brass, old brass finish.

Vestibule Door Lock Set

Design Victor
Half Size Cuts

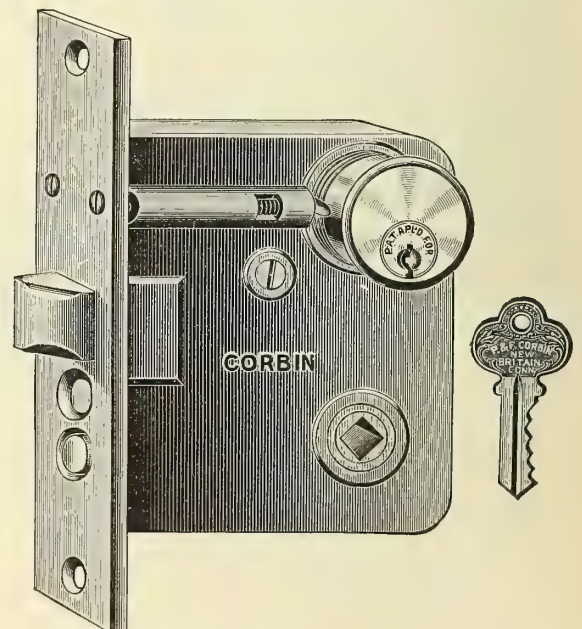


Outside Knob KA71822, 2 $\frac{1}{4}$ inches. Outside Escutcheon KA71830, 2 $\frac{3}{4}$ x 8 $\frac{1}{2}$ inches. Wrought brass, old brass finish.



Inside Knob KA71822, 2 $\frac{1}{4}$ inches, with one rose. Wrought brass, old brass finish.

Lock KA1334, each..... \$7.95
Knob KA71822, with one rose, pair..... 1.20
Outside Escutcheon KA71830, each..... .54
Inside Escutcheon, none.
Set No. KA718740, old brass finish. Complete set for single door, set.. 9.84



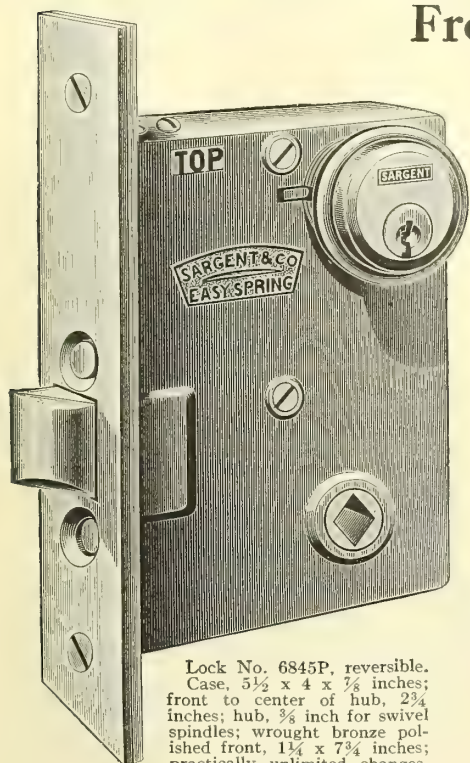
Lock KA1334, reversible.

Case 4 $\frac{1}{8}$ x 3 $\frac{3}{4}$ x $\frac{11}{16}$ inches; front to center of hub 2 $\frac{3}{4}$ inches; hub $\frac{3}{8}$ inch for swivel spindles. Practically unlimited changes.

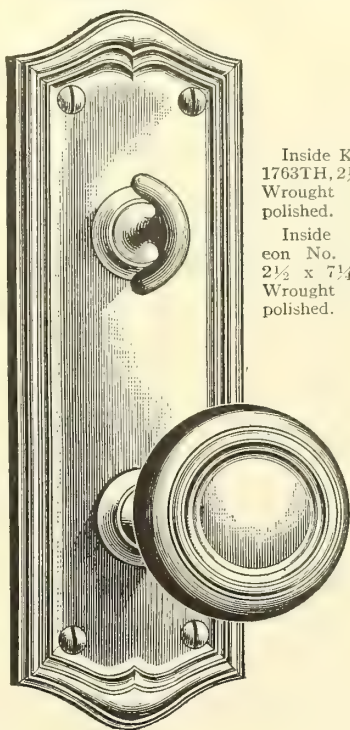
Cast brass, old brass finish, front 1 $\frac{1}{16}$ x 6 $\frac{1}{4}$ inches.

Front Door Lock Set

Design Hudson
Half Size Cuts

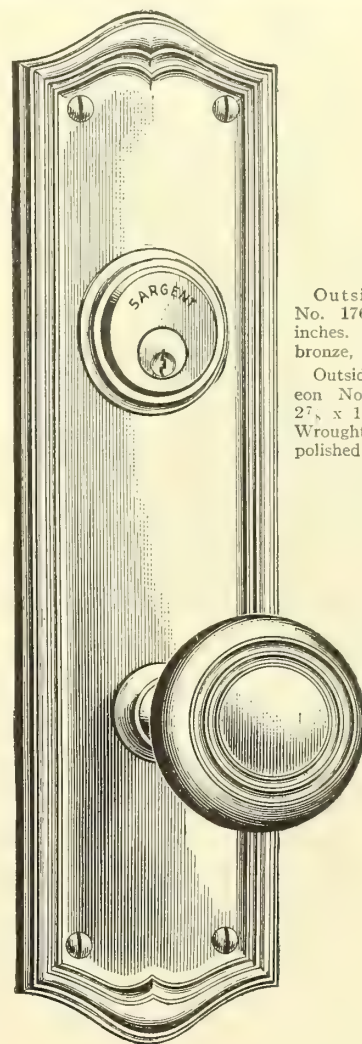


Lock No. 6845P, reversible.
Case, $5\frac{1}{2} \times 4 \times \frac{3}{8}$ inches;
front to center of hub, $2\frac{3}{4}$
inches; hub, $\frac{3}{8}$ inch for swivel
spindles; wrought bronze pol-
ished front, $1\frac{1}{4} \times 7\frac{3}{4}$ inches;
practically unlimited changes.



Inside Knob No.
1763TH, $2\frac{1}{4}$ inches.
Wrought bronze,
polished.

Inside Escutch-
eon No. 7855TH,
 $2\frac{1}{2} \times 7\frac{1}{4}$ inches.
Wrought bronze,
polished.



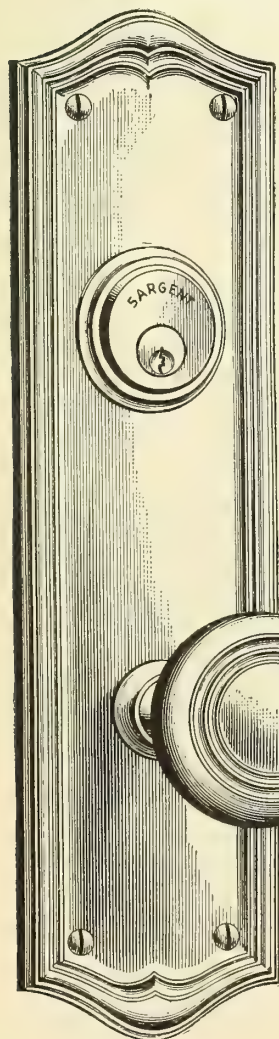
Outside Knob
No. 1763TH, $2\frac{1}{4}$
inches. Wrought
bronze, polished.

Outside Escutch-
eon No. 7876TH,
 $27 \times 10\frac{1}{2}$ inches.
Wrought bronze,
polished.

Lock No. 6845P, each.....	\$6.70
Knobs No. 1763TH, without roses, pair.....	.80
Outside Escutcheon No. 7876TH, each.....	.75
Inside Escutcheon No. 7855TH, each.....	.35
Set No. 5045TH Polished bronze, complete set for single door.....	8.70

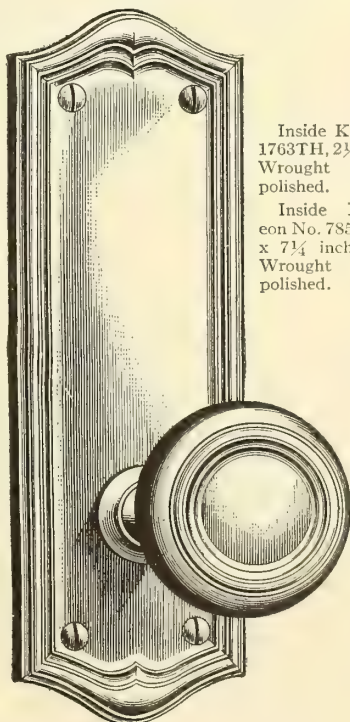
Vestibule Door Lock Set

Design Hudson
Half Size Cuts



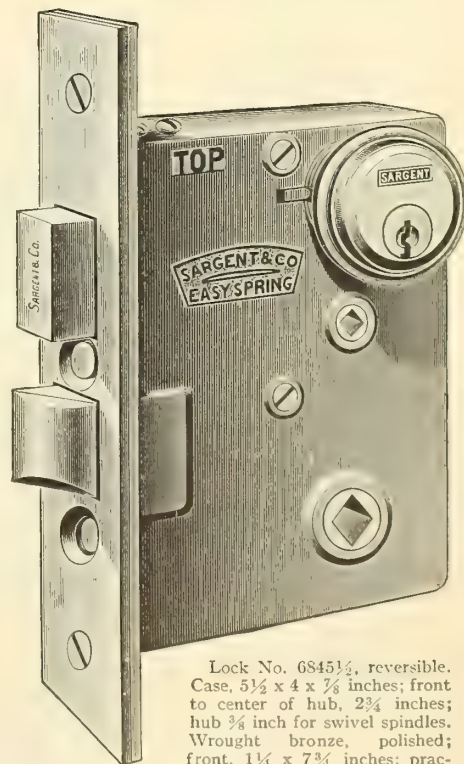
Outside Knob
No. 1763TH, $2\frac{1}{4}$
inches. Wrought
bronze, polished.

Outside Escutch-
eon No. 7876TH,
 $27 \times 10\frac{1}{2}$ inches.
Wrought bronze,
polished.



Inside Knob No.
1763TH, $2\frac{1}{4}$ inches.
Wrought bronze,
polished.

Inside Escutch-
eon No. 7855 $\frac{1}{2}$ TH, $2\frac{1}{2}$
 $\times 7\frac{1}{4}$ inches.
Wrought bronze,
polished.



Lock No. 6845 $\frac{1}{2}$ P, reversible.
Case, $5\frac{1}{2} \times 4 \times \frac{3}{8}$ inches; front
to center of hub, $2\frac{3}{4}$ inches;
hub $\frac{3}{8}$ inch for swivel spindles.
Wrought bronze, polished;
front, $1\frac{1}{4} \times 7\frac{3}{4}$ inches; prac-
tically unlimited changes.

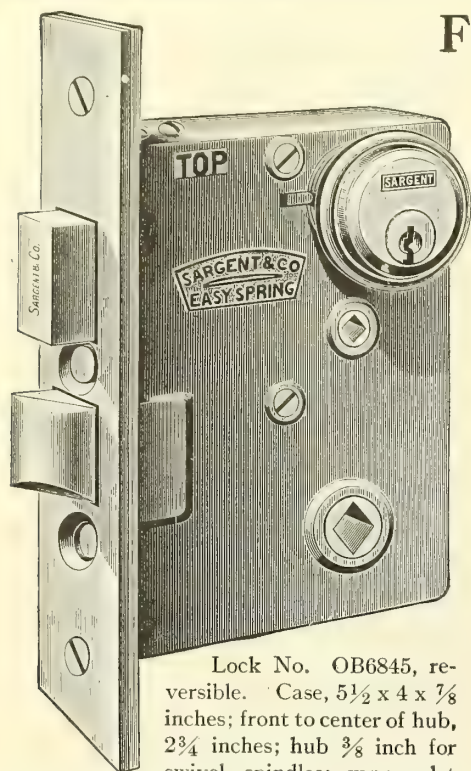
Lock No. 6845 $\frac{1}{2}$ P, each.....	\$5.50
Knobs No. 1763TH, without roses, pair.....	.80

Outside Escutcheon No. 7876TH, each.....	\$.75
Inside Escutcheon No. 7855 $\frac{1}{2}$ TH, each.....	.35

Set No. 5045 $\frac{1}{2}$ TH Polished bronze, complete set for single door.....	\$7.70
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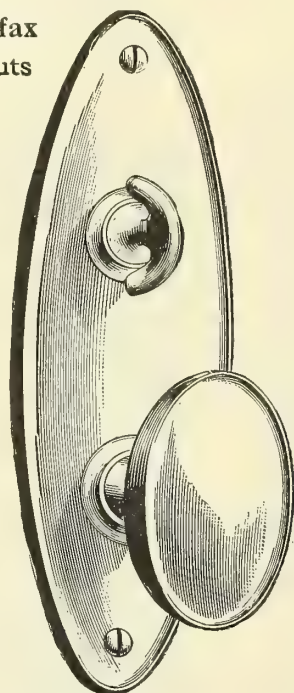
Front Door Lock Sets

Design Fairfax
Half Size Cuts



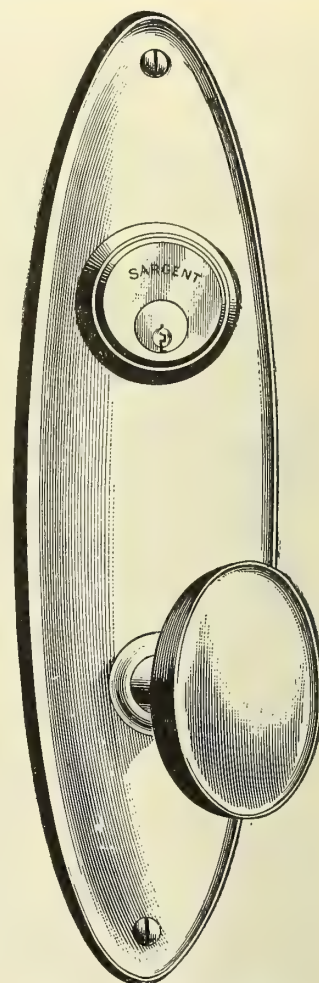
Lock No. OB6845, reversible. Case, $5\frac{1}{2} \times 4 \times \frac{7}{8}$ inches; front to center of hub, $2\frac{3}{4}$ inches; hub $\frac{3}{8}$ inch for swivel spindles; wrought brass, old brass finish; front, $1\frac{1}{4} \times 7\frac{3}{4}$ inches; practically unlimited changes.

Lock No. OB6845, each..... \$7.00
Knobs No. OB1713FC, without roses, pair..... .95
Outside Escutcheon No. OB7876FC, each..... .65
Inside Escutcheon No. OB7855FC, each..... .45
Set No. OB5085FC Old brass, complete set for single door..... 9.00



Inside Knob No. OB1713FC, $2\frac{5}{8}$ inches. Wrought brass, old brass finish.

Inside Escutcheon No. OB7855FC, $2\frac{3}{8} \times 7$ inches. Wrought brass, old brass finish.



Outside Knob No. OB1713FC, $2\frac{5}{8}$ inches. Wrought brass, old brass finish.

Outside Escutcheon No. OB7876FC, $2\frac{7}{8} \times 10$ inches. Wrought brass, old brass finish.

Vestibule Door Sets

Design Fairfax
Cuts Half Size

Outside Knob No. OB1713FC, $2\frac{5}{8}$ inches. Wrought brass, old brass finish.

Outside Escutcheon No. OB7876FC, $2\frac{7}{8} \times 10$ inches. Wrought brass, old brass finish.

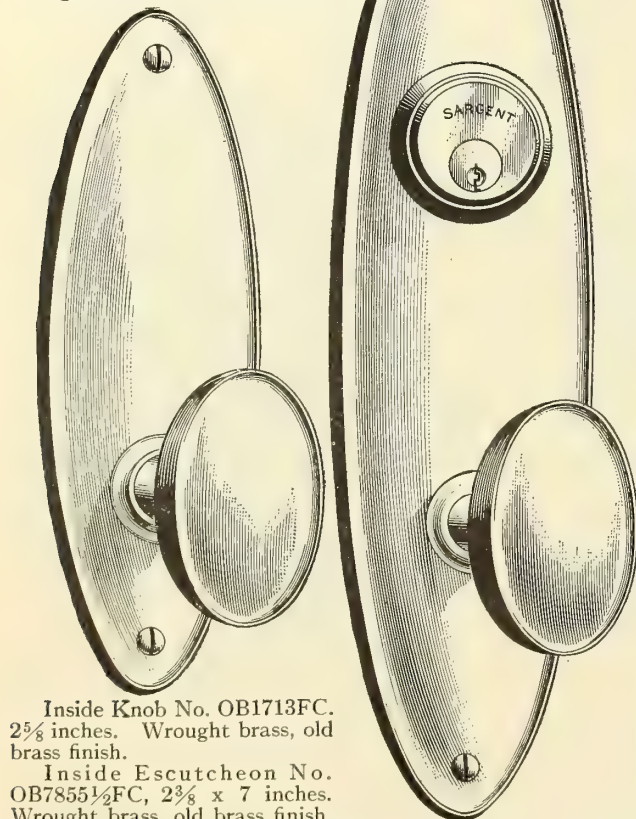
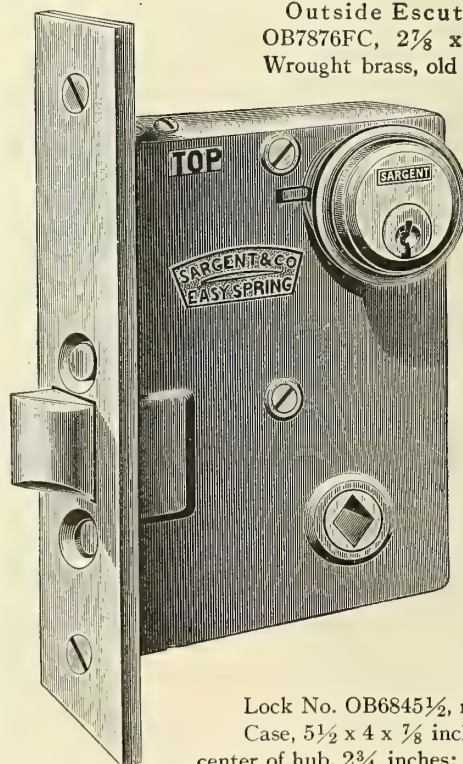
Lock No. OB6845 $\frac{1}{2}$, each..... \$5.80

Knobs No. OB1713FC, without roses, pair..... \$.95

Outside Escutcheon No. OB7876FC, each..... \$.65

Inside Escutcheon No. OB7855 $\frac{1}{2}$ FC, each..... \$.45

Set No. OB5085 $\frac{1}{2}$ FC. Old brass, complete set for single door each..... \$7.80



Inside Knob No. OB1713FC, $2\frac{5}{8}$ inches. Wrought brass, old brass finish.

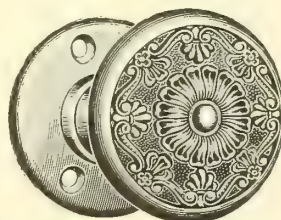
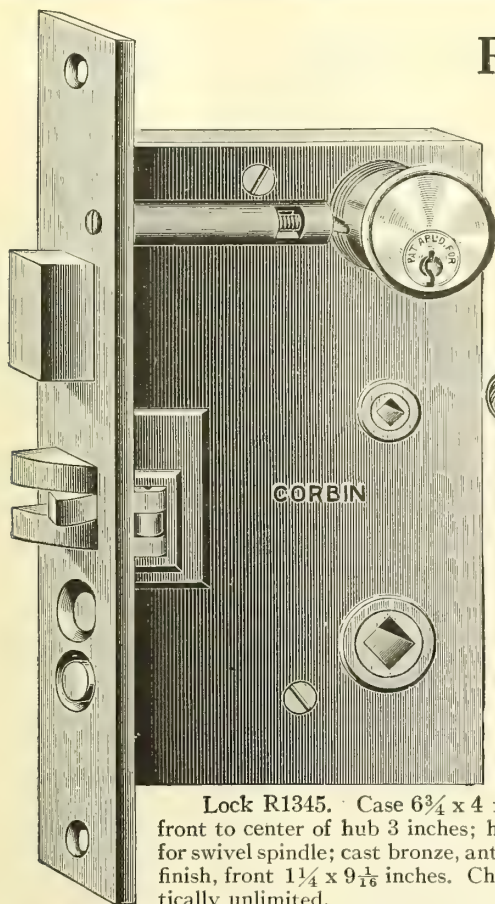
Inside Escutcheon No. OB7855 $\frac{1}{2}$ FC, $2\frac{3}{8} \times 7$ inches. Wrought brass, old brass finish.

Lock No. OB6845 $\frac{1}{2}$, reversible. Case, $5\frac{1}{2} \times 4 \times \frac{7}{8}$ inches; front to center of hub, $2\frac{3}{4}$ inches; hub $\frac{3}{8}$ inch for swivel spindles; wrought brass, old brass finish; front, $1\frac{1}{4} \times 7\frac{3}{4}$ inches; practically unlimited changes.

Front Door Lock Sets

Design Parthenon

Half Size Cuts



Inside Knob R81022, 2¼ inches, with one rose; cast bronze, antique copper finish.



Inside Thumb Knob R2149, cast bronze, antique copper finish.



Outside Knob R81020, 2½ inches.
Outside Escutcheon R81029, 2⅞ x 9½ inches. Cast bronze, antique copper finish.

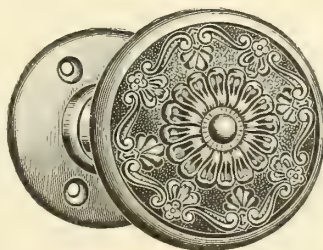
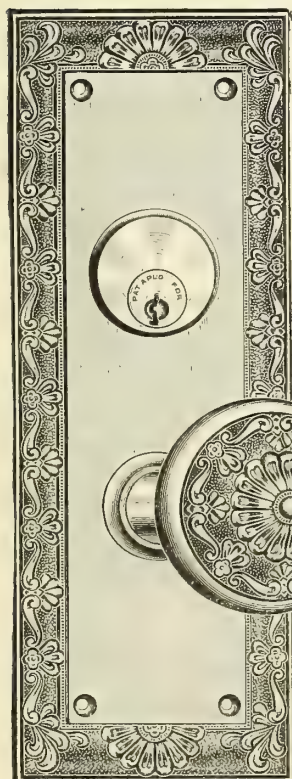
Lock R1345. Case 6¾ x 4 x ¾ inches; front to center of hub 3 inches; hub ⅜ inch for swivel spindle; cast bronze, antique copper finish, front 1¼ x 9½ inches. Changes practically unlimited.

Lock R1345, each	\$12.00
Knob R81021, 2½ x 2¼, with one rose, pair	2.78
Outside Escutcheon R81029, each	2.55
Inside Escutcheon, none.	
Set No. F800 Antique copper finish. Complete set for single door, set	17.47

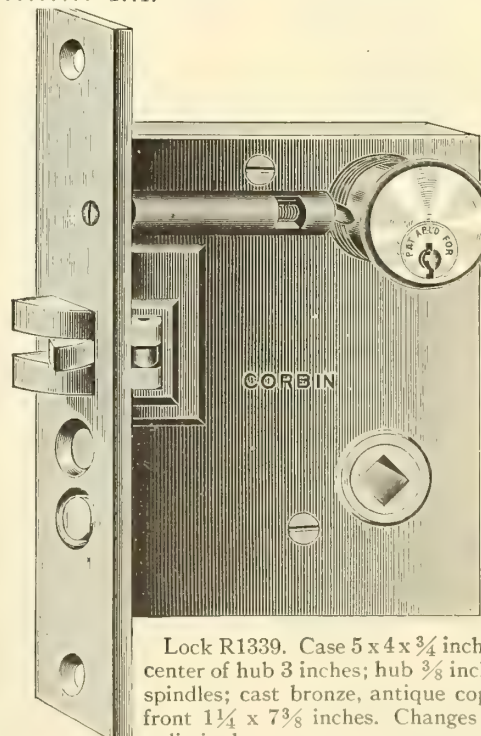
Vestibule Door Lock Set

Design Parthenon

Half Size Cuts



Inside Knob R81022, 2¼ inches, with one rose; cast bronze, antique copper finish.



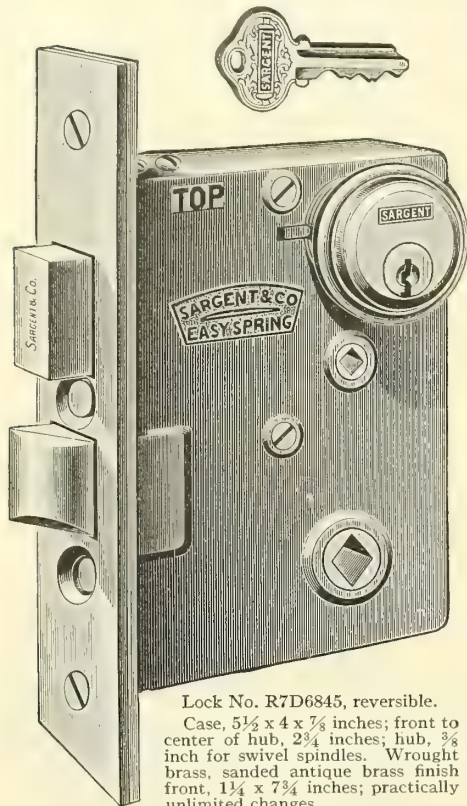
Lock R1339. Case 5 x 4 x ¾ inches; front to center of hub 3 inches; hub ⅜ inch for swivel spindles; cast bronze, antique copper finish; front 1¼ x 7⅞ inches. Changes practically unlimited.

Outside Knob R81022, 2¼ inches. Outside Escutcheon R81030, 2⅞ x 8 inches. Cast bronze, antique copper finish.

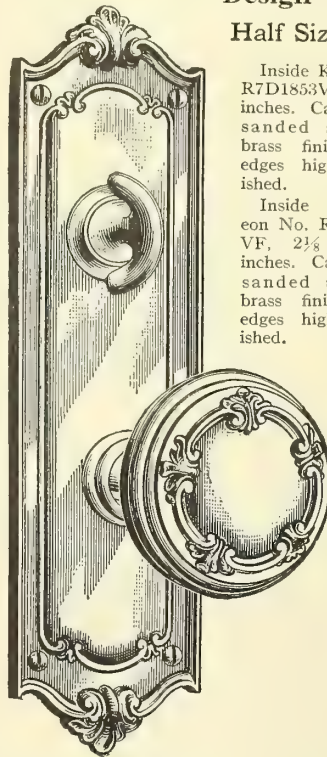
Lock R1339, each	\$8.70	Outside Escutcheon R81030, each	\$2.19
Knob R81022, with one rose, pair	2.48	Inside Escutcheon, none.	
Set No. V850 Antique copper finish. Complete set for single door, set			13.51

Front Door Lock Set

Design Vernon
Half Size Cuts

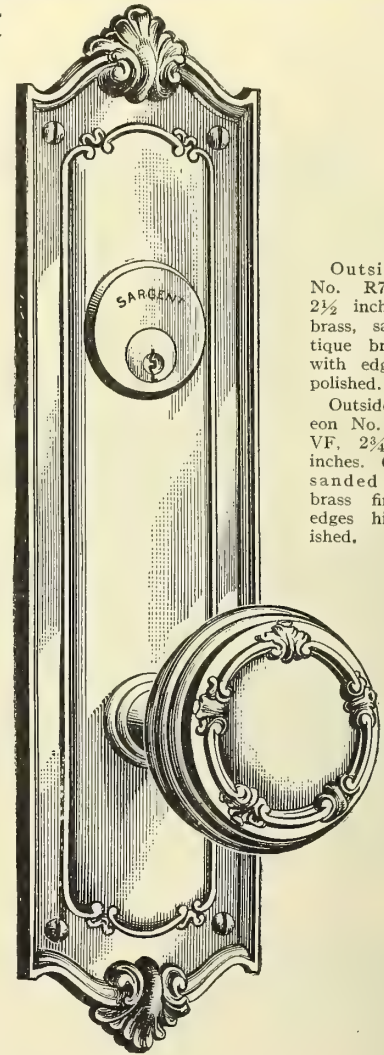


Lock No. R7D6845, reversible.
Case, $5\frac{1}{2} \times 4 \times \frac{7}{8}$ inches; front to center of hub, $2\frac{3}{4}$ inches; hub, $\frac{3}{8}$ inch for swivel spindles. Wrought brass, sanded antique brass finish front, $1\frac{1}{4} \times 7\frac{3}{4}$ inches; practically unlimited changes.



Inside Knob No. R7D1853VF, $2\frac{1}{4}$ inches. Cast brass, sanded antique brass finish with edges highly polished.

Inside Escutcheon No. R7D7855VF, $2\frac{3}{4} \times 7\frac{1}{2}$ inches. Cast brass, sanded antique brass finish with edges highly polished.



Outside Knob No. R7D1857VF, $2\frac{1}{2}$ inches. Cast brass, sanded antique brass finish with edges highly polished.

Outside Escutcheon No. R7D7876VF, $2\frac{3}{4} \times 10\frac{1}{2}$ inches. Cast brass, sanded antique brass finish with edges highly polished.

Lock No. R7D6845, each	\$7.00
Knobs No. R7D1855VF, $2\frac{1}{2} \times 2\frac{1}{4}$, without roses, pair	1.40
Outside Escutcheon No. R7D7876VF, each	1.50
Inside Escutcheon No. R7D7855VF, each	.70
Set No. R7D5075VF Sanded antique brass finish, edges polished, complete set for single door	10.60

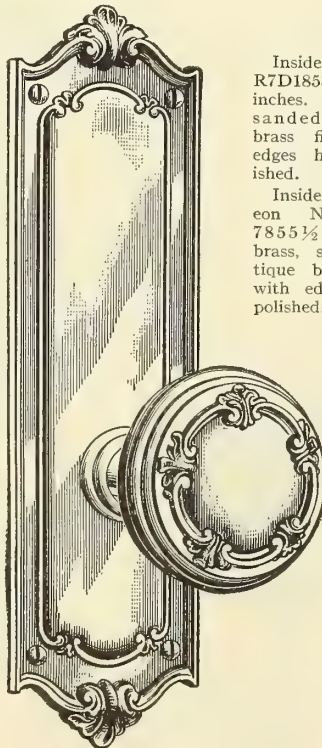
Vestibule Door Lock Sets

Design Vernon—Half Size Cuts



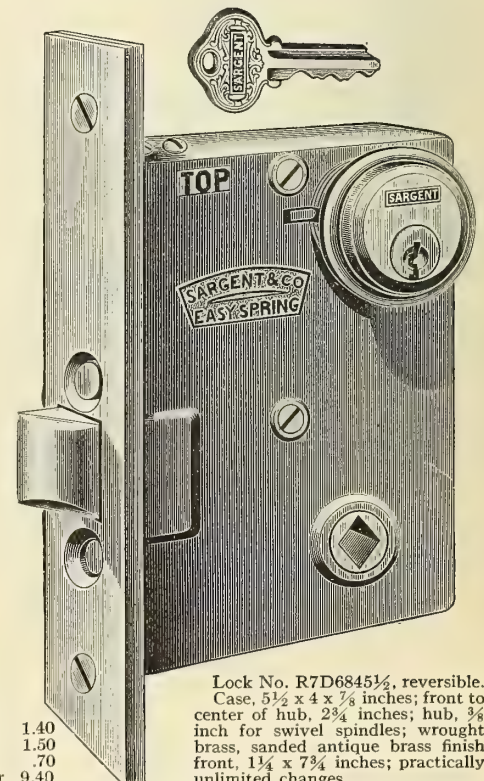
Outside Knob No. R7D1857VF, $2\frac{1}{2}$ inches. Cast brass, sanded antique brass finish with edges highly polished.

Outside Escutcheon No. R7D7876VF, $2\frac{3}{4} \times 10\frac{1}{2}$ inches. Cast brass, sanded antique brass finish with edges highly polished.



Inside Knob No. R7D1853VF, $2\frac{1}{4}$ inches. Cast brass, sanded antique brass finish with edges highly polished.

Inside Escutcheon No. R7D7855VF, cast brass, sanded antique brass finish with edges highly polished.



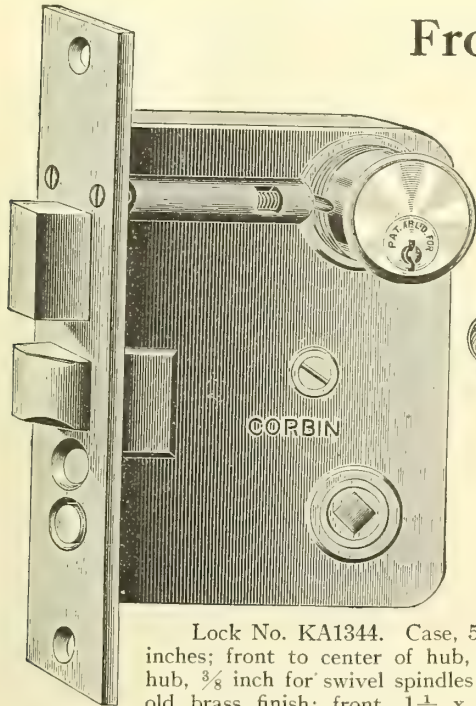
Lock No. R7D6845 $\frac{1}{2}$, reversible.
Case, $5\frac{1}{2} \times 4 \times \frac{7}{8}$ inches; front to center of hub, $2\frac{3}{4}$ inches; hub, $\frac{3}{8}$ inch for swivel spindles; wrought brass, sanded antique brass finish front, $1\frac{1}{4} \times 7\frac{3}{4}$ inches; practically unlimited changes.

Lock No. R7D6845 $\frac{1}{2}$, each	\$5.80	Knobs No. R7D1855VF, $2\frac{1}{2} \times 2\frac{1}{4}$, without roses, pair	1.40
Outside Escutcheon No. R7D7876VF, each			1.50
Inside Escutcheon No. R7D7855VF, each			.70
Set No. R7D5075 $\frac{1}{2}$ VF Sanded antique brass finish, edges polished, complete set for single door			9.40

Front Door Lock Sets

Design Marseilles

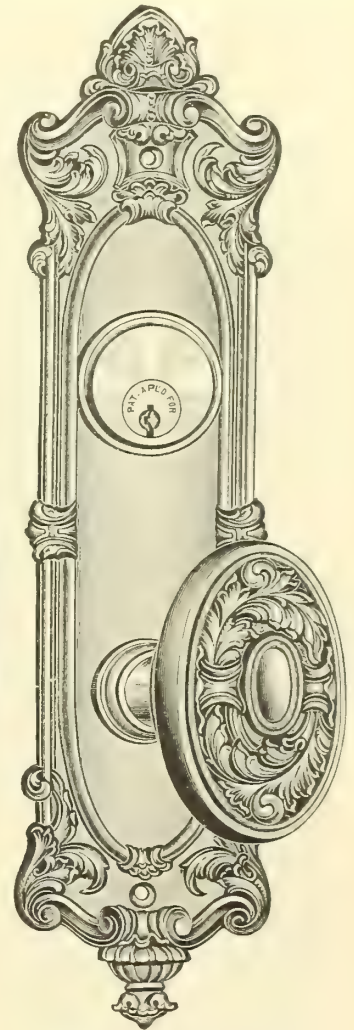
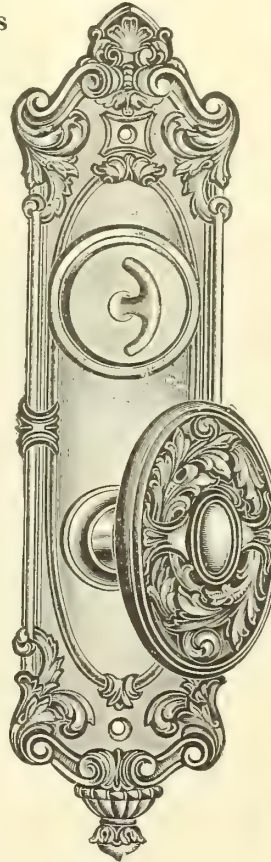
Half Size Cuts



Inside Knob No. KA89125, 2¼ inches.
Inside Escutcheon No. KA89131, 2⅝ x 9 inches. Cast brass, old brass finish.

Lock No. KA1344. Case, 5 x 3¾ x 1⅞ inches; front to center of hub, 2¾ inches; hub, ⅝ inch for swivel spindles; cast brass, old brass finish; front, 1⅞ x 7⅞ inches; practically unlimited changes.

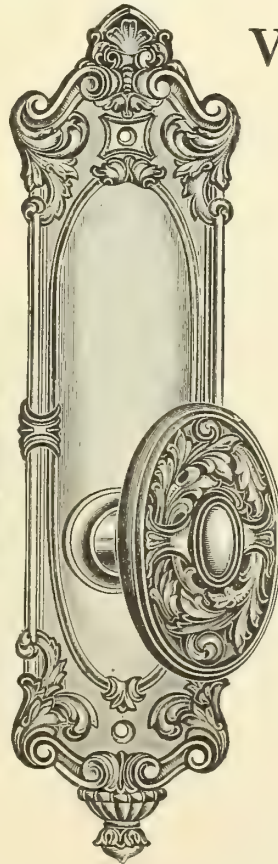
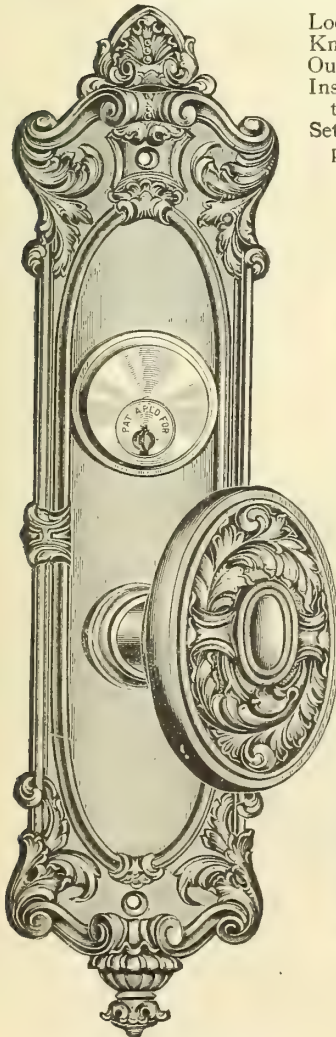
Lock No. KA1344, each.....\$10.50
Knobs No. KA89125, without roses, pair 1.26
Outside Escutcheon No. KA89130, each 1.56
Inside Escutcheon No. KA89131, with thumb piece, each 1.50
Set No. KA891843 Old brass finish, complete set for single door.....14.68



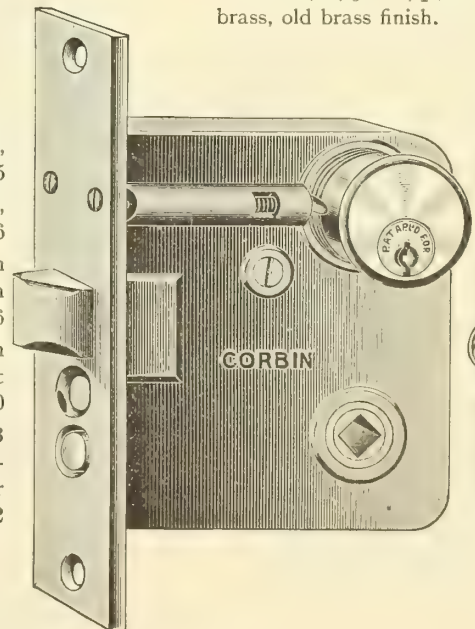
Vestibule Door Lock Set

Design Marseilles

Half Size Cuts



Lock No. KA1334, each.....\$ 7.95
Knob No. KA89125, without roses, pair 1.26
Outside Escutcheon No. KA89130, each 1.56
Inside Escutcheon No. KA89131, without thumb piece, each 1.20
Set No. KA891743 Old brass finish, complete set for single door 12.12



Outside Knob No. KA89125, 2¼ inches. Outside Escutcheon No. KA89130, 2⅝ x 10¾ inches. Cast brass, old brass finish.

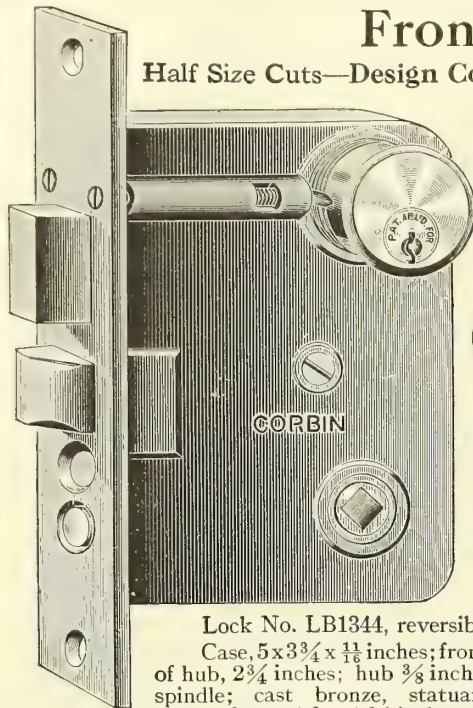
Outside Knob No. KA89125, 2¼ inches. Outside Escutcheon No. KA89130, 2⅝ x 10¾ inches. Cast brass, old brass finish.

Inside Knob No. KA89125, 2¼ inches. Inside Escutcheon No. KA89131, 2⅝ x 9 inches. Cast brass, old brass finish.

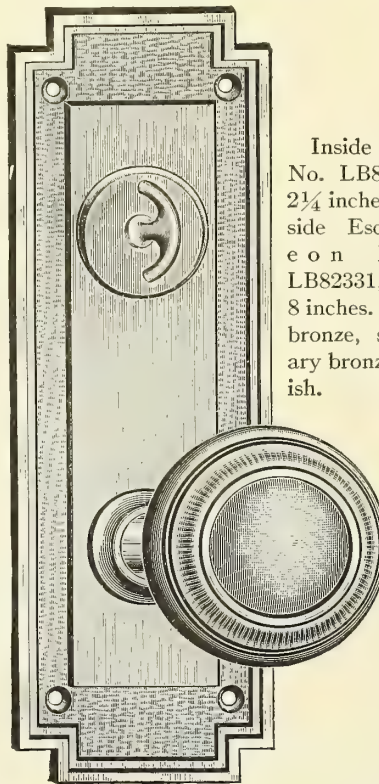
Lock No. KA1334. Case, 4⅞ x 3¾ x 1⅞ inches; front to center of hub 2¾ inches; hub ⅝ inch for swivel spindle. Cast brass, old brass finish front, 1⅞ x 6¼ inches; practically unlimited changes.

Front Door Lock Sets

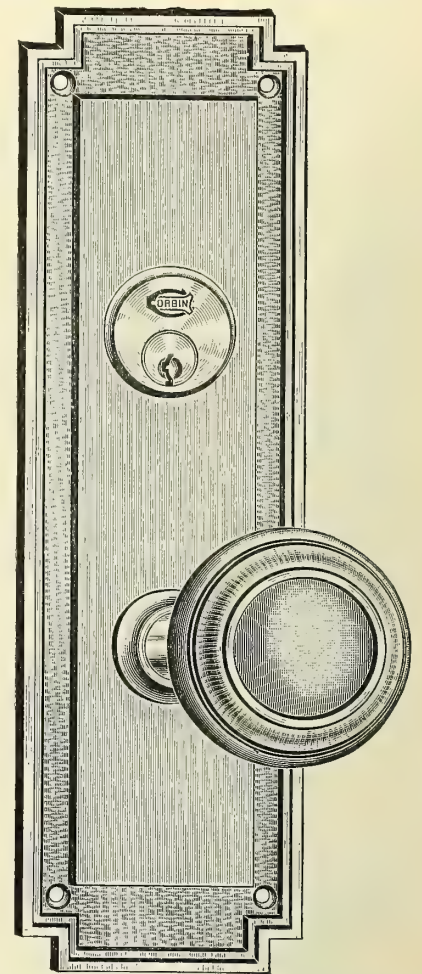
Half Size Cuts—Design Corfu



Lock No. LB1344, reversible.
Case, $5 \times 3\frac{3}{4} \times 1\frac{1}{8}$ inches; front to center of hub, $2\frac{3}{4}$ inches; hub $\frac{3}{8}$ inch for swivel spindle; cast bronze, statuary bronze finish; front, $1\frac{1}{8} \times 7\frac{1}{8}$ inches; practically unlimited changes.



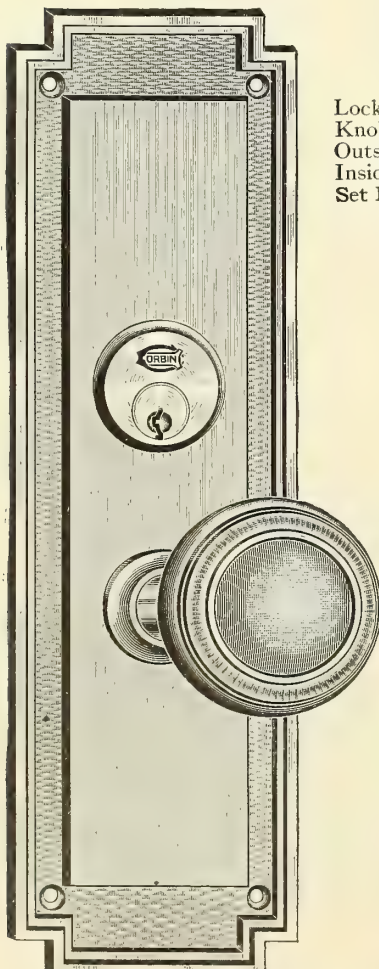
Inside Knob
No. LB82322,
 $2\frac{1}{4}$ inches; In-
side Escutch-
eon No.
LB82331, $2\frac{5}{8} \times$
8 inches. Cast
bronze, statuary
bronze finish.



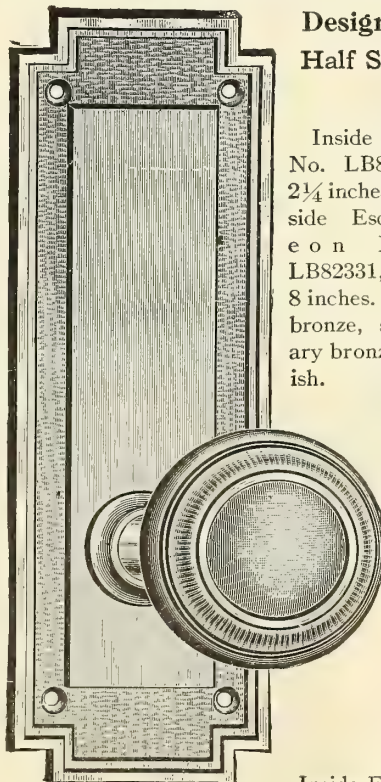
Lock No. LB1344, each \$10.50
Knobs No. LB82321, $2\frac{1}{2} \times 2\frac{1}{4}$, without roses, pair 2.55
Outside Escutcheon No. LB82330, each 3.46
Inside Escutcheon No. LB82331, with thumb piece each 3.26
Set No. LB823842 Statuary bronze finish, complete set
for single door 19.62

Vestibule Door Lock Sets

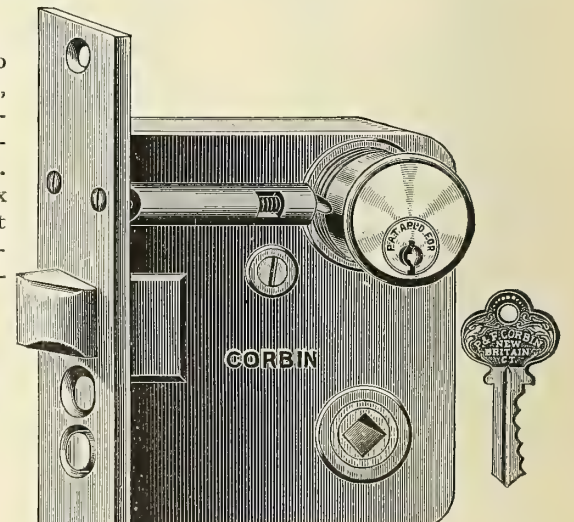
Design Corfu
Half Size Cuts



Outside Knob No. LB82322, $2\frac{1}{4}$ inches.
Outside Escutcheon No. LB82330, 3×10
inches. Cast bronze, statuary bronze finish.
Lock No. LB1334, each \$ 7.95
Knobs No. LB82322, without roses, pair \$2.25
Outside Escutcheon No. LB82330, each 3.46

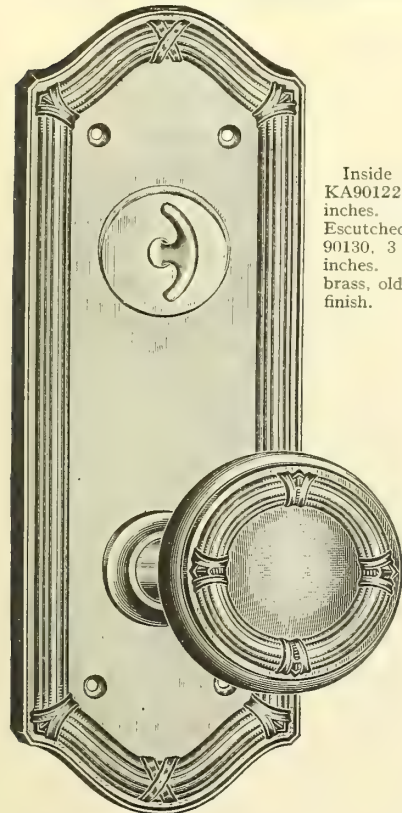


Inside Knob
No. LB82322,
 $2\frac{1}{4}$ inches. In-
side Escutch-
eon No.
LB82331, $2\frac{5}{8} \times$
8 inches. Cast
bronze, statuary
bronze finish.

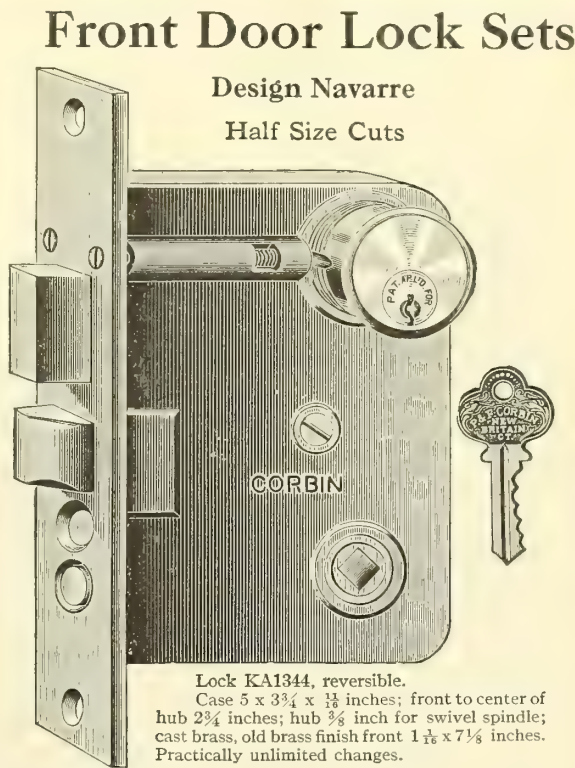


Lock No. LB1334, reversible.
Case, $4\frac{1}{8} \times 3\frac{3}{4} \times 1\frac{1}{8}$ inches; front to
center of hub, $2\frac{3}{4}$ inches; hub, $\frac{3}{8}$ inch for
swivel spindles; cast bronze, statuary
bronze finish, front, $1\frac{1}{8} \times 6\frac{1}{4}$ inches; practically
unlimited changes.

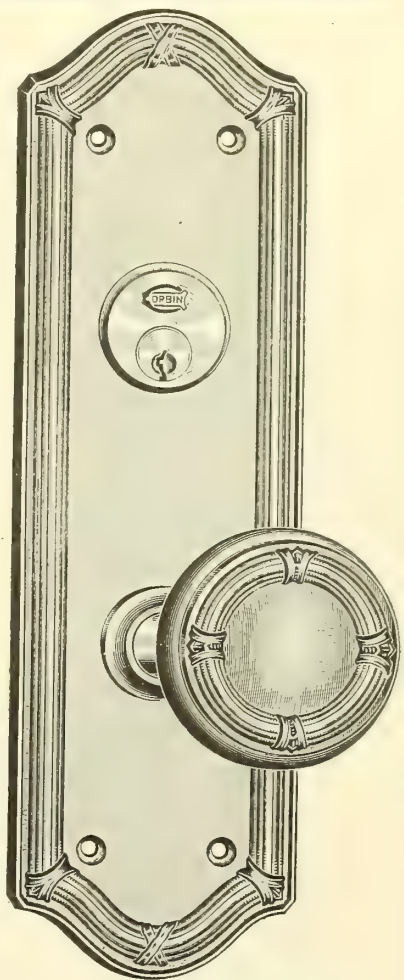
Inside Escutcheon No. LB82331, without thumb piece, each. \$ 2.96
Set No. LB823742 Statuary bronze finish, complete set for
single door 16.78



Inside Knob KA90122, 2¼ inches. Inside Escutcheon KA 90130, 3 x 8¾ inches. Cast brass, old brass finish.



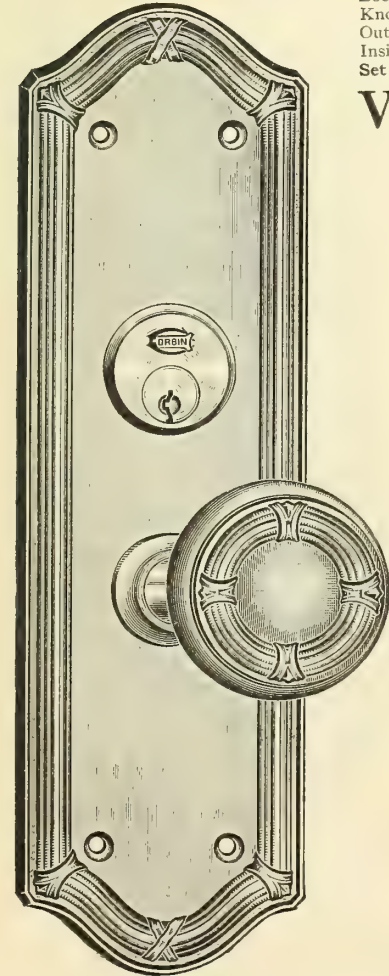
Lock KA1344, reversible.
Case 5 x 3¾ x 1½ inches; front to center of hub 2¾ inches; hub ¾ inch for swivel spindle; cast brass, old brass finish front 1 1/8 x 7 1/8 inches. Practically unlimited changes.



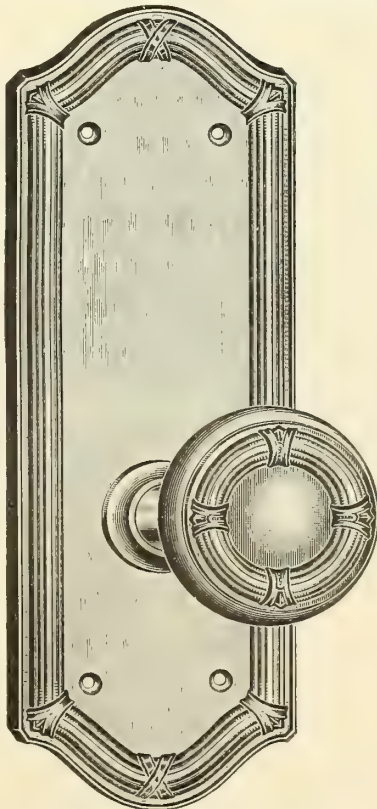
Lock KA1344, each	\$10.50
Knob KA 90121, 2½ x 2¼, without roses, pair	4.20
Outside Escutcheon KA90129, each	4.16
Inside Escutcheon KA90130, with thumb piece, each	3.96
Set No. KA901846, Old brass finish. Complete set for single door	22.67

Vestibule Door Lock Sets

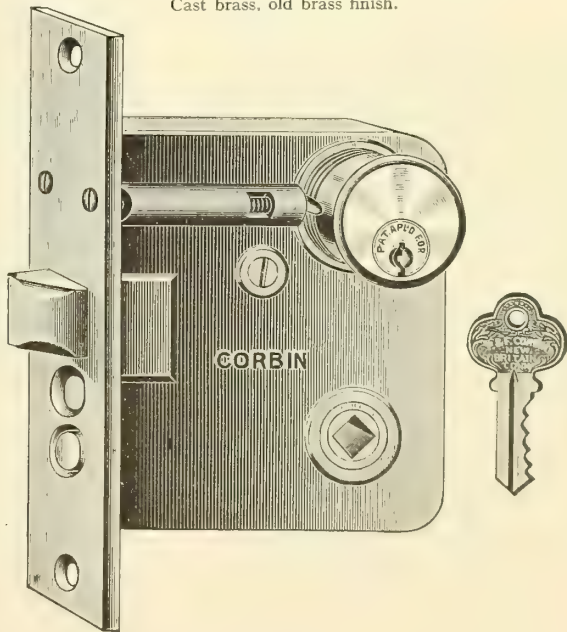
Design Navarre. Half Size Cuts



Outside Knob KA90122, 2¼ inches. Outside Escutcheon KA90129, 3 x 10½ inches. Cast brass, old brass finish.



Inside Knob KA90122, 2¼ inches. Inside Escutcheon KA90130, 3 x 8¾ inches. Cast brass, old brass finish.



Outside Knob KA90120, 2¼ inches. Outside Escutcheon KA90129, 3 x 10½ inches. Cast brass, old brass finish.

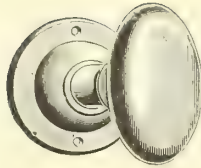
Lock KA1334, reversible.
Case 4½ x 3¾ x 1½ inches; hub ¾ inch for swivel spindles; cast brass, old brass finish; front 1 1/8 x 6 1/4 inches. Practically unlimited changes.

Lock KA1334, each	\$ 7.95
Knob KA90122, without roses, pair	3.80
Outside Escutcheon KA90129, each	4.16
Inside Escutcheon KA90130, without thumb piece, each	3.66
Set No. KA901746 Old brass finish. Complete set for single door	19.72

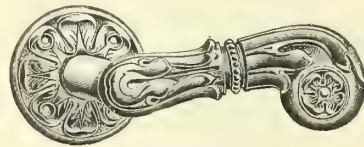
Iron Front Door or Gate Lock Set

Design Courtray

Lock is not reversible. When ordering state hand desired

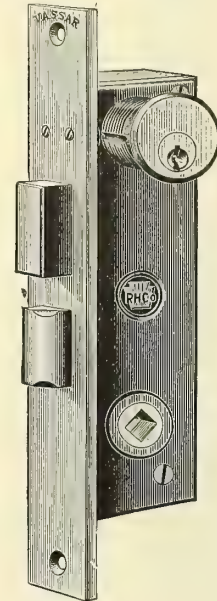


Inside Knob No. 3646 1/2-87, 2 1/4 inches;
Bower-Barff finish; size of rose 2 inches.



Right Hand

Outside Lever Handle No. 2566 1/2-87,
Bower-Barff finish; length of lever 4 inches;
size of rose 2 1/2 inches. State hand wanted.



Lock No. 01719-87. Case 6 3/4 x 1 7/8 x 3/4 inches; front to center of hub, 1 inch; 3/8 inch swivel spindles; cast bronze, Bower-Barff finish; front, 1 1/4 x 9 inches; practically unlimited changes.

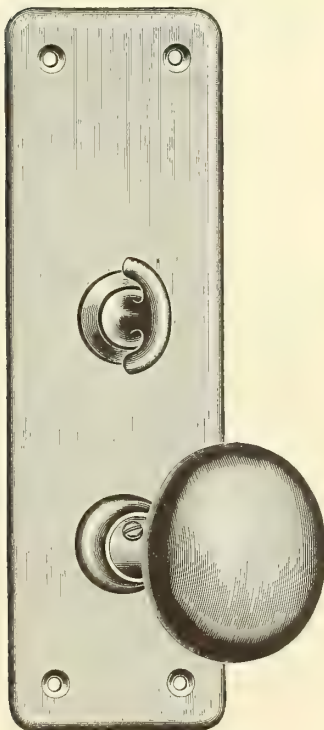
This Lock Set is especially adapted for front gates of residences, etc.

Lock No. 01719-87, each	\$11.88
Knobs No. 3646 1/2-87, pair	2.25
Levers No. 2566 1/2-87, each	3.56
Set No. I-2000 Bower-Barff finish (dead black), complete sets for single doors, each	17.69

Inside Door Cylinder Lock Sets

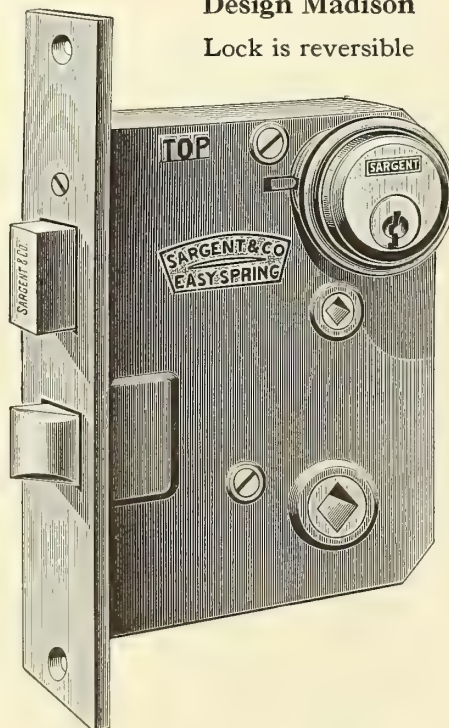
Design Madison

Lock is reversible

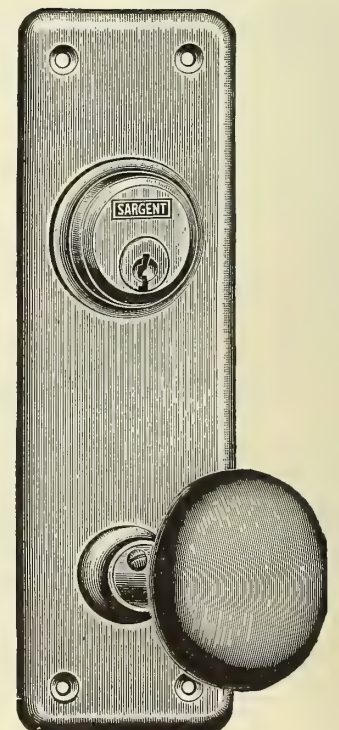


Inside Knob No. 1622P, 2 1/4 inches. Cast bronze, polished.

Inside Escutcheon No. 7875MR, 2 1/4 x 7 1/2 inches, with thumb piece. Wrought bronze, polished.



Lock No. 6725P. Jappanned case, 5 1/2 x 3 7/8 x 3/4 inches; front to center of cylinder, 2 3/4 inches; hub, 3/8 inch; cast bronze, polished; front, 1 1/8 x 7 1/2 inches.



Outside Knob No. 1622P, 2 1/4 inches. Cast bronze, polished.

Outside Escutcheon No. 7876MR, 2 1/4 x 7 1/2 inches. Wrought bronze, polished.

Lock No. 6725P, dozen	\$78.00	Outside Escutcheon No. 7876MR, dozen	\$4.40
Knobs No. 1622P, dozen pairs	10.00	Inside Escutcheon No. 7875MR, dozen	4.40
Set No. M1500 Bronze, polished, complete sets for doors, dozen			96.80

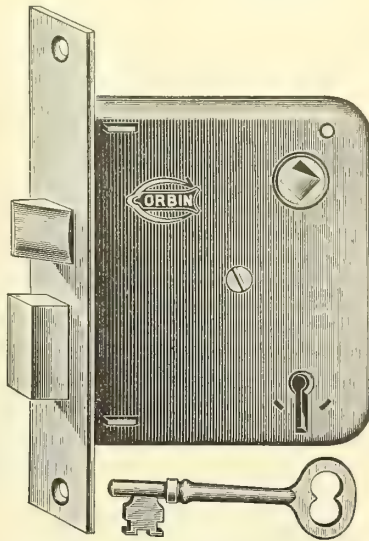
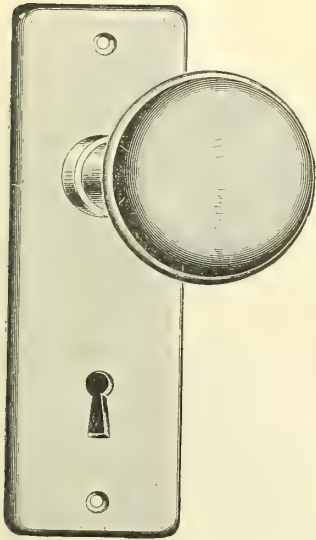
Inside Door Lock Sets

Half Size Cuts

Design Washington

Locks are Reversible

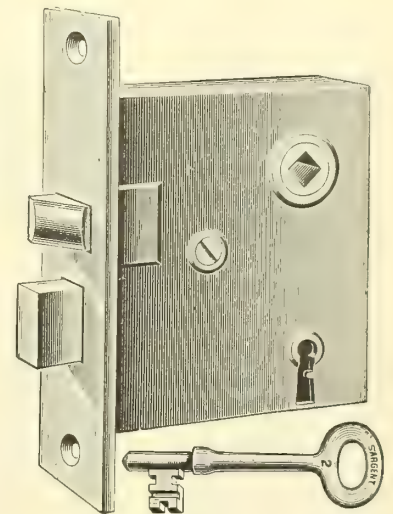
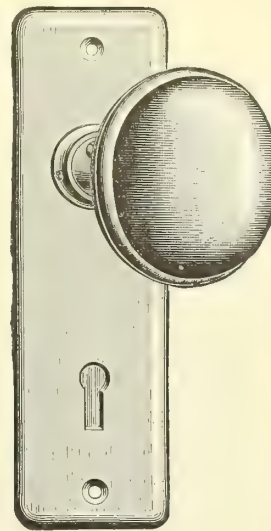
Design Madison



One pair Knobs No. N1523½, 2¼ inches; two Escutcheons No. N3420½, 1¾ x 5½ inches. Wrought steel, bronze plated.

Lock No. N1061. Wrought steel case, 3⅝ x 3⅝ x 1½ inches; front to center of hub, 2⅝ inches; hub, ⅝ inch; wrought steel, bronze plated front, ⅞ x 5¼ inches; 1 tumbler; 24 changes.

Lock No. N1061, dozen \$ 5.40
Knobs No. N1523½, dozen pairs 7.95
Escutcheons No. N3420½, dozen 1.65
Set No. N165064 Bronze plated, complete sets for doors, dozen 15.45



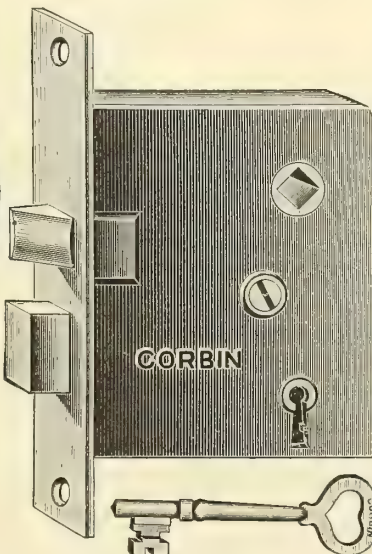
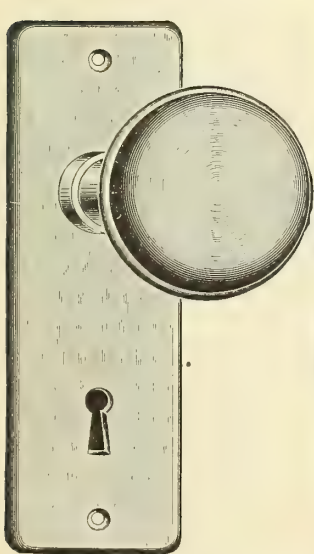
One pair Knobs No. AB 1342, 2¼ inches; two Escutcheons No. AB315MR, 1⅝ x 5⅜ inches. Wrought steel, antique copper finish.

Lock No. AB5161. Case, 3½ x 3¼ x ⅝ inches; front to center of hub, 2½ inches; hub, ⅝ inch; wrought steel, antique copper finish, front ⅞ x 5¼ inches; 1 tumbler, 12 changes.

Lock No. AB5161, dozen \$ 4.00
Knobs No. AB1342, dozen pairs 5.00
Escutcheons No. AB315MR, dozen 1.30
Set No. AB340MR Antique copper finish, complete sets for door, dozen 10.80

Design Washington

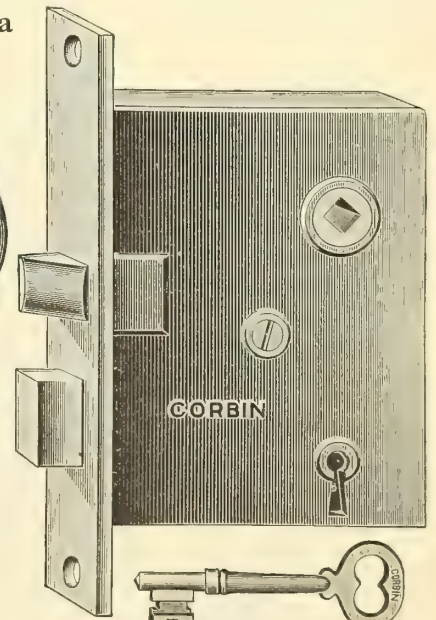
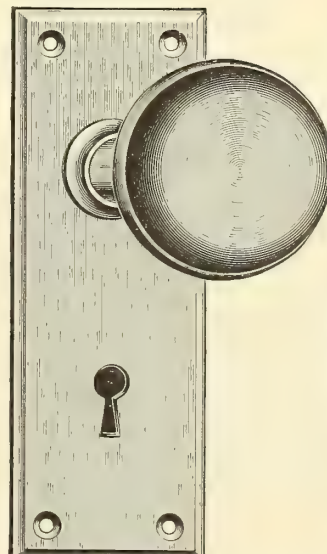
Design Columbia



One pair Knobs No. 01583, 2¼ inches; two Escutcheons No. 2420½, 1¾ x 5½ inches. Wrought bronze, polished.

Lock No. 1285B. Case, 3¾ x 3⅝ x ½ inches; front to center of hub, 2⅝ inches; hub, ⅝ inch; wrought bronze, polished, front, ⅞ x 5¼ inches; 1 tumbler, 12 changes.

Lock No. 1285B, dozen \$ 7.50
Knobs No. 01583, dozen pairs 10.50
Escutcheons No. 2420½, dozen 3.50
Set No. 265124 Polished bronze, complete sets for door, dozen 23.25



One pair Knobs No. 01583, 2¼ inches; two Escutcheons No. 2422, 2 x 5¾ inches. Wrought bronze, polished.

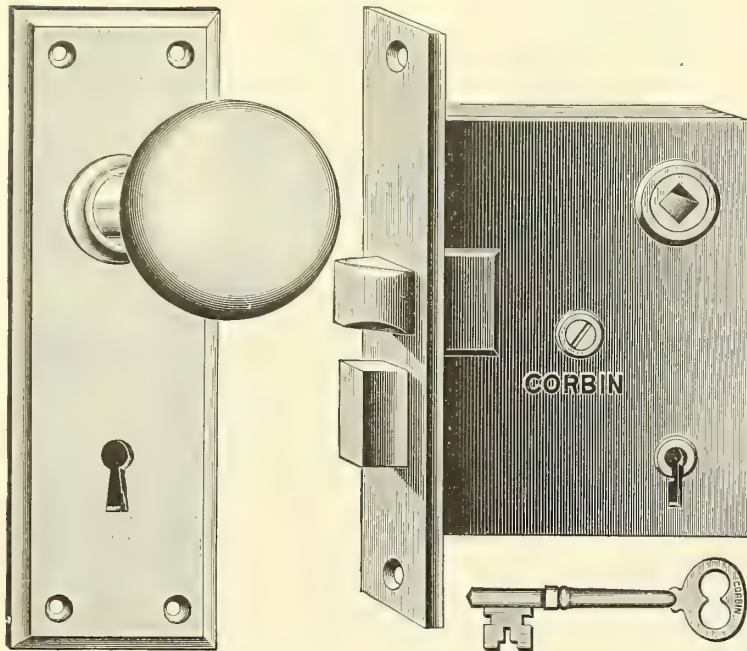
Lock No. 1287B. Case, 4½ x 3⅝ inches; front to center of hub, 2⅝ inches; hub, ⅝ inch; cast bronze, polished; front, ⅞ x 5¾ inches; 1 tumbler; 12 changes.

Lock No. 1287B, dozen \$15.00
Knobs No. 01583, dozen pairs 10.50
Escutcheons No. 2422, dozen 3.75
Set No. M775 Bronze, polished, complete sets for doors, dozen 33.00

Inside Door Lock Sets

Half Size Cuts
Locks are reversible

Design Columbia

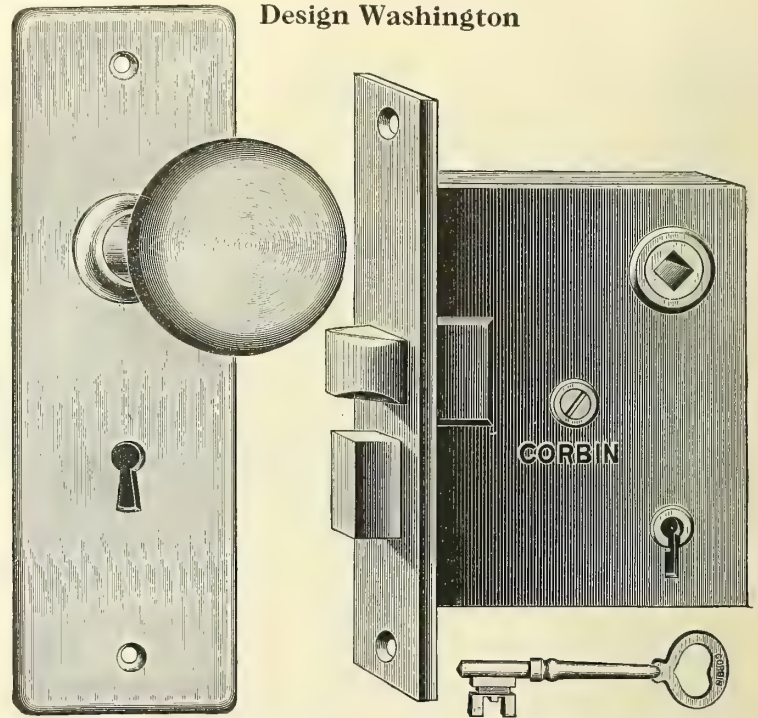


One pair Knobs cast bronze, polished; No. 1519½, 2¼ inches. Two Escutcheons, wrought bronze, polished; No. 2424, 2 x 7 inches.

Lock No. 1363. Case, 4¼ x 3½ x 5⁄8 inches; front to center of hub, 2¾ inches; hub, 1⁄8 inch; cast bronze, polished; front, 1 x 6½ inches; 1 tumbler; 24 changes.

Lock No. 1363, dozen..... \$27.00
Knob No. 1519½, dozen pairs..... 18.00
Escutcheon No. 2424, dozen..... 4.80
Set No. M875 Bronze, polished, complete sets for doors, dozen.. 54.60

Design Washington

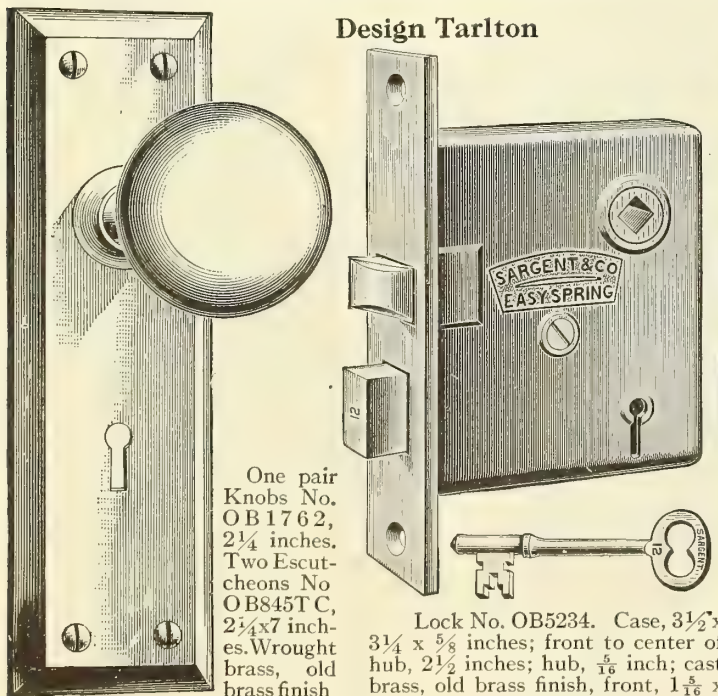


One pair Knobs, cast bronze, polished; No. 1519½, 2¼ inches. Two Escutcheons, wrought bronze, polished; No. 2430½, 2¼ x 7¼ inches.

Lock No. 1363. Case, 4¼ x 3½ x 5⁄8 inches; front to center of hub, 2¾ inches; hub, 1⁄8 inch; cast bronze, polished; front, 1 x 6½ inches; 1 tumbler; 24 changes.

Lock No. 1363, dozen..... \$27.00
Knob No. 1519½, dozen pairs..... 18.00
Escutcheon No. 2430½, dozen..... 6.00
Set No. M1075 Bronze, polished, sets for doors complete, dozen. 57.00

Design Tarlton

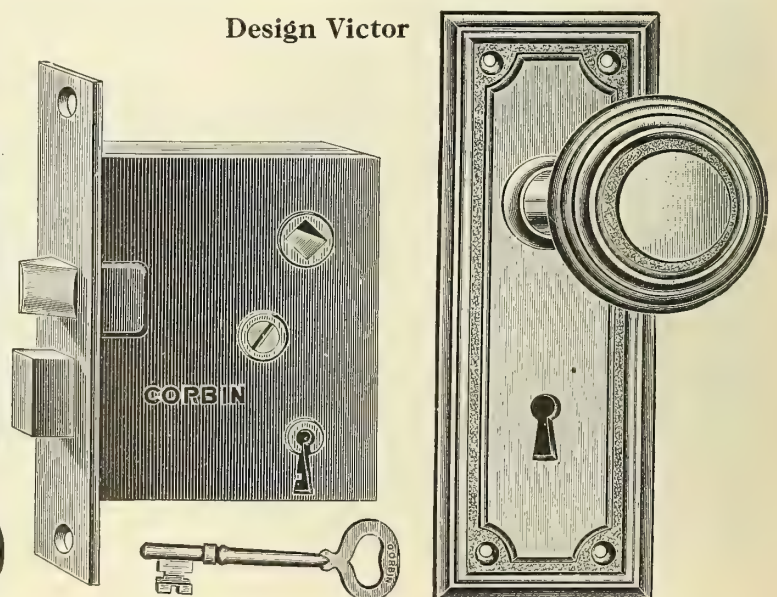


One pair Knobs No. OB1762, 2¼ inches. Two Escutcheons No. OB845TC, 2¼x7 inches. Wrought brass, old brass finish.

Lock No. OB5234. Case, 3½ x 3¼ x 5⁄8 inches; front to center of hub, 2½ inches; hub, 1⁄8 inch; cast brass, old brass finish, front, 1½ x 5¾ inches; 1 tumbler; 24 changes.

Lock No. OB5234, dozen..... \$ 8.30
Knobs No. OB1762, dozen pairs..... 9.70
Escutcheons No. OB845TC, dozen..... 4.80
Set No. OB1255TC Old brass finish, complete for door, dozen.. 25.20

Design Victor

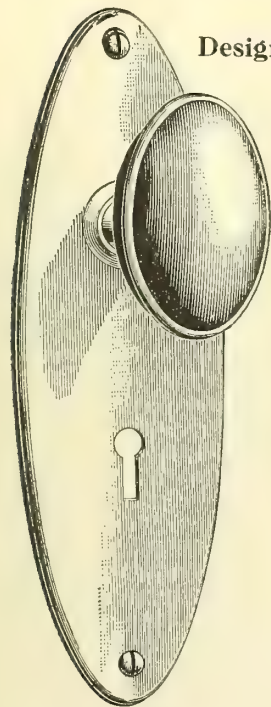


Lock No. KA13271. Case, 3¾ x 3½ x 1⁄2 inches; front to center of hub, 2¾ inches; hub, 1⁄8 inch. Wrought steel, old brass finish, front, 1 x 5¼ inches; 1 tumbler; 12 changes.

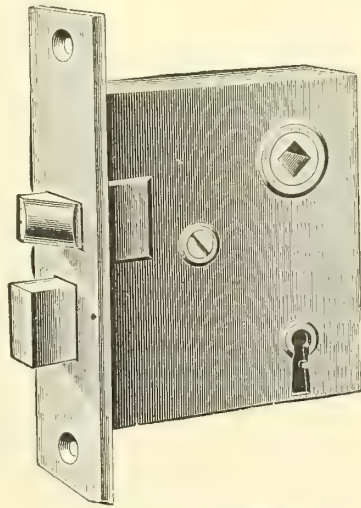
One pair Knobs No. KA61822, 2¼ inches. Two Escutcheons No. KA61832, 2¼ x 6¼ inches. Wrought steel, old brass finish.

Lock No. KA13271, dozen..... \$ 6.00
Knob No. KA61822, dozen pairs..... 8.25
Escutcheon No. KA61832, dozen..... 3.75
Set No. KA618048 Old brass finish, complete set for doors, dozen 21.75

Inside Door Lock Sets

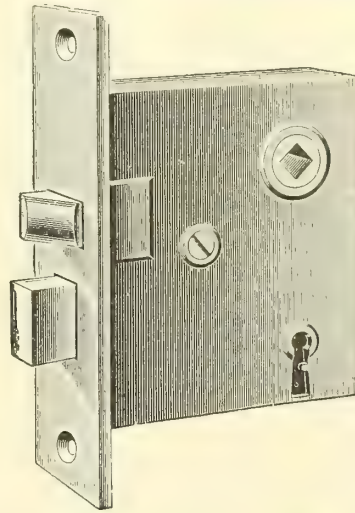


Design Fairfax

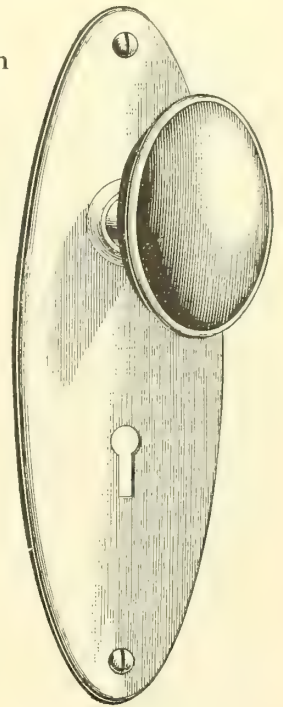


Half Size Cuts

Locks are reversible



Design Portsmouth



One pair Knobs No. OB 1712FC, $2\frac{3}{8}$ inches. Two Escutcheons No. OB845FC, $2\frac{3}{8}$ x 7 inches, same style as Fairfax design, on page 1108. Wrought brass, old brass finish.

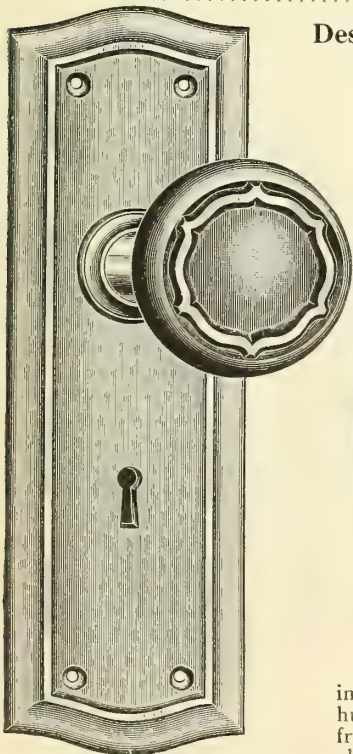
Lock No. OB5164, dozen..... \$ 5.80
Knob No. OB1712FC, dozen pairs..... 10.20
Escutcheons No. OB845FC, dozen..... 5.40
Set No. OB1075FC Old brass finish, complete sets for door, dozen..... 21.60

Lock No. OB5164. Case, $3\frac{1}{2}$ x $3\frac{1}{4}$ x $\frac{5}{8}$ inches; front to center of hub, $2\frac{1}{2}$ inches; hub, $\frac{5}{16}$ inch. Cast brass, old brass finish; front, $\frac{7}{8}$ x $5\frac{1}{4}$ inches; 1 tumbler; 12 changes.

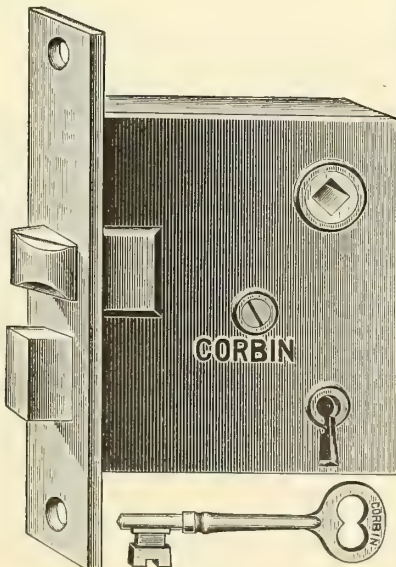
Lock No. 5164P. Case $3\frac{1}{2}$ x $3\frac{1}{4}$ x $\frac{5}{8}$ inches; front to center of hub, $2\frac{1}{2}$ inches; hub, $\frac{5}{16}$ inch. Cast bronze, polished; front, $\frac{7}{8}$ x $5\frac{1}{4}$ inches; 1 tumbler; 12 changes.

One pair Knobs No. 1702P, $2\frac{1}{4}$ inches. Two Escutcheons No. 845PC, $2\frac{3}{8}$ x 7 inches. Wrought bronze, polished.

Lock No. 5164P, dozen..... \$ 5.00
Knobs No. 1702P, dozen pairs..... 7.00
Escutcheons No. 845PC, dozen..... 4.20
Set No. 1075PC Polished bronze, complete sets for door, dozen..... 18.00



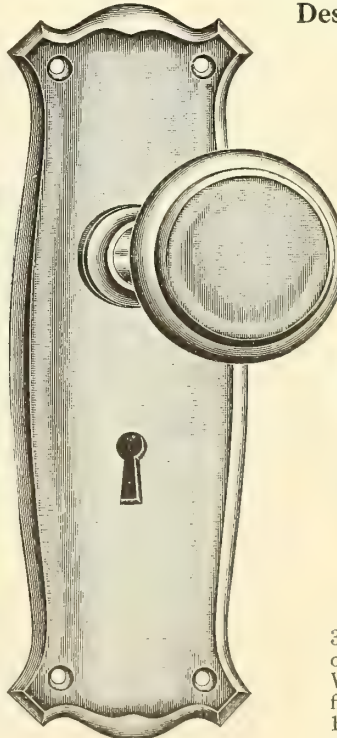
Design Wakefield



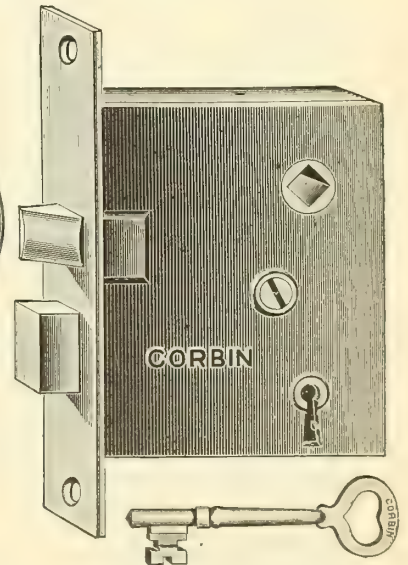
Lock No. KA785. Case, $3\frac{5}{8}$ x $3\frac{1}{4}$ x $\frac{5}{16}$ inches; front to center of hub, $2\frac{9}{16}$ inches; hub, $\frac{5}{16}$ inch. Cast brass, old brass finish, front, $\frac{15}{16}$ x $5\frac{1}{2}$ inches; 1 tumbler; 24 changes.

One pair Knobs No. KA 72622, $2\frac{1}{4}$ inches. Two Escutcheons No. KA72631, $2\frac{1}{2}$ x $7\frac{3}{4}$ inches. Wrought brass, old brass finish.

Lock No. KA785, dozen..... \$12.45
Knobs No. KA72622, dozen pairs..... 15.75
Escutcheons No. KA72631, dozen..... 7.95
Set No. KA726156 Old brass finish, complete sets for door, dozen..... 36.00



Design Princeton



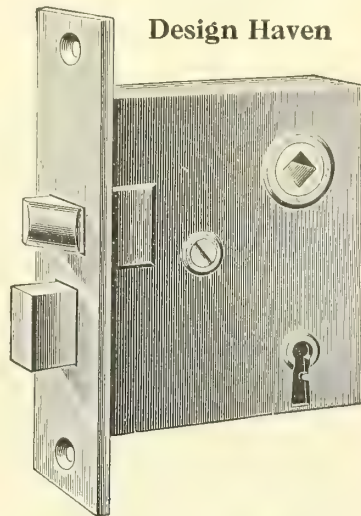
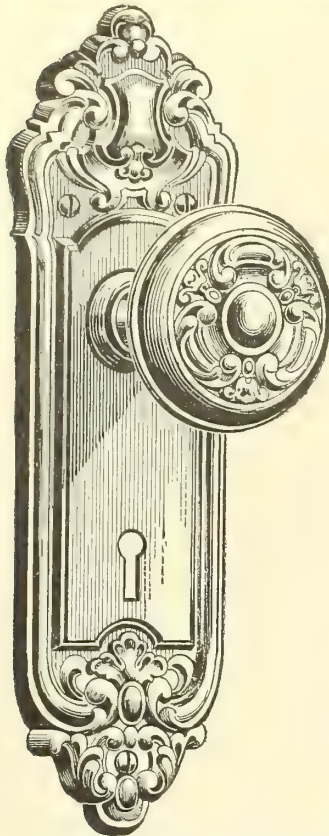
Lock No. SKA13271. Case, $3\frac{3}{4}$ x $3\frac{1}{8}$ x $\frac{1}{2}$ inches; front to center of hub, $2\frac{3}{16}$ inches; hub, $\frac{5}{16}$ inch. Wrought steel, sanded old brass finish, front, $\frac{7}{8}$ x $5\frac{1}{4}$ inches; 1 tumbler; 12 changes.

Lock No. SKA13271, dozen..... \$ 6.00
Knobs No. SKA62122, dozen pairs..... 10.50
Escutcheons No. SKA62131, dozen..... 3.75
Set No. SKA621-048 Sanded old brass, complete sets for doors, dozen..... 24.00

One pair Knobs No. SKA62122, $2\frac{1}{4}$ inches. Two Escutcheons No. SKA62131, $2\frac{1}{2}$ x $7\frac{3}{4}$ inches. Wrought steel, sanded old brass finish.

Inside Door Lock Sets

Half Size Cuts. Locks are reversible



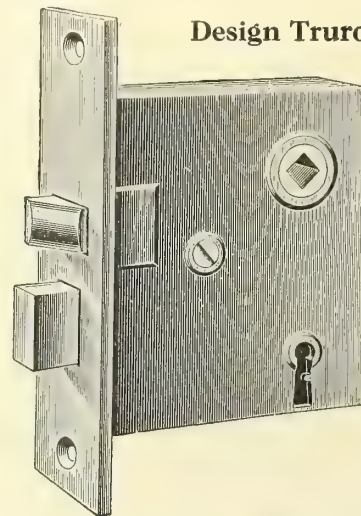
Design Haven



Lock No. OE5161. Case $3\frac{1}{2} \times 3\frac{1}{4} \times \frac{5}{8}$ inches; front to center of hub $2\frac{1}{2}$ inches; hub $\frac{1}{8}$ inch; front is wrought steel, old brass finish, $\frac{7}{8} \times 5\frac{1}{4}$ inches; 1 tumbler, 12 changes.

Lock No. OE5161, dozen..... \$ 4.00
Knobs No. OE1342HF, dozen pairs. 6.00
Escutcheon No. OE354HF, dozen. 3.00
Set No. OE344HF Old brass, depressed surface, oxidized and relieved, complete set for door, dozen 12.00

One pair Knobs No. OE1342HF, $2\frac{1}{4}$ inches. Two Escutcheons No. OE354HF, $2\frac{1}{8} \times 8\frac{3}{4}$ inches. Wrought steel, old brass finish, depressed surface oxidized and relieved.

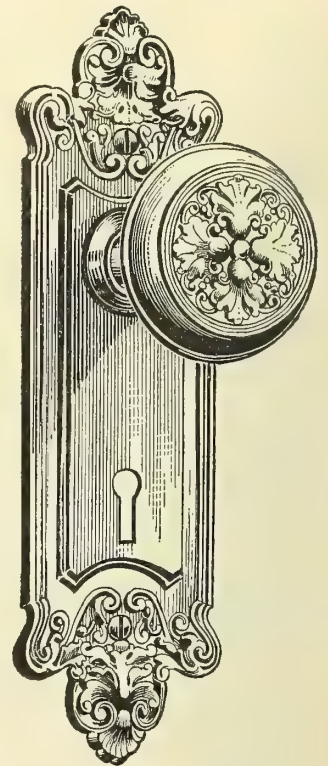


Design Truro

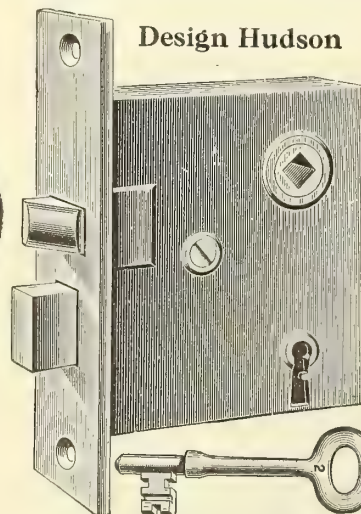
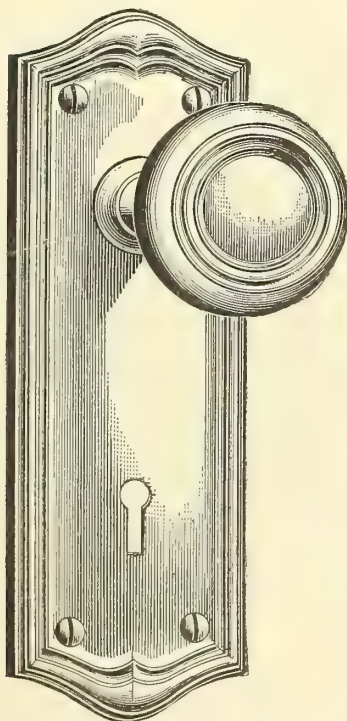


Lock No. AB5161. Case $3\frac{1}{2} \times 3\frac{1}{4} \times \frac{5}{8}$ inches; front to center of hub $2\frac{1}{2}$ inches; hub $\frac{1}{8}$ inch; front is wrought steel, antique copper finish, $\frac{7}{8} \times 5\frac{1}{4}$ inches; 1 tumbler, 12 changes.

Lock No. AB5161, dozen..... \$ 4.00
Knobs No. AB1452TG, dozen pairs 5.40
Escutcheon No. AB345TG, dozen.. 2.40
Set No. AB364TG Antique copper finish, complete set for door, dozen 15.60



One pair Knobs No. AB1452TG, $2\frac{1}{4}$ inches. Two Escutcheons No. AB345TG, $2\frac{1}{4} \times 7\frac{1}{2}$ inches. Cast iron, antique copper finish.



Design Hudson

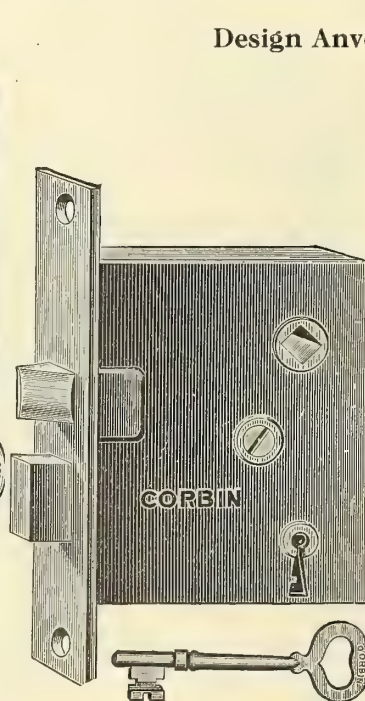


Lock Case $3\frac{1}{2} \times 3\frac{1}{4} \times \frac{5}{8}$ inches; front to center of hub $2\frac{1}{2}$ inches; front $\frac{7}{8} \times 5\frac{1}{4}$ inches; 1 tumbler, 12 changes. No. 5164P, cast bronze, polished; No. R7D5161, wrought steel sanded antique brass finish with edges highly polished.

POLISHED BRONZE
Lock No. 5164P, dozen..... \$ 5.00
Knobs No. 1762TH, dozen pairs... 8.40
Escutcheons No. 845TH, dozen.... 4.20
Set No. 1055TH, polished bronze, complete sets for doors, dozen set 20.40

WROUGHT STEEL
Lock No. R7D5161, dozen..... 4.00
Knobs No. R7D1462TH, dozen pairs 7.20
Escutcheons No. R7D345TH, dozen. 2.40
Set No. R7D345TH Wrought steel, sanded antique brass finish with edges highly polished brass, complete sets for doors, dozen set.... 12.60

One pair Knobs, $2\frac{1}{4}$ inches. No. 1762TH, wrought bronze, polished; No. R7D1462TH, wrought steel, sanded, antique brass finish, with edges highly polished brass.
Two Escutcheons, $2\frac{1}{2} \times 7\frac{1}{4}$ inches. No. 845TH, wrought bronze, polished; No. R7D345TH, wrought steel, sanded antique brass finish, with edges highly polished brass.



Design Anvers



Lock No. S2KA1285. Case $3\frac{3}{4} \times 3\frac{1}{8} \times \frac{1}{2}$ inches; front to center of hub $2\frac{3}{8}$ inches; hub $\frac{1}{8}$ inch; wrought brass sanded, antique brass shaded. Size front, $\frac{7}{8} \times 5\frac{1}{4}$ inches; 1 tumbler, 12 changes.

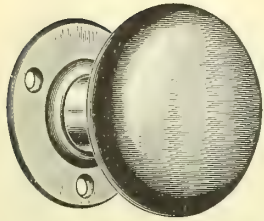
Lock No. S2KA1285, dozen..... \$ 8.70
Knobs No. S2KA72322, dozen pairs..... 15.75
Escutcheon No. S2KA72331, dozen..... 7.95
Set No. S2KA723124 Sanded antique brass, shaded, edges highly polished. Complete sets for doors..... 32.25

One pair Knobs No. S2KA72322, $2\frac{1}{4}$ inches. Two Escutcheons No. S2KA72331, $2\frac{1}{2} \times 7\frac{1}{4}$ inches. Wrought brass sanded, antique brass shaded, with edges highly polished.

Inside Door Lock Sets

Half Size Cuts

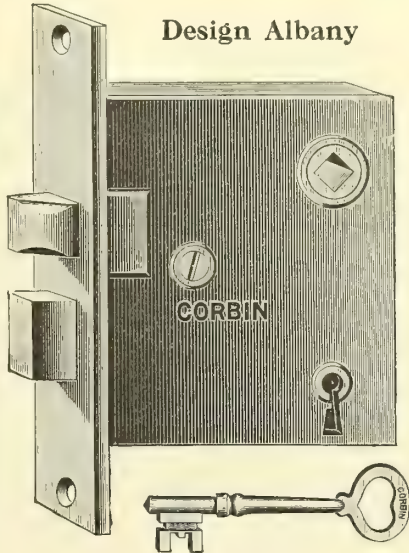
Design Albany



One pair Knobs No. LB1419½, wrought bronze, statuary bronze finish.



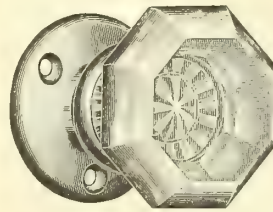
Two Escutcheons No. LB76440, 1 x 2 inches, cast bronze, statuary bronze finish.



Lock No. LB785. Japanned case 3⅝ x 3¼ x ⅞ inches; front to center of hub 2⅞ inches; hub ⅝ inch; cast bronze, statuary bronze finish front ⅝ x 5½ inches; 1 tumbler, 24 changes.

Lock No. LB785, dozen..... \$12.45
Knobs No. LB1419½, dozen pairs..... 17.85
Escutcheons No. LB76440, dozen..... 6.12
Set No. LB2075 Statuary bronze finish, complete sets for doors, dozen..... 42.54

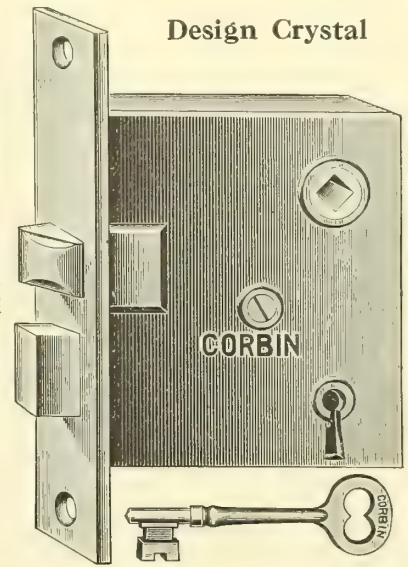
Design Crystal



One pair Knobs No. DA0240½, 2¼ inches, brass, old brass finish mountings.



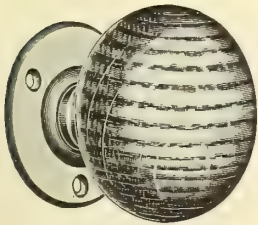
Two Escutcheons No. DA2560, 1⅞ x 1⅜ inches; wrought brass, old brass finish.



Lock No. DA785. Japanned case 3⅝ x 3¼ x ⅞ inches; front to center of hub 2⅞ inches; hub ⅝ inch; cast brass, old brass finish, front ⅝ x 5½ inches; 1 tumbler; 24 changes.

Lock No. DA785, dozen..... \$12.45
Knobs No. DA0240½, dozen pairs..... 41.40
Escutcheon No. DA2560, dozen..... 1.80
Set No. DA2175 Old brass finish, glass knobs, complete sets for doors, dozen..... 57.45

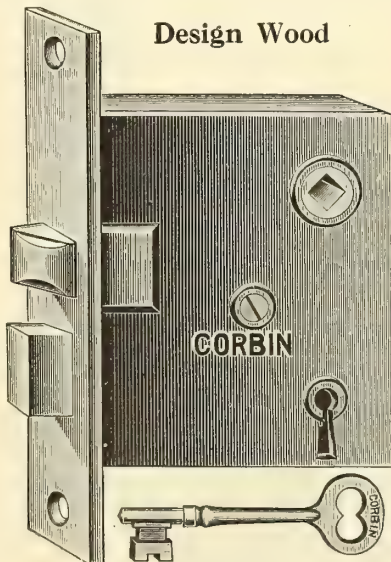
Design Wood



One pair Knobs, 2¼ inches. No. 06001¼, oak; No. 06001¼, mahogany; wrought brass, old brass finish mountings.



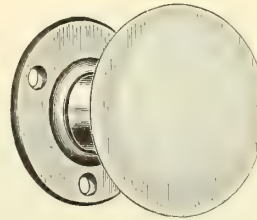
Two Escutcheons No. DA2560, 1⅞ x 1⅜ inches; wrought brass, old brass finish.



Lock No. DA785. Japanned case 3⅝ x 3¼ x ⅞ inches; front to center of hub 2⅞ inches; hub ⅝ inch; cast brass, old brass finish, front ⅝ x 5½ inches; 1 tumbler; 24 changes.

Lock No. DA785, dozen..... \$12.45
Knob No. DA06001¼, oak, dozen pairs..... 7.90
Knob No. DA06001¼, mahogany, dozen pairs..... 7.90
Escutcheon No. DA2560, dozen..... 1.80
Set No. DA2275½ Old brass finish, oak knob, complete for doors, dozen..... 23.95
Set No. DA2275 Old brass finish, mahogany knob, complete for doors, dozen..... 23.95

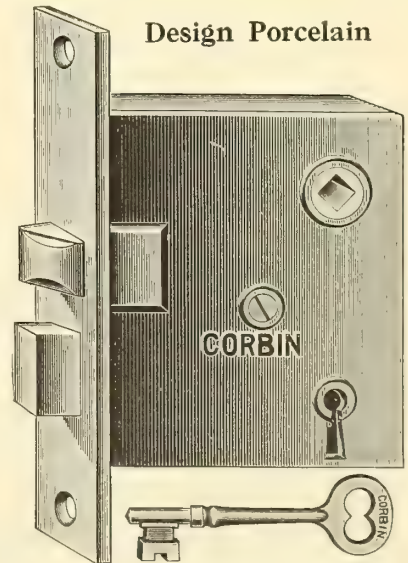
Design Porcelain



One pair Knobs No. DA2851, 2¼ inches; porcelain, wrought brass, old brass finish mountings.



Two Escutcheons No. DA2560, 1⅞ x 1⅜ inches; wrought brass, old brass finish.



Lock No. DA785. Japanned case 3⅝ x 3¼ x ⅞ inches; hub ⅝ inch; front to center of hub 2⅞ inch; cast brass, old brass finish, front ⅝ x 5½ inches; 1 tumbler; 24 changes.

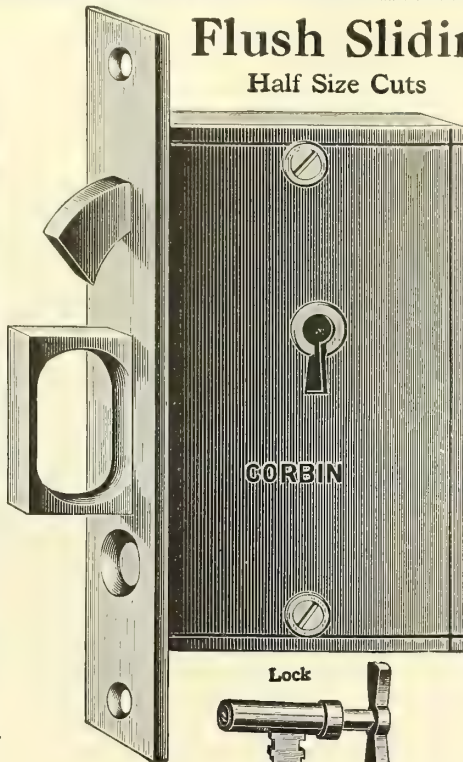
Lock No. DA785, dozen..... \$12.45
Knobs No. DA2851, dozen pairs..... 9.30
Escutcheons No. DA2560, dozen..... 1.80
Set No. DA2375 Old brass finish, porcelain knobs, complete for doors..... 25.35

Flush Sliding Door Lock Sets

Design Columbia



Escutcheon, 2 x 5 3/4 inches.
Cast bronze polished, No. 0986 3/4.
Cast bronze, statuary bronze finish, No. LB0986 3/4.
For single doors with two escutcheons.
For double doors with four escutcheons.



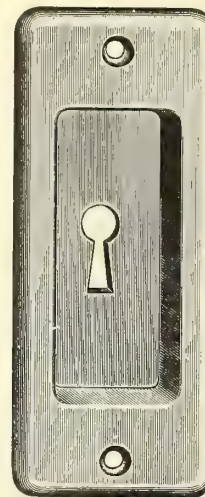
Lock

Japanned case 5 1/2 x 3 1/2 x 5/8 inches; front to keyhole 2 inches; size front, 1 1/8 x 7 7/8 inches.

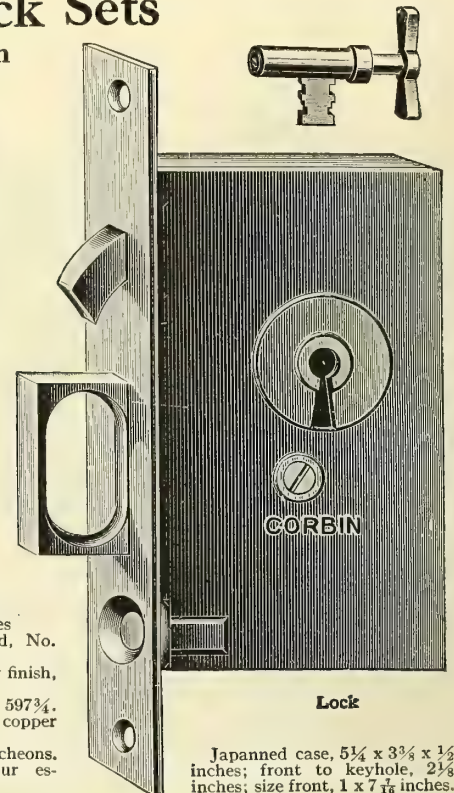
Set No. 302312	Polished bronze, complete for single doors, set.....	\$ 3.69
Set No. 302314	Polished bronze, complete for double doors, set.....	6.15
Set No. LB302312	Bronze, statuary bronze finish, complete for single doors, set.....	4.02
Set No. LB302314	Bronze, statuary bronze finish, complete for double doors, set.....	6.84

Half Size Cuts

Design Washington



Escutcheons, 2 x 5 Inches
Wrought steel, bronze plated, No. N397 3/4.
Wrought steel, antique copper finish, No. R397 3/4.
Wrought bronze, polished, No. 597 3/4.
Wrought bronze, antique copper finish, No. R597 3/4.
For single doors with two escutcheons.
For double doors with four escutcheons.

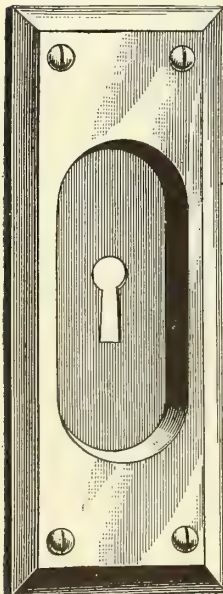


Lock

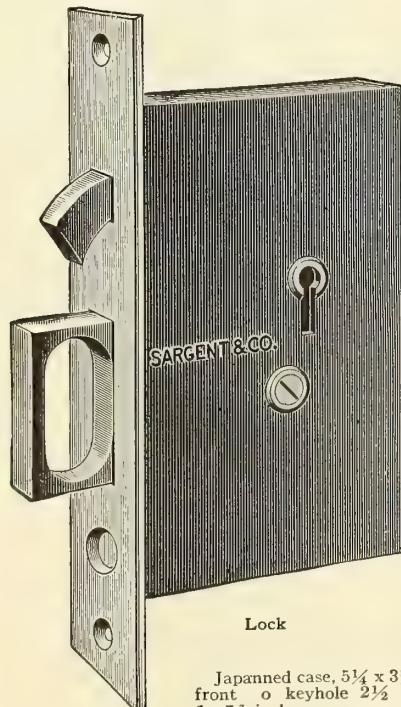
Japanned case, 5 1/4 x 3 3/4 x 1 1/2 inches; front to keyhole, 2 1/8 inches; size front, 1 x 7 1/8 inches.

Set No. N165-308	Steel, bronze plated, complete for double door, dozen sets....	\$34.20
Set No. R165-308	Steel, antique copper finish, complete for double doors, dozen sets....	39.60
Set No. 265312	Bronze, polished, complete for single doors, dozen sets....	30.90
Set No. 265314	Bronze, polished, complete for double doors, dozen sets....	47.40
Set No. R265312	Bronze, antique copper finish, complete for single doors, dozen sets....	34.50
Set No. R265314	Bronze, antique copper finish, complete for double doors, dozen sets....	54.60

Design Tarlton



Escutcheons, 2 3/8 x 6 inches.
Wrought steel, old brass finish, No. OB344TC.
Brass, old brass finish, No. OB844TC.
For single doors with two escutcheons.
For double doors with four escutcheons.



Lock

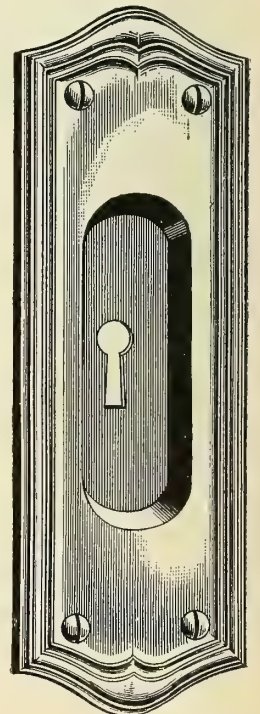
Japanned case, 5 1/4 x 3 3/4 x 5/8 inches; front to keyhole 2 1/2 inches; front, 1 x 7 1/8 inches.

Set No. OB6961TC	Steel, old brass finish, complete for single door, set....	\$ 1.65
Set No. OB6962TC	Steel, old brass finish, complete for double door, set....	2.70
Set No. OB6963TC	Brass, old brass finish, complete for single door, set....	2.05
Set No. OB6964TC	Brass, old brass finish, complete for double door, set....	3.30

Design Hudson



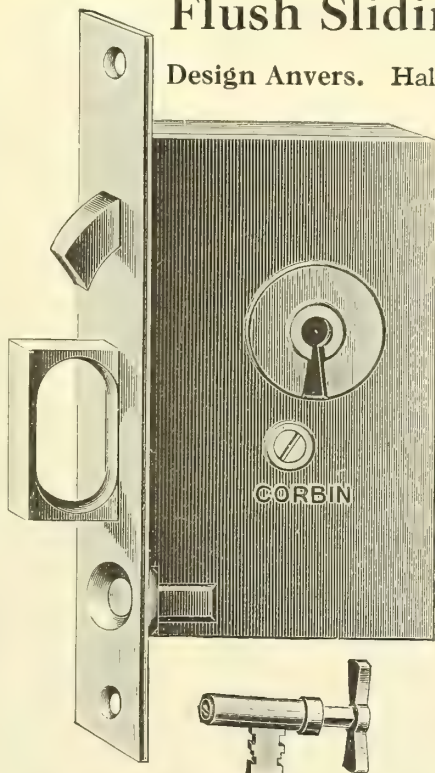
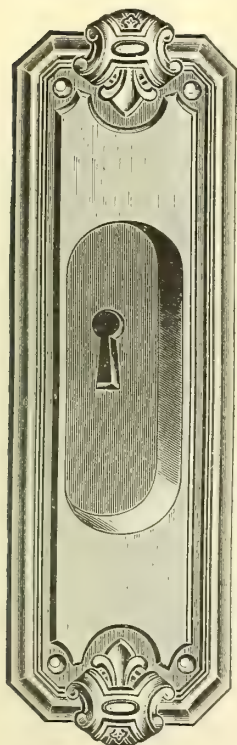
Escutcheons, 2 1/2 x 7 1/4 inches.
Wrought bronze, polished, No. 844TH.
Steel, sanded antique brass finish with edges highly polished brass, No. R7D344TH.
For single doors with two escutcheons.
For double doors with four escutcheons.



Set No. R7D6961TH	Steel sanded antique brass, with edges highly polished brass, complete for single door, set.....	\$ 1.60
Set No. R7D6962TH	Steel sanded antique brass, with edges highly polished brass, complete for double door, set.....	2.60
Set No. 6963TH	Bronze, polished, complete for single door, set.....	2.25
Set No. 6964TH	Bronze, polished, complete for double door, set.....	3.65

Flush Sliding Door Lock Sets

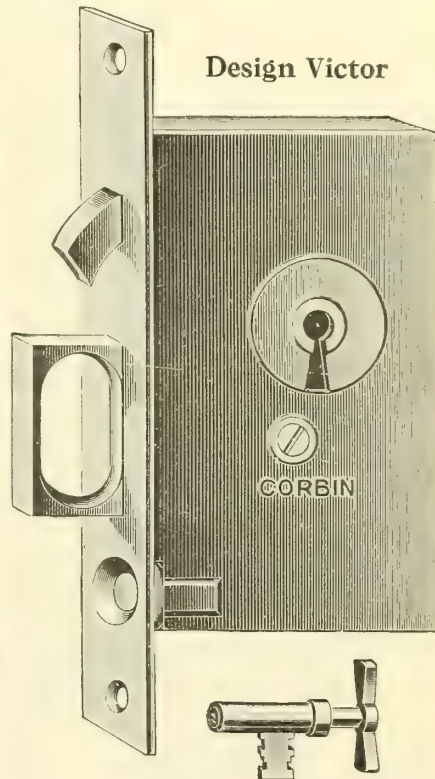
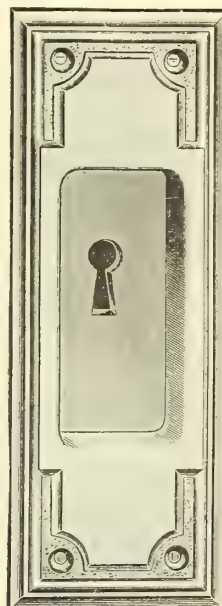
Design Anvers. Half Size Cuts



Escutcheon S2KA72334, 2 1/2 x 7 3/4 inches. Wrought brass sanded, antique brass shaded with edges highly polished.

For single door with two escutcheons.

For double door with four escutcheons.



Design Victor

Escutcheon KA61834. Wrought steel, old brass finish.

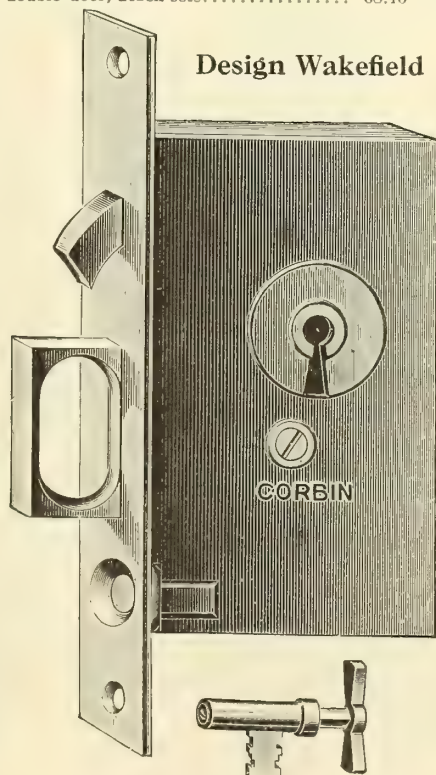
For single door with two escutcheons.

For double door with four escutcheons.

Lock for single door KA13092, for double door KA13100. Case 5 1/4 x 3 3/8 x 1/2 inches; front to keyhole 2 1/8 inches; steel, old brass finish, front 1 1/8 x 7 3/8 inches.

Complete for single door, dozen sets. \$28.80

Complete for double door, dozen sets. 46.80



Design Wakefield

Escutcheon KA72634, 2 1/2 x 7 3/4 inches. Wrought brass, old brass finish.

For single doors with two escutcheons.

For double doors with four escutcheons.

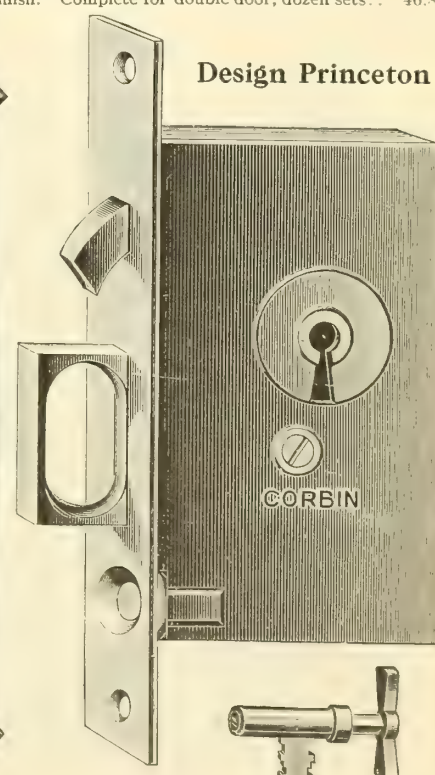
Lock for single door KA1092, for double door KA1100. Case 5 1/4 x 3 3/8 x 1/2 inches; front to keyhole 2 1/8 inches; brass, old brass finish, front 1 1/8 x 7 3/8 inches.

Set No. OB726312 Old brass finish.

Complete for single door, dozen sets. \$41.40

Set No. OB726314 Old brass finish.

Complete for single door, dozen sets. 68.40



Design Princeton

Escutcheon SKA62134, 2 1/2 x 7 3/4 inches. Wrought steel, sanded old brass finish.

For single door with two escutcheons.

For double door with four escutcheons.

Lock, for single door, SKA13092, for double door SKA13100. Case 5 1/4 x 3 3/8 x 1/2 inches; front to keyhole 2 1/8 inches; steel, sanded old brass finish, front 1 1/8 x 7 3/8 inches.

Set No. SKA621306 Sanded old brass finish.

Complete for single door, dozen sets \$28.80

Set No. SKA621308 Sanded old brass finish.

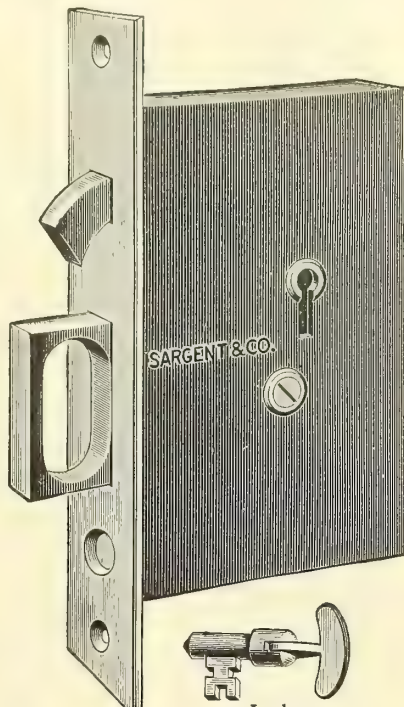
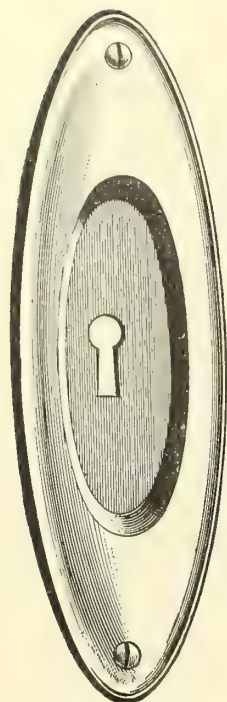
Complete for single door, dozen sets 46.80

Flush Sliding Door Lock Sets

Design Fairfax

Half Size Cuts

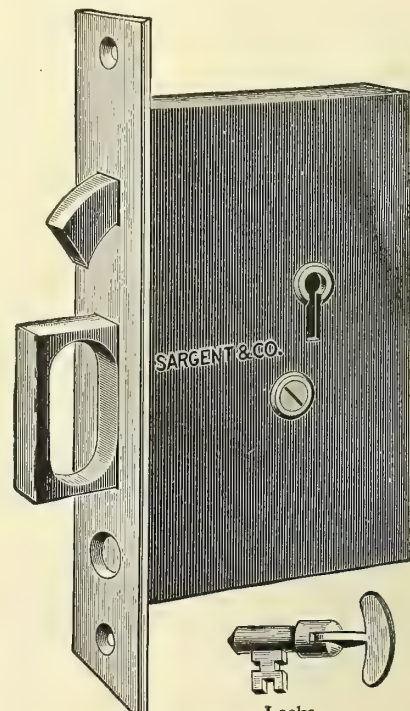
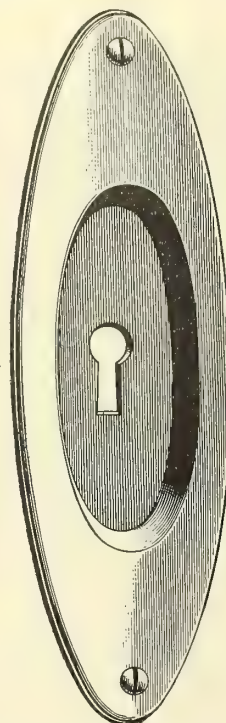
Design Portsmouth



Escutcheons No. OB844FC, $2\frac{3}{4} \times 7$ inches. Wrought brass, old brass finish. For single door with two escutcheons. For double doors with four escutcheons.

Locks
For single doors No. OB6963.
For double doors No. OB6964.
Case, $5\frac{1}{4} \times 3\frac{3}{4} \times \frac{5}{8}$ inches; front to keyhole, $2\frac{1}{2}$ inches; brass, old brass finish front, $1 \times 7\frac{1}{16}$ inches.

Set No. OB6963FC Old brass finish, complete for single door, set..... \$2.30
Set No. OB6964FC Old brass finish, complete for double door, set..... 3.80

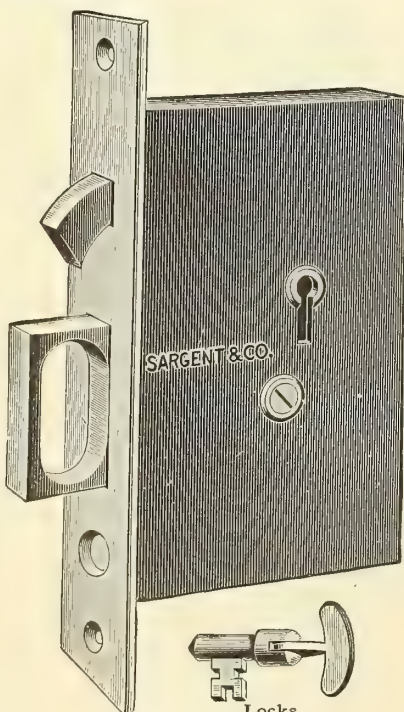
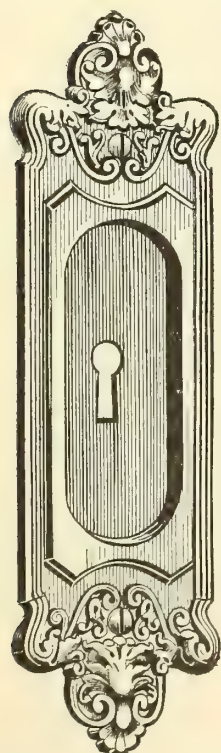


Escutcheon No. 844PC, $2\frac{3}{4} \times 7$ inches. Wrought bronze, polished. For single doors with two escutcheons. For double doors with four escutcheons.

Locks
For single doors No. 6963P.
For double doors No. 6964P.
Case, $5\frac{1}{4} \times 3\frac{3}{4} \times \frac{5}{8}$ inches; front to keyhole, $2\frac{1}{2}$ inches; bronze polished front, $1 \times 7\frac{1}{16}$ inches.

Set No. 6963PC Bronze, polished, complete for single door, set..... \$2.15
Set No. 6964PC Bronze, polished, complete for double door, set..... 3.45

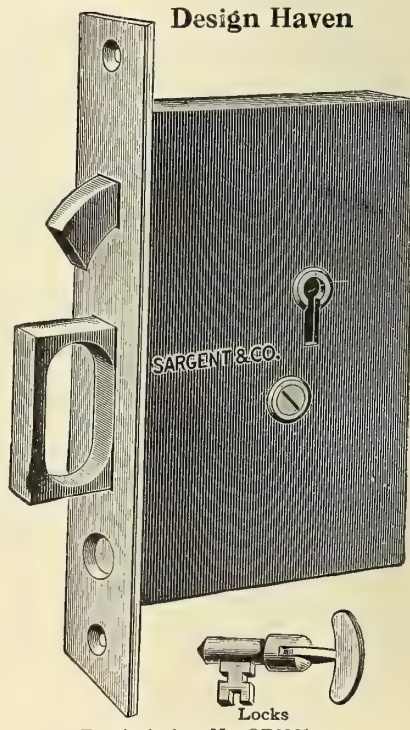
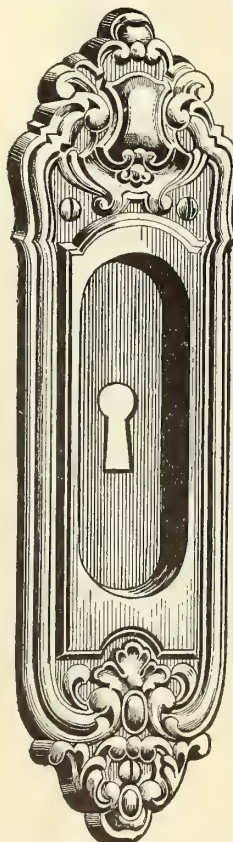
Design Truro



Escutcheon No. AB425TG, $2\frac{1}{4} \times 7\frac{1}{2}$ inches. Cast iron, antique copper finish. For single doors with two escutcheons. For double doors with four escutcheons.

Locks
For single doors No. AB6961.
For double doors No. AB6962.
Case, $5\frac{1}{4} \times 3\frac{3}{4} \times \frac{5}{8}$ inches; front to keyhole, $2\frac{1}{2}$ inches; steel, antique copper finish front, $1 \times 7\frac{1}{16}$ inches.

Set No. AB6961TG Antique copper finish, complete for single door, set..... \$1.70
Set No. AB6962TG Antique copper finish, complete for double door, set..... 2.80



Escutcheons No. OE344HF, $2\frac{7}{8} \times 8\frac{1}{4}$ inches. Wrought steel, old brass finish. Depressed surface oxidized and relieved.

Locks
For single door No. OE6961.
For double door No. OE6962.
Case, $5\frac{1}{4} \times 3\frac{3}{4} \times \frac{5}{8}$ inches; front to center of keyhole, $2\frac{1}{2}$ inches; steel, old brass finish front, $1 \times 7\frac{1}{16}$ inches.

Set No. OE6961HF Old brass finish, depressed surface oxidized, relieved, complete for single door, set..... \$1.70
Set No. OE6962HF Old brass finish, depressed surface oxidized, relieved, complete for double door, set..... 2.80

SINCE
1848

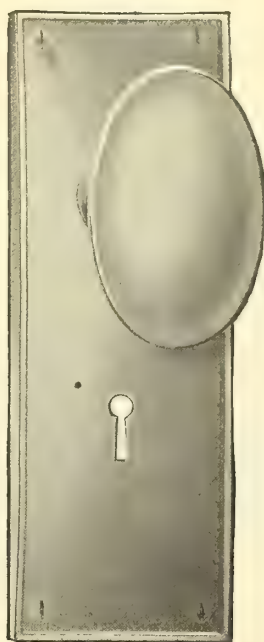
HAMMACHER SCHLEMMER & CO.

NEW
YORK

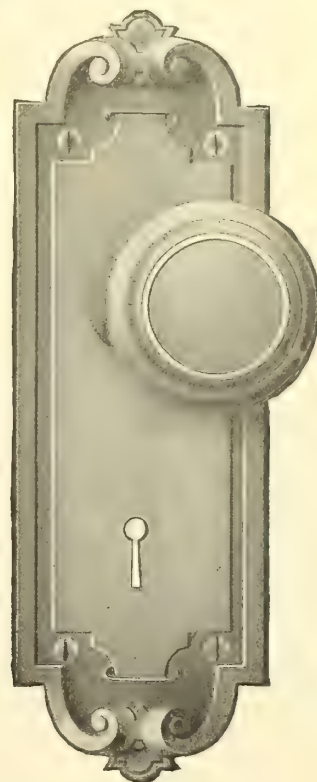
Special Designs—Builders Hardware



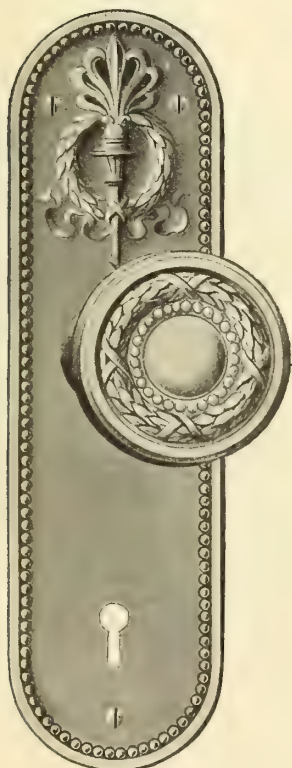
School Adams
Design Boston



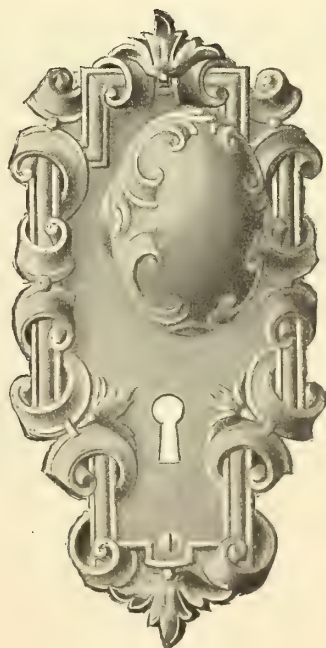
School Colonial
Design Yarmouth



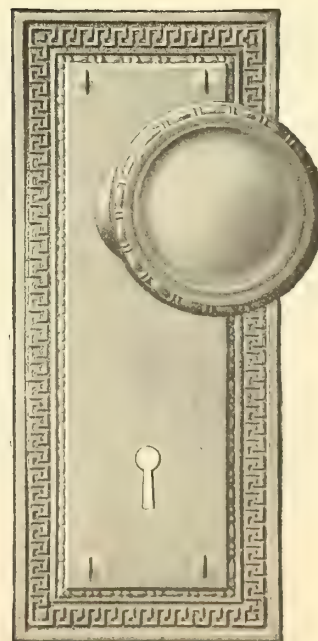
School Elizabethan
Design Stockton



School Empire
Design Corsica



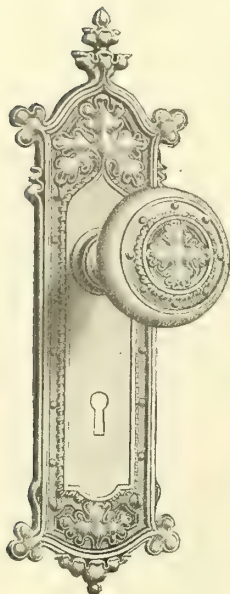
School Flemish
Design Utrecht



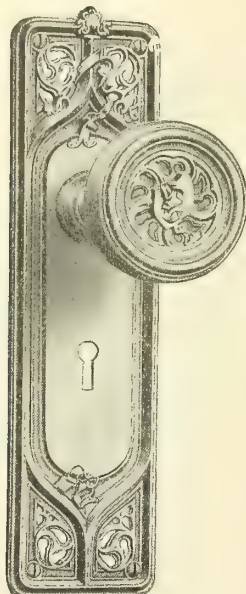
School Greek
Design Meander

The above combined Escutcheons and Knobs are illustrated to show what we are in position to furnish for the complete hardware trimming of a house. Other designs are available in many of the schools and we solicit opportunities to quote in this connection.

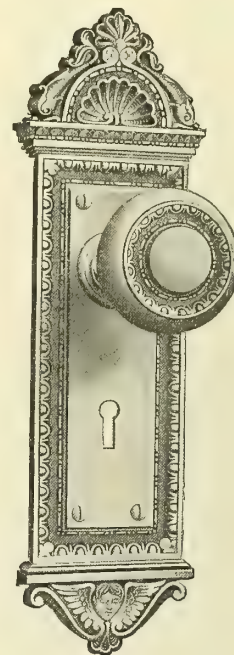
Special Designs—Builders Hardware



School English Gothic
Design Kirkby



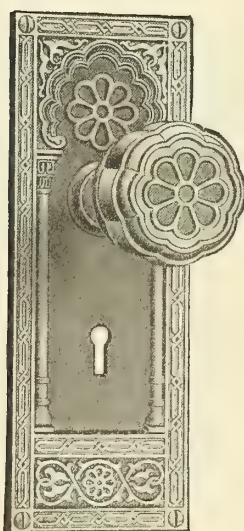
School French Gothic
Design Fargeau



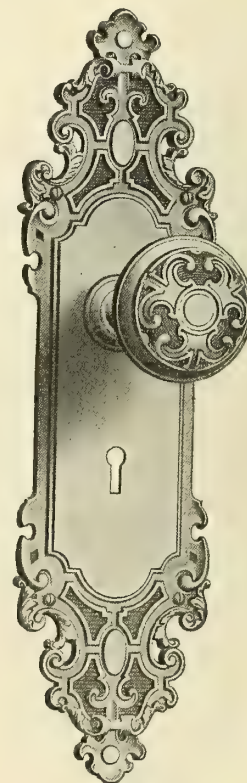
School of Italian Renaissance
Design Parma



School L'Art Nouveau
Design Larna



School Moorish
Design Olmedo



School Elizabethan
Design Bedford

These combined Escutcheons and Knobs are illustrated to give an idea of what we are in position to furnish for the complete hardware trimming of a house. Other designs in any of the schools are also available.

Hand of Doors

As seen from outside

In ordering Locks (except those which are reversible) it is necessary that the hand of door be given, therefore we give the following illustrations to explain fully



View 1, Left Hand

View 2, Right Hand

Regular Doors. As seen from outside, doors opening in. Regular bevel bolts. View 1 shows a left-hand door, requiring a left-hand lock. View 2 shows a right-hand door, requiring a right-hand lock.



View 3, Left Hand, Reverse Bevel

View 4, Right Hand, Reverse Bevel

Reversed Doors. As seen from outside, doors opening out. Reverse bevel bolts

View 3. Left-hand Reverse Bevel

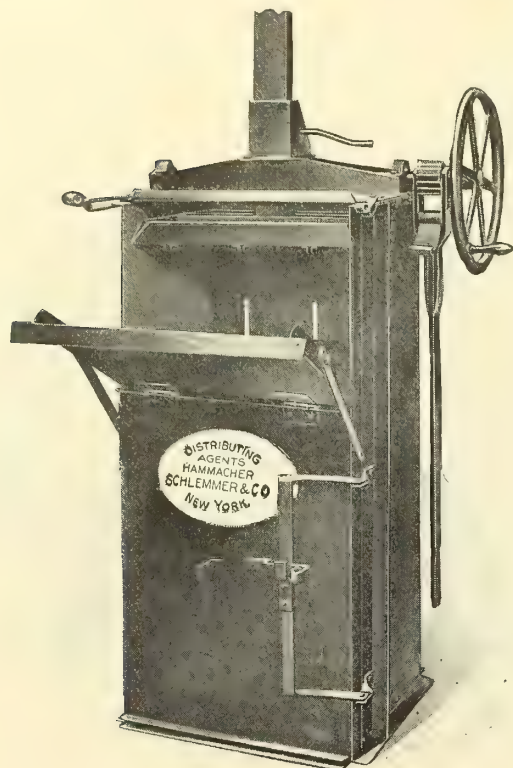
View 4. Right-hand Reverse Bevel

Left-hand Reverse Bevel Rim Locks.
Left-hand Reverse Bevel Rim Night Latches.
Left-hand Reverse Bevel Mortise Night Latches.
Right-hand Mortise Knob Locks.

Right-hand Reverse Bevel Rim Locks.
Right-hand Reverse Bevel Rim Night Latches.
Right-hand Reverse Bevel Mortise Night Latches.
Left-hand Mortise Knob Locks.

All Steel Baler

Schick



No. 3, ready to fill

Built entirely from heavy sheet steel—strongly reinforced with steel angle bars. Is absolutely fireproof, therefore means reduction of fire risk and insurance rate. The double method of applying the pressure, i. e., with lever and wheel, insures rapidity and compactness in baling.

Full open side swing door. Bale is easily removed after pressing. Will bale all kinds of waste paper, waste rags, canvas cuttings, cloth cuttings, tobacco stems, excelsior or any other waste which is capable of being compressed.

Produces full weight, compact bales which stand shipment; are fireproof and cleanly.

Contains very few working parts which are made of crucible steel castings.

The operation is simple with a direct and positive mechanism.

Nothing inflammable—guaranteed throughout.

Annealed Baling Wire

In bundles of 250 wires, 3 wires required for each bale, enough for 80 bales

For No. 3 machine, 8 feet No. 16 wire, bundle..... \$2.00

For No. 4 machine, 10 feet No. 14 wire, bundle..... 2.00

Dimensions of No. 3

Size of bale, 18 x 20 x 33 inches.

Weight of bale, 100 to 150 pounds.

Weight of press, 300 pounds.

Base, 24 inches x 24 inches.

Floor space for operating, 42 inches x 36 inches.

Compression chamber, 42 inches x 20 inches x 18 inches.

Price of No. 3, \$45.00

Dimensions of No. 4

Equipped with Double Ram

Size of bale, 20 x 24 x 38 inches

Weight of bale, 250 to 300 pounds.

Weight of press, 385 pounds.

Inside measurements, 22 x 24 x 50 inches.

Outside measurements, 25½ x 27½ x 51 inches.

Price of No. 4, \$75.00

Grades and Values of Waste

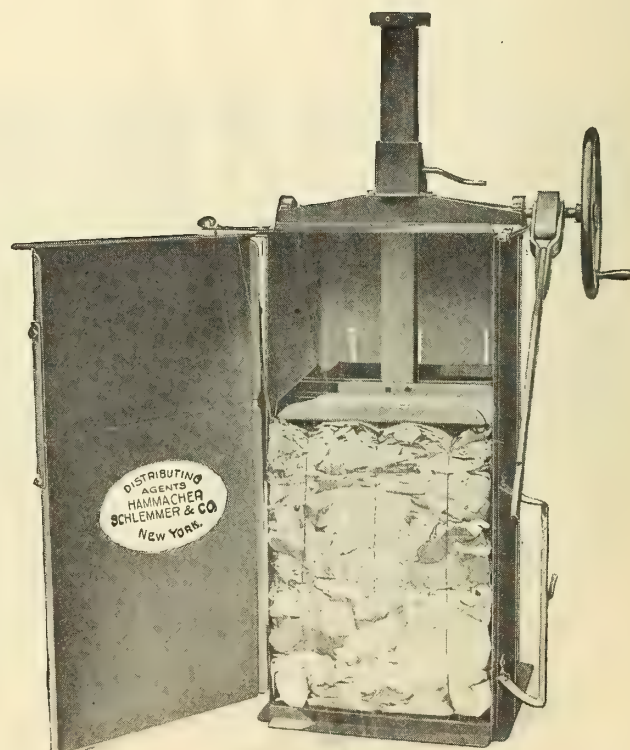
Mixed.....As low as \$6.00 to as high as \$18.00 per ton

News.....As low as 8.00 to as high as 20.00 per ton

Blanks and No. 2

Shavings.....As low as \$18.00 to as high as 27.00 per ton

No. 1 Shavings.....As low as 32.00 to as high as 45.00 per ton



No. 3 with bale compressed and wired ready for removal from Press

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